

weG/weGmGm tčÜMög

mgvRZËj-5

MteI Yv c×wZ

Research Methodology

†Kvm©KwW - BSO 6305



mgvRK weÁvb, gvbweK I fvlv -j
evsj vř`k Dšš³ wekte`vj q
MvRxcj -1705



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cV-ib` R
Study-Direction

evsj v`k Dby³ wek^{te} `vj tqi weG/weGmGm ch^q hviv mgvRweAv^tb wM^{ix} t^bteb Zv^t i
cV^mPx Ab^hvqx Om^telYv c^xwZ⁰ M^šUⁱ cwi Kⁱ bv Kiv n^tq^tQ| wek^{te} `vj tqi c⁰uj Z v^bqg
Ab^hvqx mgvRweAv^tbi Rb[”] wbaⁿⁱ Z P^{ri}U t^Kum^otkl Kivi ci, c^{Ag} ev tkl t^Kvtm^o cV[”]
c^y K wⁿmv^{te} w^kq^v_x^pv M^šU Aa[”]qb Ki^teb|

weAv^tbi j q[”] n^tju, we^rf^bae[”], NU^bv, ev we^tqⁱ m^vaviY i^fci A^we^ovi, eY^ov l e^vL^v Kiv|
M^telYv c^xwZⁱ tg^šuj K b^wuz^gvj v[”] t^jv AbⁿⁱY K^{ti} weAv^bm^ošZ Av^b AR^obi g^va[”]tg^B G^KR^b
weAv^bx t^m Aw^ro[”] j t^q” t^co^tZ c^vtⁱb| w^kš[’]w^el q^u m^vg^wRK weAv^tbi t^q”t[”] ZZ^Uv mⁿR b^q|
K^{ri}Y, m^vg^wRK c^oš[”] t^jv c^oZ^wb^qZ we^rf^bae[”]Dc^v v^tbi o^{ri}v c^fw^eZ n^q, c^wi e^wZ^o n^q Ges
A^waK^vsk t^q”t[”] G[”] t^jv t^k m^o f^ute c^wi g^vc Kiv m^oe n^q b^v| t^m Rb[”], m^vg^wRK weAv^bx t^k
M^telYv c^xwZⁱ tg^šuj b^wuz^gvj v[”] t^jv t^k Av^tv t^ekx h^tZ^o m^vt[”] Dc^j w^a Kiv c^oq^vR^b|

Om^telYv c^xwZ⁰ M^šU^tZ, G m^Kj tg^šuj K b^wuz^gvj v^tk t^Kvtm^o Dc^th^wM^x K^{ti} Dc^šv^cb Kiv
n^tq^tQ| M^šU[”] k^u BD^wt^u w^ef³ | c^oZ^u BD^wt^ui A^ax^tb w^el q^e”i c^oq^vR^bx^zv Ab^hvqx
we^rf^bae[”]c^v A^šf^o Kiv n^tq^tQ| k^u BD^wt^u w^ef^gv^u 45^w c^v i^tq^tQ| M^š’ A^šf^o
w^el q[”] t^jv n^tju, M^telYv c^oq^vi we^rf^bae[”]av^c, c^wi g^vc l g^vcb^x, M^telYⁱ c^kvⁱf[”], Z[”]
m^sM^oni n^wuz^qi w^bg^o, Dc^vE m^sM^oni t^kš^kj, b^gb^vq^b, Z[”] c^oq^vKⁱY, Z^t”i w^et^k” l
Dc[”]v^cb|

w^el t^qi m^vt[”] m^ou^wK^o e^tj t^Kv^b c^vt^v ce^oZ^ot^Kvtm^o (mg^vRZ^E-4) w^kO^zw^kO^z A^št^ki m^v” k[”]
i^tq^tQ, A^evⁱ w^kO^z w^kO^z c^vt^k mⁿR^tev^x K^{ti} t^Zv^jvi c^oq^vR^tb t^ek w^kO^uv w^e”wⁱ Z^fu^{te}
Dc[”]v^cb Kiv n^tq^tQ| Ab[”] P^{ri}U M^ši g^Z, GB M^š’ c^oZ^u c^v i i” n^tq^tQ w^kO^z m^yb^w” o[”]
Dⁱl^k”t^k m^gt^b tⁱl Ges t^kl n^tq^tQ c^vt^v”Eⁱ g^j”v^qb w[”] t^q| Z^vO^vov, w^kq^v” i[”] w^o b^v
Gov^tb^{vi} Rb[”] Av^tj v^pb^{vi} c^vt^k ” i” Z^cY^ow^el q[”] t^jv t^k e^t” i g^va[”]tg Dc[”]v^cb Kiv n^tq^tQ|

c^wi t^kl, M^telYv c^xwZⁱ t^htⁿZⁱ G^Ku^l R^ul^j w^el q, t^mtⁿZⁱ w^el q m^ou^tK^omg[”]K Av^b j v^tfⁱ
Rb[”] w^kq^v” c^oZ^u c^vt^{vi} c^oZ^u j v^Bb g^tb^vt^hv^M w[”] t^q c^ot^Z n^tel w^kO^z w^kO^z w^el t^q,
c^oq^vR^bt^ev^ta, ”ah^o a^{ti} G^tKⁱ A^waK^evi c^o t^ev^Svi t^Po^v Kⁱt^Z n^tel t^ev^Svi g^ta[”] t^Kv^b
d^uk[”] v^Kt^j, w^kq^v” M^telYv c^xwZⁱ m^ou^tK^om^wK avⁱ Yv c^vteb b^v|

t^Kum^og^šq^Kvi x

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cW - 1 : bgbvqđbi hı ³	204
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1

fᵏgKv *Introduction*

KZZpē`x c×wZ, AZw`q c×wZ I hᵑ³ev`x c×wZi gva`tg Ávb ARᶘ m³ē nᵗj I mZ`
AbmÜvtbi ᵗᶓᵗ GB c×wZ, ᵗjv KLᵗbv KLᵗbv weáwšᵗ Rbᵗ w`ᵗq ᵗvK | %eÁwbK c×wZᵗZ
mZ` AbmÜvtbi Rb` e`eüZ MᵗelYv c×wZ, ᵗjv Avgvᵗ`i cᶓᵗj Z wekᵑm I mvaviY ÁvbᵗK
cwi`i× Kivi weagjv cᵒvb Kᵗi, thšw³K I h_vh_ hᵑ³web`vᵗmi wbgg `vcb Kᵗi Ges
Avšeᶓ³K thvMvᵗhvᵗMi wbgg-bwZ cᵒvb Kᵗi | wKŠ` weÁvbm³SZ MᵗelYv c×wZ AbmiY
KiᵗZ nᵗj MᵗelKᵗK RvbᵗZ nᵗe th, weÁvᵗbi hᵑ³ wK, weÁvᵗbi `ewkó` ᵗjv wK Ges tmB
`ewkó` ᵗjv mvgwRK weÁvᵗb AwaZ mvgwRK AvPiᵗYi weiq, ᵗjv MᵗelYvq AbmZ c×wZi
mvᵗ_ m/wZcYᶓwK bv? weÁvbm³SZ MᵗelYv cᵒᵑqv m³úbeKiᵗZ nᵗj KZ, ᵗjv mybw`ᶘ I
wbqge× avc AwZᵑg KiᵗZ nq | tm, ᵗjv nᵗjv MᵗelYv mgm`vi wbeᶓᵑb I mᶓe×KiY,
cZ`q, ᵗjvi KvRi msÁvqᵑ I AbKí wbgᶓY, MᵗelYv bKkv cᵓqᵑ, DcvÉ msMᶓni nwwZqvi
wbgᶓY, DcvÉ msMᶓ Ges DcvᵗÉi weᵗkᵗY, e`vL`v I mvaviYxKiY | %eÁwbK MᵗelYv c×wZᵗZ
`bwZK AvPiY weia AbmiᵗYi weiqw weᵗkl fᵑᵗe ᵗjv i`ZcYᶓ KviY, MᵗelYv cwi Pᵑj bv KiᵗZ
wMᵗq MᵗelYvq AskMᶓYKviᵗᵗ`i AwaKvi j wNZ nᵗ`Q wK bv, ev ᵗKvb AKj`vY mwaZ nᵗ`Q wK
bv, ᵗmU wbowᶗZ Kiv MᵗelᵗKi Rb` GKwU Aek` cᵑj brq KZᶘ | Avgiv G weiq, ᵗjvᵗK wᵑᵗq
GB BDwbᵗU Avᵗj vPbv Kiᵗev |

GB BDwbᵗU Avgiv th cw, ᵗjv Aa`qb Kiᵗev, tm, ᵗjv nᵗj v:

- ◆ cw - 1 : MᵗelYv c×wZi thšw³KZv - 1
- ◆ cw - 2 : MᵗelYv c×wZi thšw³KZv - 2
- ◆ cw - 3 : weÁvᵗbi PPP
- ◆ cw - 4 : mvgwRK weÁvᵗbi hᵑ³
- ◆ cw - 5 : weÁvb Ges mvgwRK weÁvᵗbi %ewkó`
- ◆ cw - 6 : MᵗelYv cᵒᵑqv
- ◆ cw - 7 : mvgwRK MᵗelYvq `bwZKZv

Mtel Yv cxiZi thSw³KZv - 1
Logic of Research Methodology - 1

GB cW tkfi hv Rvbn hvte —

- Ávb AR³bi Dcvq
- AbymÜv³bi wPivqZ AvKv³¶v
- wbr³^D³^v³M AbmÜv³bi áwš-

Ávb AR³bi Dcvq (Approaches to Knowledge)

ÁvbK cxiZ Qvov Av³iv
wZbuU cxiZtZ gvbj Ávb
AR³ K³ti³Q| tm cxiZ, tjv
ntjv, KZ³ev³ x cxiZ,
AZ³w³ q cxiZ Ges hv³ev³ x
cxiZ/

Avgt³ i gtb ntZ cvfi th, GKgv³ ÁvbK cxiZtZB gvbj Zvi Pricv³ki cwi³tek Ges
wb³tri m³ú³t³K³Ávb AR³bi tP³ov K³ti³Q| wK³Š BwZnm ch³¶vPbv Kitj t³Lv hvq th,
ÁvbK cxiZ Qvov Av³iv wZbuU cxiZtZ gvbj Ávb AR³ K³ti³Q| tm cxiZ, tjv ntjv,
KZ³ev³ x cxiZ (authoritarian mode), AZ³w³ q cxiZ (mystical mode) Ges hv³ev³ x
cxiZ (rationalistic mode)| GB wZbuU cxiZi g³ta³ cv³R³ w³Y³¶Kvix wZbuU c³avb w³elq
i³qt³Q| c³g³w³U ntjv, wK³fv³te Áv³bi Drm ev Ávb Drcv³ bKvixi c³ÖZ w³ek³ym v³cb Kiv
nt³qt³Q? A³¶, Áv³bi Drm³U wK³? w³Zxq w³elq³U ntjv wK³ cxiZtZ Ávb³U Av³R³ nt³qt³Q? A³¶,
wK³fv³te Ávb³U Av³R³ nt³qt³Q? ZZxq w³elq³U ntjv, th Ávb Drcw³ Z nt³qt³Q Zvi dj³v³d³j³U wK³
nt³qt³Q? A³¶, Av³R³ Ávb tKvb cv³R³ ^Zwi K³ti³Q wK³?

KZ³ev³ x cxiZtZ mvgw³RK
ev ivR³w³ZKfv³te ^KZ KZ³¶Zi
Áv³Kvix e³w³t³ i e³e³t³K
Ávb w³mv³te M³hY Kiv nq| Giv ntZ
cvfi b DcRv³Zxq mgv³R f³w³el³ i³ov
e³w³, c³¶i w³nZ kw³mZ
mgv³R c³avb ag³¶vRK, ivR³Z³š; ivRv,
ch³¶w³e³t³ i mgv³R ÁvbK c³gh³¶v
m³ú³b³e e³w³eM³, BZ³w³ | th tKvb
mgv³R w³ef³b³aeKZ³¶m³ú³b³e³w³ w³ef³b³ae³w³
w³elq m³ú³t³K³Áv³bi Drm
w³mv³te KvR K³ti³ |

KZ³ev³ x cxiZtZ mvgw³RK ev ivR³w³ZKfv³te ^KZ KZ³¶Zi Áv³Kvix e³w³t³ i e³e³t³K
Ávb w³mv³te M³hY Kiv nq| Giv ntZ cvfi b DcRv³Zxq mgv³R f³w³el³ i³ov e³w³, c³¶i w³nZ kw³mZ
mgv³R c³avb ag³¶vRK, ivR³Z³š; ivRv, ch³¶w³e³t³ i mgv³R ÁvbK c³gh³¶v m³ú³b³e
e³w³eM³, BZ³w³ | th tKvb mgv³R w³ef³b³aeKZ³¶m³ú³b³e³w³ w³ef³b³ae³w³
w³elq m³ú³t³K³Áv³bi Drm w³mv³te KvR K³ti³ |

AZ³w³ q cxiZtZ Atj Šw³KK
Áv³m³ú³b³e³w³ ev
Av³Zc³ÖKZ kw³i KvQ t³¶K
Ávb AR³ Kiv nq|

AZ³w³ q cxiZtZ Atj Šw³KK Áv³m³ú³b³e³w³ ev Av³Zc³ÖKZ kw³i KvQ t³¶K Ávb AR³ Kiv
nq| GB e³w³ ev kw³ ntZ cvfi b tKvb ag³¶q c³ c³k³R, Hk³¶i K ¶gZvm³ú³b³e³w³,
m³ú³KZ³¶, ev Ab³ th tKvb g³va³g| G w³ K t³¶K AZ³w³ Z cxiZ KZ³ev³ x cxiZi gZB| wK³Š
Ávb AR³Kvixi g³tb³kvixi w³K Ae³v I Av³Zc³ÖKZ m³st³KZ c³Öv³tki Dci w³b³f³¶k³j Zv G
cxiZi m³v³¶ KZ³ev³ x cxiZi cv³R³ ^Zwi K³ti³ | A³¶, AZ³w³ q cxiZ Av³Pvi I
Av³b³¶w³bKZvi Dci Áv³K gv³¶vq w³b³f³¶k³j | Zxe³ w³el³v³ M³Ö Zv, Am³vqZ; Ges Db³¶ZvRw³B
cwi³w³ZtZ AZ³w³ q cxiZtZ Drcw³ Z Áv³bi c³ÖZ gvbj tek³ w³b³f³¶k³j nt³q cto|

hv³ev³ x cxiZi gj e³e³w³U
ntjv th, b³w³ZM³Zfv³te hv
mZ³ Zv thSw³Kfv³te Abgv³b
Kiv m³¶e|

Ab³w³¶K, hv³ev³ ntjv Ggb GKw³ v³kw³¶K w³ofw³ hvi Ašw³b³¶nZ aviYw³U ntjv th,
Av³f³ÁZv³ ä c³ÖÁgm³¶ni ch³¶e¶Y QvovB gv³¶li gb c³w³ext³K e³š³Z cvfi, Ges Avgt³ i
e³w³MZ Av³f³ÁZvi c³¶e³Á Áv³bi Av³Kvi Avgt³ i gtb Av³Zgv³ v³¶K| Ab³ K³vq, hv³ev³ x
cxiZi gj e³e³w³U ntjv th, b³w³ZM³Zfv³te hv mZ³ Zv thSw³Kfv³te Abgv³b Kiv m³¶e| a³c³x
hv³ev³ x³ i g³tZ ce³aviYw³MZ Áv³bi g³va³tg Avgt³ i gb GK ai³t³Yi ch³¶e¶Ythw³M³ Rm³t³Zi
Qvc ^Zwi K³ti³ | wK³Š mg³Kv³j xb hv³ev³ x³ i cig c³Ökv³w³U ntjv w³egZ³¶ thgb, w³ei x M³w³Zkv³;
Ggb wK³Qz aviYv w³¶q M³w³Z hv m³veR³b³xbfv³te h³v³ w³bw³ÖZ Ges ev³e RMZ t³¶K v³axb|
Av³iv m³ybw³ ¶fv³te ejv hvq th, w³ei x R³w³gv³Z ev³eZv m³ú³t³K³w³KQB etj bv, wK³Š Gi

cŃvebv, tjv hŃ³i ifc, tjvi (forms of logic) Kvi tYB mZ` | `eÁwibK `wófw/zi Rb` hw` I wei x MwYvZK mĤ Ges i xwZwmx hŃ³ cŃqvRbxq, wKŠ` mvgwRK weÁvĤb G, tjvi cŃtqwmK gj` wbi frcZ nq ZLbB, hLb G, tjv tKvb wel qe` tK h_vh_ DcvĤq eŠtZ mrvh` Kti |

AbymŮvtbi wPivqZ AvKv•Ův (Eternal Desire of Inquiry)

tKvb wel q mŃutKŃgvĤl i Rvbevi B`Qv mveRbxb Ges Amxg | cŃKZcĤŮ, cŃZwU gvbyl wĤRi Ae`v ev tKvb NUbv cĤv mŃutKŃfiel` ŮvYx Kivi AvKv•Ův cŃ kŮ Kti | Avi gvbyl Zv Kti KvĥKvi Y Ges mŃvebvġj K hŃ³ e`enĤi i gra`tg | gvĤl i fiel`r Ae`v wK nĤe Zv tKvb bv tKvbfĤe AZxZ Ges eZŮv Ae`vi Ůviv cŃfiweZ nq | thgb, Avgiv Rwb th, wbcqgZ I gĤbvĤhvM w`tq tj Lvcov Kitj fvĤjv djvdj Kiv hvq Ges fvĤjv djvdj Kitj fvĤjv teZĤbi PvKix cvl qv hvq | G aiĤYi KvĥKvi Y mŃuKŃ³tjv mŃaviYZt mŃvebvġj K cŃkwiZi nĤq _vĤK | Kvi Y, hw` I GKRb QvĤ RvĤb th, wbcqgZ I gĤbvĤhvM w`tq covĤkvb Kitj fvĤjv djvdj Kiv hvq Ges fvĤjv djvdj Kitj fvĤjv teZĤbi PvKix cvl qv hvq, wKŠ` me mgqB Zv NĤU bv | tKb Awakvsk tŮĤĤ cŃ`wkZ NUbv NUĤQ Ges KLbI KLbI NUĤQ bv, Zv Avgiv wKfvĤe RvĤev?

cŃZwU gvbyl wĤRi Ae`v ev tKvb NUbv cĤv mŃutKŃ³fiel` ŮvYx Kivi AvKv•Ův cŃ kŮ Kti | Avi gvbyl Zv Kti KvĥKvi Y Ges mŃvebvġj K hŃ³ e`enĤi i gra`tg |

Avgiv Zv RvĤZ cwi HwZn` t_ĤK | mgvĤRi cŃZwU gvbyl GK aiĤYi mŃ`wZK HwZn` wĤq RbMŃY Kti Ges H mŃ`wZK HwZn` t_ĤK gvbyl Zvi AbymŮrmj gĤb D`mZ AĤbK cŃkŃe DĤi LĤR cvq | gvbyl GB Rvbv, tjv vĤK mZ` eĤj gĤb Kti | Kvi Y, mevB G, tjv vĤK RvĤb Ges MŃY Kti | HwZn`MZ ÁvĤbi mŃeav nĤjv, G, tjv AbymŮvb Kti RvĤZ nq bv | G, tjv mevB RvĤb Ges G, tjv cŃĤ | ZĤe HwZn`MZ Ávb KLbI KLbI mZ` AbymŮvbĤK evavMŮ`-Kti | thgb, hv mevB RvĤb Zv t_ĤK wfbĤvĤe RvĤbi tPŃv Kitj Zv mntR MŃYĤhvM` nq bv | Gi dtj, tKvb wel q mŃutKŃ³Zb Kti RvĤbi D`mZebx cŃPŃvi RbĤ nq bv Ges ÁvĤbi weKvĤ ifx nĤq cŃo |

mgvĤRi cŃZwU gvbyl GK aiĤYi mŃ`wZK HwZn` wĤq RbMŃY Kti Ges H mŃ`wZK HwZn` t_ĤK gvbyl Zvi AbymŮrmj gĤb D`mZ AĤbK cŃkŃe DĤi LĤR cvq |

wKŠ` Zvi cĤi l t`Lv hvq th, cŃZwbqZ bZb bZb ÁvĤbi DĤbŮ NĤU | HwZn`i cvkvcwK AbĤ`i Ůviv AwmŃKZ ÁvĤbi gra`tg Avgiv AvgvĤ`i mŃx Kti Zuj | AbĤ`i Ůviv AwmŃKZ GB Ávb, tjvi MŃYĤhvM`Zv wbfŮ Kti AwmŃKZŮ ghŮvi Dci | GKRb weĤklĤÁi gZvgZĤK Avgiv hZ mntR MŃY Kwi, GKRb mŃavi Y gvĤl i e³e`ĤK Avgiv ZZ mntR MŃY Kwi bv | GB weĤklĤÁ`i Avgiv KZŮj (authority) eĤj _wK | tKvb wel tq weĤklĤ ÁvĤbi Awakvix e`w³ AvgvĤ`i bZb Ávb l `wófw/zi `Zwi tZ mrvh` Kti | wKŠ` hw` tm e`w³i ÁvĤbi gĤa` tKvb áwš`_vĤK, ZĤe Zv AvgvĤ`i gĤa` mntRB weáwš`-Zwi Ki tZ cvĤi | hw` Avgiv Ggb tKvb KZŮj Dci wbfŮ Kwi, th KZŮj wBR`^`ŮjZvi AwZwi³ e³e` ivĤLb, ZĤe mZ` AbymŮvb evavMŮ`-nĤq cŃo | thgb, tKvb e`w³ `Re i mŃvqwbK Ávb QvovB hw` tKvb tŮl R mŃutKŃ³gZvgZ cŃkŃv Kti b, ZĤe tmB gZvgZ áwš`-nevi mŃa mŃvebv _vĤK |

HwZn`i cvkvcwK AbĤ`i Ůviv AwmŃKZ ÁvĤbi gra`tg Avgiv AvgvĤ`i mŃx Kti Zuj |

Dctiv³ AvĤj vPbv t_ĤK GKwU wel q `úo th, HwZn` Ges KZŮj nĤjv wekĤ RMr mŃutKŃÁvb ARŮbi `Ůw`ĤK avĤjv GKwU Ziemi i gZ | mZ` AbymŮvtbi tŮĤĤ G, tjv AvgvĤ`i w`K wĤt`R Kti _vĤK eĤU, ZĤe Zv KLbI KLbI weáwš`Kil nĤZ cvĤi | hw` Avgiv HwZn` I KZŮj Dci wbfŮ Ki tZ bv PvB, tm tŮĤĤ wekĤ RMrĤK RvĤbi I tevSvi Rb` wBR`^DĤ`wM MŃY Kiv thĤZ cvĤi | ZĤe wBR`^DĤ`vĤMi tŮĤĤ I weŮbĤeKviĤY áwš`-avi Yv RbĤ tbevi eŮ mŮĤhvM i tĤtQ | áwš`-RbĤw` tZ cvĤi Ggb wKQz, i "ZcY`Dcv` vbĤK AvĤj vPbv Kiv nĤjv |

wbR^Df`vM AbmUvtbi ams-(Errors in Personal Inquiry)

Avgv`i migtb hv`k`gub
Zvi mewKQB Avgiv
chfeY KiZ e`nB Ges
hv tbB GiKg AtbK wKQz
fj Kti chfeY Kwi |

fj chfeY (Inaccurate Observation): Avgiv Rwb th, th tKvb AbmUvtbi gj PweKwW ntjv chfeY | wKs' Avgiv Rxeabi wefbaNUbvej xtK mvavi YZt Acwi Kwir Zfvte ev AmPZbfvte chfeY Kti _wK| thgb, hw Avgv`i ckeKiv nq th, th e`w`i mvt_ mefkl t`Lv ntqtQ tm e`w`i ci`b wK i`oi Rvgy wQj? Avgiv AtbKKB nqtZv wbuOZ Kti Zv ejtZ cvi`tev bv| KviY, Avgiv tmlU memgq `i`Zji mvt_ j`j` Kwi bv| A_w, Avgiv hLb tKvb wKQz chfeY Kwi, ZLb cOZwU melq Avgiv LpUtq t`wL bv| dtj, Avgiv fj Kwi | Ab`K_vq, Avgv`i migtb hv`k`gub Zvi AtbKwKQB Avgiv chfeY KiZ e`nB Ges hv tbB GiKg AtbK wKQz fj Kti chfeY Kwi |

GKwU D`vniY t`qv hvK| aiv hvK, GKRB wef`kx chOK evsjv`tk teovtZ Gtm wKQz AvMstKi Qviv AvmUvS-ntj b| G NUBv t`tK wef`kx chOK fivetZ cvtib th, chOKt`i Rb` evsjv`k w`bivc` `vb bq| wKs' wef`kx chOKi GB chfeY mWK bv| ntZ cvti | KviY, th mKj AvMSK ZvtK AvugY KtiwQj Zvivi m`eZ wQj wef`kx chOK| Zvntj, wef`kx chOK tKb GB Dcmsnvi Uvbttj b? KviY, th mKj AvMSK ZvtK AvugY KtiwQj Zvivi t`Ltz AtbKuv evsjv`kx`i gZ Ges thtnZi Zvivi Bsti RxtZ Kt_vcK_b KtiwQj tmtnZi Zvi ct`j tevSvi Dcvq wQj bv th Zvivi evsjv`kx bv wef`kx| Acwi Kwir Z Ges m`v gvUv chfeY memgqB fj w`xvtsi Rb`f`q| cwi Kwir Z Dcvq mPZb chfeY G ai`Yi ams`nm Kti | thgb, mefkl t`Lv e`w`i ci`b wK i`oi Rvgy wQj, Zv hw` wj tL ivLv ntZv Zvntj Avgiv mntRB mWK DEi w`tZ cvi Zvg| GKBfvte, `iay evsjv`kx`i gZ t`Ltz Ggb avi Yvi Dci w`E bv Kti NUBwUtk wKQz AbmY Ki t j B mZ`wU Rvbi m`e wQj |

AwZmvari YxKi tYi cEYZv
AwK gvTvg cOwKZ nq,
hLb tKvb melq m`utK`
GKwU mvari Y avi Yv t`evi
ZwM`wU _vtK Lp tekx|

AwZmvari YxKi Y (Overgeneralization): Avgiv hLb Avgv`i Pvi cvtki NUBvej x chfeY Kwi Ges tm mKj NUBvej xi m`b`w`i ifc LpRtZ tPov Kwi, ZLb A`i wKQz mgifc NUBvtK GKwU mvaviY ifci cOY w`mvte Abgvb KiZ PvB| mvavi YZt, G ai`Yi AwZmvari YxKi tYi cEYZv AwK gvTvg cOwKZ nq, hLb tKvb melq m`utK`GKwU mvaviY avi Yv t`evi ZwM`wU _vtK Lp tekx| wKs' cOqvRtbi ZwM` Qvovl Avgiv G ai`Yi AwZmvari YxKi Y Kti _wK| thgb, tKvb NUBv m`utK`hLb GKRB mvsew` K KtqKRb e`w`i KvQ t`tK GKB iKg gse`i btZ cvb, ZLb Zvi w`E tZB wZwb NUBwU eY`v l e`vL`v`Zwi Ktib | G ai`Yi AwZmvari YxKi Y memgqB Avgv`i avS`avi Yv w`tq _vtK |

%eAwK MtelYv c`wZ e`envt`i gva`tg AwZmvari YxKi tYi mgm`wUtk Govt`v hvq| enr mSL`vi bgbv w`e`P`bi gva`tg Ges cpt cpt AbmUvtbi gva`tg djvdtj i w`f`P`thwM`Zv cOY Kti weAvbxiv Zv Kti _vtKb| GKB MtelYvi cptcp AbmUvb wefba`vte Kiv ntq _vtK| cOgZt, ctiv MtelYwU GKB cwi w`wZtZ cpivq cwi Pvj bv Kti | cpivq AbmUvb cwi Pvj bvi gva`tg t`Lv thtZ cvti th, evievi GKB djvdj cvlqv hvq wK bv| wOZiqZt, GKB MtelYv wKQz w`fba`w`wZtZ cwi Pvj bv Kti | w`fba`w`wZtZ MtelYwU cwi Pvj bv Kti wefba`AA`tj i gta` cv`R` i tq`Q wK bv Zv t`Lv thtZ cvti, A`ev wefba`mvgwRK tMv`ox ev eqtMv`oxi gta` m`utK`P mgifcZv ev w`fba`v cix`jv Kiv thtZ cvti | ZZiqZt, MtelYwU Ab` MtelKt`i Qviv `vaxbfvte w`fba`w`wZtZ cwi Pvj bvi gva`tg| Ab` MtelK hw` GKB iKg djvdj bv cvb, ev tKvb wefkl ifci gta` AmvgAm`Zv aiv cto, Zte cteP MtelK hw` AwZmvari YxKi Y Kti _vtKb, Zte Zv mntRB w`PwYZ nte |

AwZmvari YxKi tYi Ab`Zg
wec`wU ntjv th, GuU
w`e`P`Z chfeY tYi cEYZv
Zwi Kti |

w`e`P`Z chfeY (Selective Observation): AwZmvari YxKi tYi Ab`Zg wec`wU ntjv th, GuU w`e`P`Z chfeY tYi cEYZv `Zwi Kti | thgb, AbmUvtbi dtj hw` t`Lv hvq th, wefkl

KZ,tjv mæútkP mvaviY ifc we`gvb Ges tmB mvaviY ifc,tjvi wfvÉtZ GKwU mgm`vi eYðv l e`L`v Kiv thtZ cvti, tm t`tt`f fvel`tZ`i agv` tmB mKj ifc chfeytYi cðZ AbymÜvbKvixi gtbvthvM tK``ifZ Kivi cðYzv`_vtK tekx| th mKj mvaviY ifc cte`aiv ctovb, tm mKj ifc chfeytYi cðZ GK aittYi Abxrv`Zwi nq|

aiv hvK, GKwU AvšwefvM dUej cðZthvMZvq mgvRweÁvb wefvtMi KtqKRb QvT-QvT`x tLjvi gvfv wek;Ljv mjo Kivi dtj aviYv Kiv nq th, mgvRweÁvb wefvtMi QvT-QvT`xiv memgqB tLjvi gvfv wek;Ljv mjo Kiti | Gi dtj mgvRweÁvb wefvtMi QvT-QvT`xt` i t`Ltj B gtb ntZ cvti th, Zviv wek;Ljv mjoKvix| wKš`GB GKwU wetkl NUbvi dtj mgvRweÁv`bi Awakvsk QvT-QvT`xt` i k;Ljvex AvPiY Ges Ab`vb` wefvtMi QvT-QvT`xt` i wek;Ljv mjoKvix AvPiY chfeytYi Avl Zvfv` bvl ntZ cvti | GB wbePZ chfeytYi memgqB avš-wm`vtš`-Rbft`q|

ce`cwi Kwi Z MtelYv bKkvi gva`tg weÁvbmæšZ AbymÜvb G aittYi wbePZ chfeytYiK cðZnZ Kiti | thgb, Avgiv hw` wku`fZ Ges Ankw`fZ RbtMvöxi gta` i`fYkxj Zvi gv`vi wfbzv RvbtZ PvB, tm t`tt`f GKwU mpcwi Kwi Z MtelYv bKkvi gva`tg cðZwbaZkxj bgbv wbePb Kiti wefbæPj`iki gta` mæútkP chfeytYi Kitz cwi | cðg`kRb wku`fZ e`w` i`fYkxj Ges`kRb Ankw`fZ e`w` D`vi gtbvve cðk` Kiti | bgbvq wbePZ mKj e`w` i` gZvgZ bv cvl qv chš`-tKvb Dcmsnvi Uvbn wK bq|

gb-Mov Z` (Made-up Information): AtbK mgq, Avgiv wbtRi aviYvgZ evbtbv Z` t`tk Dcmsnvi tUtb`_wK| GKwU D`vniY t`qv hvK| thgb, evm, wiK` ev U`v` xtZ tKvb wRvbm tdtj tMj Awakvsk t`tt`f mvaviYzt Zv Avi tdir cvl qv hvq bv| Gi dtj Avgiv aviYv Kwi th, wi`v, evm ev U`v` xPvj`tkiv mr e`w` bb| wKš`hLb tKvb wi`v ev U`v` xPvj`K nvi`vbw wRvbm tdir w`tZ Avtm, ZLb Zvi mZZvi cðZ gj`vqb bv Kiti Avgiv aviYv Kitz cwi th, Duj`wZ wi`v ev U`v` xPvj`K nqtZv tKvb gZj`te Gtm`Q, ev fvel`tZ Pni Wvkwzi gZj`te ewo`vbtZ Gtm`Q| cðZw`tbi AwfÁZvq G aittYi gb-Mov aviYvi gva`tg Avgiv eU` wvš`-MhY Kiti`_wK, hv mæúY`vte fj wfvÉi Dci`%Zwi nq| weÁvbmæšZ AbymÜvb G aittYi gbMov Zt`i tKvb mthvM tbB| KviY, th tKvb wclq mæútk`Dcmsnvi Uvbi cte` MtelK GKwU cðg`vjvi gva`tg DEi`vZvtK cðk`wRÁvmv Kiti Z` AvniY Kiti b| cðB Zt`i wfvÉtZ Abj`i MVb Kiti b Ges Zv cix`fivi gva`tg Dcmsnvi Uvttb|

AtbK mgq, Avgiv wbtRi aviYvgZ evbtbv Z` t`tk Dcmsnvi tUtb`_wK|

Athšw`K hys`web`vm (Illogical Reasoning): AtbK mgq, Avgiv Ggb wKQy fvel`ðvYx Kwi, hv tKvbvteB thšw`K nq bv| wKš`Zey Avgiv Avgvt`i cðZ`wnK Rxe`b Zv Kiti`_wK| thgb, mvBwnK QwU w`tb tKv`vl teovtZ hvevi AvtqvRb Kivi ci hw` t`Lv hvq th, mBvtni cwp`w`b ewo`nq vb, ZLb Avgiv fvetZ`i`i` Kwi th, QwU w`tb ewo`ntZ cvti | tKvb wclq AKZKvh`nevi ci Avgiv GB wekym wbtq Zvi cpive`É Kitz`_wK th, GKw`b KZKvh` ntevB| mvaviYzt, evRx aivi t`tt`f G aittYi Athšw`K hys`i AeZviYv NtU| cwimsL`vbw`MY G aittYi Athšw`K hys`web`vm`K`ORqvwt`i` avšhys`O (Gambler's fallacy) etj AwfwnZ Kiti`Qb| mtPZb Ges m`j`úo hys`i` cð`vq Abymi`tYi gva`tg weÁvbxiv G aittYi avš`š`K Gwotq Pjtj b|

Ansme`^ Dcj äx (Egocentric Understanding): mvaviY if`ci AbymÜvb Ges Gi Dcj`wä Lp mnR ep`xew`EK PPI`bq| GB PPI` Abj`xjb Avgvt`i e`w`MZ Rxe`tk gvi`vZKfite`c`fweZ Kiti | wefbæNUbv Ges cwi`w`Z Avgvt`i Rb` cðqB wetkl gvbwmK Zvrch`enb Kiti | tKD hw` PvKi`xPiz nb ev c`vbwZ tctZ e`_`nb, ZLb tmB e`w` fvetZ

*tKvb Nubv ev wel qtk tevsv
I eVLvi tqtat, eW3MZ
Anstevatk Rwoz Kijtj
mWVK Ges e`wbo eVLvi
cvl qv mae bqj*

i'i" Ktib th, Zvi D×Zb KgKZPwbtrI cQt`i eW3tK ct`vbwZ t`evi Rb`B wZwb ev` cto:Qb| wKs' H eW3 GKeviI Zvi wbtRi thvM'Zv, `tqv ev mxgve×Zvi K_ v wefePbv Ktib wbl tKvb Nubv ev wel qtk tevsv I eVLvi tqtat, eW3MZ Anstevatk Rwoz Kijtj mWVK Ges e`wbo eVLvi cvl qv mae bqj | wKs' Avgiv cWZwbqz G aiYi eL'v w`tq _mK Ges wbtRi I Atb'i RxebtK cfwEz Kitz tPov Kwi | GKRb weAvbx thLvtb wbtRi GKRb gvbl, ZviI G aiYi avS-Dcmsrvti tcdOvi SmK t`tK hvq| thgb, wKQz wetkl Abgvtbi wfvEtZ GKRb weAvbx GKwU Awewi Kijtj b, wKs' wKQz b ci AvtkRb weAvbx cWY Kitz mTg ntjb th, ceEzX weAvbx Awewitii Abgvb, tjv fj wQj Ges dj`tfc, Zvi Awewitii djvdj I fj ntqtQ| G tqtat, weAvbx hW welquUtK eW3MZfite tbb, Zte wZwb mZ'tK` wKvi Kiteb bv Ges Zvi AbmUvb nte T`wUcYf A_w, weAvbmaz AbmUvtbi tqtat, Dcj wai gta` wbr`g`g`teva Avtvtci cEYvtK Z`m Kitz nte|

*AwZmavi YxkiY, ubeWpz
chfeTY, gbMow Z` Ges
Athsr3K hy3webvvtmi
AvZfi qvgjK e`envi GKwU
AbmUvb Krtph AKvj
cwi mgwB NUtZ cfti*

AbmUvtbi AKvj mgwB (Premature Closure of Inquiry): AwZmavi YxkiY, ubeWpz chfeTY, gbMow Z` Ges Athsr3K hy3webvvtmi AvZfi qvgjK e`envi GKwU AbmUvb Krtph AKvj cwi mgwB NUtZ cfti | aiv hvK, tKD hW GiKg e3e` ivtLb th, uAvwg evsv vt`tki gvbl ; GB mgvR mautK@Avgvi me Rvbw AvtQ; bZb Z` w`tq AvgvtK weavS-Kiv hvte bv; Zte tmB eW3 tmLvtbB Zvi Rvbi c`tK eU Kti w`tj b| AbmUvb Krtph AKvj mgwB eW3 chfeqi Zj bvq mvgmRK chfeq tekx ntq hvtk| thgb, mi Kvi x cWZwb ev`vZv cWZwb hW tKvb welq MtelYvi Rb` Avi Uvkv w`tZ bv Pvb, ZLb Zvi v G aiYi hy3 w`tq`vtKb th, welquU mautK@ht_o Z` itqtQ bZb Kti MtelYvi Avi cWqRb tbB| MtelYvi AKvj mgwB dtj wec`wU ntjv th, tKvb welq mautK@mawY@Avb ARfbi cteB Avb ARfbi cwquwU ifx ntq hvq|

*weAvbmaz AbmUvtbi
tqtat KLtbvB AbmUvtbi
cwi mgwB NtU bv, Aweivg
AbmUvb ntjv weAvtbi
GkUW mjbr` e agf*

cKZctq, tKvb AvbB mawY@bq| gvbe Avtbi BwZnvm chfej vPbv Kijtj t`Lv hvq th, cWZwbqzB cftvbtv AvtK cwieZB Kti bZb Avtbi DtbW NUtQ| AZGe, th tKvb AbmUvtbi mgwB ntjv AKvj mgwB| weAvbmaz AbmUvtbi tqtat KLtbvB AbmUvtbi cwi mgwB NtU bv, Aweivg AbmUvb ntjv weAvtbi GKwU mjbr` e agf hW GKRb weAvbx Zvi AbmUvb eU Ktib, Zte Ab` weAvbx v Zv Pwvj tq hvb|

inm'gqZv (Mystification): Avgiv KLtbvB cL'vkv Kwi bv th, Avgiv mewKQy mautK@ Rwb| GKRb gvbl hZ epxgvb, ev hZ cwi ktv, ev hZ tPovB Ki`K bv tKb, t`Lv hvte th, AtbK welq Ges cwi w`wZ itqtQ hv wZwb tevSb bv| thgb, hZ eVL'v t`qvi tPovB Kwi bv tKb, Avgiv tKvbw b wek! efvU mautK@mawY@Avb ARB Kitz cvi tev bv| GB mawY@Avb ARB Kitz bv cvivi mgm'wUtK AtbK Lp mntR AwZcWz ev inm'gq tKvb KviY w`tq eVL'v Kivi tPov Ktib| tm tqtat atib tbqv nq th, Ggb wKQy welq itqtQ, hv KLtbvB gvbl i Avb Kvvrtgvi gta` Avbv mae bq| nqtZv AtbK Nubv ev cwi w`wZ itqtQ, hv mautK@ Rvbw maw'B KwVb| wKs' hW atib tbqv nq th, wKQy welq mautK@Rvbw tKvb mtgB mae bq, Zte Avb ARfbi j tqtat AbmUvb cwquU t`tg hvte| weAvb KLbB wekym Kti bv th, tKvb wKQz mautK@Kvb mtgB Rvbw mae bq|

*tKvb mjnsex c×wZ AbmiY
bv Kti AmtpZbfvte
Gtj vtgtjv AbmUvtbi cwpm
memqB avS-avi Yvi Rbft`q|*

gvbl gvIB fj nq (To Err is Human): tKvb mjnsex c×wZ AbmiY bv Kti AmtpZbfvte Gtj vtgtjv AbmUvtbi cwpm memqB avS-avi Yvi Rbft`q| weAvbmaz AbmUvtbi tqtat, Lp mtPZbfvte wetkl welq mautK@wtkl c×wZ AbmiY Kti AbmUvb Kvt`cwi Pvj bv Kiv nq| Avgvt`i cWz' tbi mvaviY chfeTYi Zj bvq`eAvwK chfeTYi memqB avS-Kg nq|

mvisk

Ávbi h_v_Zv wbaŕY Mtel Yvi gj Dššk`| Ávb ARŕbi AvKv•Lv gvbŕli wPivqZ| eZŕvb
cvŕV mgvR Mtel Yvq Ávbi fŕgKv, Ávb ARŕbi Dcivq Ges Ávb ARŕbi wBR`^Dšš`vM t_ŕK
mó m`e` áwšš_tjv Avŕj vPbv Kiv ntqŕQ| weÁvbm`šZ Ávb ARŕbi tŕŕŕ Mtel KŕK G mKj
áwšš cŕYZvŕK cwi nvi KiŕZ nte| GKRB Mtel KŕK tKvb wel q m`úŕK`Dcmsnŕti DcbxZ
nl qvi cŕe; Z_` msMŕni Kŕi cŕB Zŕ`i wŕwEŕZ AbKí cixŕvi Avkŕ wŕZ nq| Mtel KŕK
gŕb ivLŕZ nte th, Z_` msMŕni tŕŕŕ thb Zvi gj`teva tKvbŕŕte Mtel YvŕK cŕwweZ bv
Kŕi |

cvfVvEi gj `vqb

`be⁹³K c⁰ke

m⁰WK DEti i cvfk WJK (√) wPy w`b -

1| cwi msL`vbw` MY Gambler's fallacy ej tZ eyStqtQb:

- K. th⁰sw³K h³i AeZvi Yvfk
- L. Ath⁰sw³K h³i AeZvi Yvfk
- M. h³nxb msL`vi gvbtk
- N. h³h³ msL`vi gvbtk |

2| h³ev`x c⁰wzi gj e³e`w n⁰tv:

- K. b⁰wZMZfvte hv mZ`, Zv th⁰sw³Kfvte Abgvb Kiv
- L. b⁰wZMZfvte hv mZ`, Zv th⁰sw³Kfvte Abgvb bv Kiv
- M. b⁰wZMZfvte hv mZ`, Zv AvteM w`tq eSvfbv
- N. Dc⁰ti i me |

3| Kv⁰h⁰Kvi Y m⁰uK⁰tj v mvavi YZt

- K. wbtm⁰ebvgj K c⁰kwzi n⁰tq `vfk
- L. m⁰ebvgj K c⁰kwzi n⁰tq `vfk
- M. m⁰ebv I wbtm⁰ebvgj K c⁰kwzi n⁰tq `vfk
- N. w`i c⁰kwzi n⁰tq `vfk |

msw⁰fb c⁰ke

1| Avb AR⁰bi Dcvq wK?

2| Ath⁰sw³K h³ web`vm wK?

iPbv⁰gj K c⁰ke

1| mgvR Mtel Yvq Avb AR⁰bi fvgKv D`vni Ymn Avtj vPbv Ki`b |

2| Avtbi msAv wK? `eAvwbK Avtbi `i`Zi Avtj vPbv Ki`b |

cW - 2

Mtel Yv c×wZi thšw³ KZv - 2
Logic of Research Methodology - 2

GB cW tkłl hv Rvbr hvte —

- Mtel Yv wK
- mvari Y Ávb ebyq Mtel Yv
- Mtel Yv c×wZi fvgKv

Mtel Yv wK (What is Research)?

tKvb GKwJ mgm`v m`útk`D™Z wefbaecłk`k` mvgvavb LjR cvevi j`ŋ` GKwJ weiaex AbymÜvb ntjv Mtel Yv| gvbłl i gtb wefbaelq m`útk`Rvbevi tKšZnj t`tk eü Mtel Yvi Rbŋnq| Rxeb I RMr m`útk`mZ` AbymÜvbi gva`tg Mtel Yvj ä Ávb t`tk weÁvbi wefbae kvLv cłvLv weKwKZ nq| cłKwZK I mvgwRK cłt`Ái m`úK`š`j`vtK cixŋlv wbxŋlv Kti t`Lv ntjv Mtel Yvi Ab`Zg KvR| GKgvł mpmsex Mtel Yvi gva`tg wefbaecłt`Ái gta` we`gvb m`úK`š`j`vtK Avtiv Mfxi fvte chfeŋY Kiv Ges tm`tjv t`tk Avtiv bZb tKvb ev`eZvi mŋ Ame`vi Kiv hvq wK bv Zv t`Lv m`e| Mtel Yvi j`ŋ` ntjv, cjevZb Z` t`tk bZb gvłv I mvari YxKiŋYi AbymÜvb Kiv, bZb Zt`i gva`tg cjevZb Dcmsnvi tK Swj tq tboq, bZb avi Yvi Rbŋ t`qv, ev Ávbi Abwe`KZ w` Mšš` DtbŋPb NUvıbv, Ges we`gvb Ávbi gta` ō` mgŋni mvgvavb Kiv| mjbw` ōfvte msÁwqZ Kiti ejv hvq th, Mtel Yv ntjv Rxeb I RMtzi m`úK`š`j`vtK Ame`vi, wełkŋ I ZmEłK KvWtgvı gta` AwZłKiY Kivi GKwJ mpmsex c×wZ|

*Mtel Yv ntjv Rxeb I
RMtzi m`úK`š`j`vtK
Ame`vi, wełkŋ I ZmEłK
KvWtgvı gta` AwZłKiY
Kivi GKwJ mpmsex c×wZ|*

cłketZvjv thtZ cvti th, Mtel Yvi AvmtjB tKvb cłqvRb AvtQ wK? mvari Y ÁvbB wK hť_ó bq? DĚti ejv hvq, mvari Y Ávb hť_ó ntZ cvti ZZŋY chš_ hZŋY bv tmB mvari Y Ávb tK cłk`k` m`š`lvb ntZ nq| hLbB mvari Y Ávbi h_v`Zv wbtq cłketZvjv nq, ZLbB tevSv hvq th, Gi wfwEw `p` ntZ `i` Kiti tQ| mvari Y Ávbi gva`tg AwRZ Ávb Avgv` i KLtbvB wbuŌZ Kti ej tZ cvti bv th, tm`tjv mWwK, bv fj | KviY, AtbK mgq Avgiv fj hŋ`i Dci AwRZ Ávb tK mWwK etj gtb Kiti Z cwi | thgb, `xNŋ b Avgv` i mvari Y Ávb Abhıvq Avgiv RvbZvg th, c_w`excł mgZj | tKb bv, mvari Y tPvłL t`łL tm i KgB gtb nq| wKš` mvari Y tPvłL t`łL tKvb Dcmsnvi Uvbtj Zv Awakvsk tŋt`B fj ntZ cvti | weÁvxi v cieZłZ cŋY Kiti tQb th, AvciZt` wótZ cłxqgvb mgZj c_w`ex gj Zt tMvj vKvi | Avgiv GI RvbZvg th, mh`c_w`exi Pwıw` tK tNvti | wKš` Zvı fj cŋwYZ ntqtQ| GLb Avgiv Rwb th, c_w`ex mŋP Pwıw` tK tNvti | AZGe, GwJ `úófvte tevSv hv`Q th, mvari Y Ávbi gva`tg AwRZ Dcmsnvi h_v`c`bq| G`tjv memgq cŋwZ Z avi Yv I wełtmi Dci wfwE Kti `wbtq `vtK| Zte, mvari Y Ávbi hť_ó DcthwMzv i tqtQ| G`tjv Awakvsk `eÁwB K Mtel Yvi cł_wgK wfwE wnmvte KvR Kti | mvari Y Ávb Ges Mtel Yvi gta` wK cv`R` we`gvb Zv Avtj vPbv Kiv hvK|

mvavi Y Ávb eavg Mtel Yv (Common Sense versus Research)

mvavi Y Ávb ntjv gj`teva Avtiwicz Ávb| Ab`w`tk, MtelYv ntjv gj`teva ewRZ ev`ewfwiEK Ávb, hv hv³ ZtK³ Dci cZwóZ| Mvavi Y Ávb mvavi Y chfe³Yi Dci cZwóZ Ges MtelYv Avgvt` i mvavi Y chfe³Yi AwZwi³ cix³Yv wbiX³Yj ä Ávb| mvavi Y Ávb KLt³bv tKvb avi YvtK cKek³ti bv, wKŠ` MtelYv memgqB cPuj Z Ges cZwóZ avi YvtK cKek³ti _vtK| Avgvt` i cwi cwK³RZvq cZw` b th cwi eZ³ mwaZ nt`Q, tm mKj cwi eZ³ cPuj Z a`vb avi YvtK cKek³tiZ eva` Kti | Avgiv hv wek³Ym Kwí, mvavi Y chfe³Yi memgqB Zv t`L³Z wbt`R Kti | wKŠ` MtelYj ä wbeo chfe³Yi Avgvt` i awi³q t`q th, Avgiv hv Rwb, Zv memgqB Avgiv hv Rwb, fwe ev cZ`vkv Kwí Zvi t`tK wfb³ GB wbeo chfe³Yi Rb` cDqvRb ce`cK³Yi Ges AwfÁZv, hv mvavi Y chfe³Yi t`t³ cDqvRb nq bv|

mvavi Y Ávb ntjv gj`teva Avtiwicz Ávb| Ab`w`tk, MtelYv ntjv gj`teva ewRZ ev`ewfwiEK Ávb, hv hv³ ZtK³ Dci cZwóZ| mvavi Y Ávb mvavi Y chfe³Yi Dci cZwóZ Ges MtelYv Avgvt` i mvavi Y chfe³Yi AwZwi³ cix³Yv wbiX³Yj ä Ávb| mvavi Y Ávb KLt³bv tKvb avi YvtK cKek³ti bv, wKŠ` MtelYv memgqB cPuj Z Ges cZwóZ avi YvtK cKek³ti _vtK| Avgvt` i cwi cwK³RZvq cZw` b th cwi eZ³ mwaZ nt`Q, tm mKj cwi eZ³ cPuj Z a`vb avi YvtK cKek³tiZ eva` Kti | Avgiv hv wek³Ym Kwí, mvavi Y chfe³Yi memgqB Zv t`L³Z wbt`R Kti | wKŠ` MtelYj ä wbeo chfe³Yi Avgvt` i awi³q t`q th, Avgiv hv Rwb, Zv memgqB Avgiv hv Rwb, fwe ev cZ`vkv Kwí Zvi t`tK wfb³ GB wbeo chfe³Yi Rb` cDqvRb ce`cK³Yi Ges AwfÁZv, hv mvavi Y chfe³Yi t`t³ cDqvRb nq bv|

mvavi Y Ávb Ges MtelYv Dfqb Dcj wáMZ avi YvtK wei`xKi³Yi GKwU Dcvq wmvte KvR Kti | wKŠ` MtelYv Ges mvavi Y Ávtbi gta` h³ó cv`R` i tqtQ| tKvb Dcj wáMZ avi YvtK wei`xKi³Yi Rb` MtelYv GKwU m³sex c³wZ Abymi³Yi gva`tg`³ f³rte Zvi wfiE`³ Zwi Kti | cDgZt, cjvZb avi Yv³ t³vtK cix³Yv Kti, Ges wZiqZt, bZb weKí avi Yvi Rb³ t` evi ci tm³ t³vtKl cix³Yv wbiX³Yv Kti | mvavi Y Ávb tKej gv³ cwi wPZ Ges cPuj Z avi Yvi gta`B gvb³ tK m³gve³ i vtL| wKŠ` MtelYv memgq cwi wPZ, cPuj Z Ges c³vtbv wek³Ym I avi YvtK wK, KLb, tKv³vq, tKb Ges tKgb Kti³ GB cK³ej v D³l vctbi gva`tg cix³Yv wbiX³Yv Kti | tm Rb` Mtel Kt` i A³tbK mgq t³ckvMZ m³gm³ v m³oKvi x³ (professional trouble makers) etj Awf³WZ Kiv ntq _vtK|

MtelYv Dcj wáMZ avi YvtK tKej wei`x ev mstkvabB Kti bv, tm³ t³vtK e`vL`vi Kti |

MtelYv Dcj wáMZ avi YvtK tKej wei`x ev mstkvabB Kti bv, tm³ t³vtK e`vL`vi Kti | Ab`w`tk, mvavi Y Ávb tKej gv³ wKueZ³Yj v³ f³Yi w`tk`³ w³bex³ Kti etj bZb cZ`q I e`vL`vtK MhY Kt³Z cvti bv| thgb, ivR³wZK`³ j³ t³v m³šym³tK`³ gb Kt³Z PvBt³l Zv Kt³Z cvti bv| KviY, tbZ³ gtb Ktib th, wbt³Ri`³ t³j i m³šym³t³ i`³ j t`tK weZwóZ Kt³j we³ivax`³ j Gw³tK`³ j³ Zv gtb Kti m³thvM wbt³Z cvti | G ai³Yi mvavi Y Ávb wfiE³ K avi Yvi Kvi³YB Zv Avi m³ae ntq D³iv bv|

mvavi Y Ávb Zv³YvK djvdj I ci`uí we³ivax wek³Ymí m³ve`vtbi mvt`³ m³st³kw³ thgb, ivR³wZw`³ MY hLb mi Kvi MVb Ktib, ZLb Zv`³ i gta` GK`³ j gtb Ktib th, mi Kvi³ e`q ew³ Kt³j wbe³tb tnti hvevi m³gn m³aebv _vtK, Avevi Ab`³ j gtb Ktib th, mi Kvi³ e`q ew³ Kt³j Zv bZb Kg³ms`³vtbi m³thvM NUvte Ges Zvi dtj c³ptube³Yj nevi m³aebv te³to h³te| Mtel Yvq t`Lv tM³Q th,`³ ai³Yi wek³YmB ávš³

mvavi Y Ávtbi Dci wfiE`³ Kti M³ix w³vš-memgqB weáwšKi ntq _vtK| Ab`w`tk, MtelYvi gva`tg AwRZ Ávb GKwU m³ we³tk`³ I YvfiE³ K ev`e eY³ c³vb Kti | mte³wi, th³tnZi GwU avi Yv³ t³vtK c`³ E gtb Kti, tm³tnZi mvavi Y Ávtbi bv itqtQ tKvb ZwE³K KvvtgvMZ wfiE`, bv GwU Abymi³Y Kti tKvb`³ eÁw³bK c³wZ| AZGe, gj³ t`d³wZ, Aciva cE³YZv, ivR³wZK Aw`³ wZk³j Zv, BZ`³ w`³ tKb ew³ cvt`³Q, G mKj c³ok³ Reve mvavi Y Ávb w`³ tZ cvti bv| mvavi Y Ávtbi Avl Zvq G ai³Yi c³ok³ w³cZB nq bv|

mvavi Y Ávtbi Dci wfiE`³ Kti M³ix w³vš-memgqB weáwšKi ntq _vtK| Ab`w`tk, MtelYvi gva`tg AwRZ Ávb GKwU m³ we³tk`³ I YvfiE³ K ev`e eY³ c³vb Kti | mte³wi, th³tnZi GwU avi Yv³ t³vtK c`³ E gtb Kti, tm³tnZi mvavi Y Ávtbi bv itqtQ tKvb ZwE³K KvvtgvMZ wfiE`, bv GwU Abymi³Y Kti tKvb`³ eÁw³bK c³wZ| AZGe, gj³ t`d³wZ, Aciva cE³YZv, ivR³wZK Aw`³ wZk³j Zv, BZ`³ w`³ tKb ew³ cvt`³Q, G mKj c³ok³ Reve mvavi Y Ávb w`³ tZ cvti bv| mvavi Y Ávtbi Avl Zvq G ai³Yi c³ok³ w³cZB nq bv|

Zj bvgj K Avtj vPbvq t`Lv hv³Q th, MtelYv`³ eÁw³bK c³wZ w³f³Y|`³ eÁw³bK c³wZ ev`e Z`³ wbt³q KvR`³ i`³ Kti fwe³ w³Y³Ki³Yi gva`tg ZE³ w³bg³Yi w`³tk Gw³Mtq hvq Ges tmB ZE³ cix³Yv wbiX³Yv Rb` Avevi bZb Z`³ wbt³q KvR`³ i`³ Kti | GB c³u³q³ P³v³Yv³ Pj³ tZ _vtK| GLb c³ok³ t³v th,`³ eÁw³bK Ávb AR³bi Rb` c³wZi f³gKv wK? Avgiv Rwb th, me

iKg gvbe cōZwμqvτK chfēŋY Kiv mæe ntj I mevB me iKg cōZwμqvτK Dcj w× KitZ cvtib bv| hw` Avgiv mvariY Ávtbi Dci wbfŋkxj nB, Zte me aiŋYi cwieZß Avgvτ` i chfēŋY ai v cote bv| hLb GKRB e`w³i Ávtbi Drm nq` i agvī wczv gvZv, eÜŋevÜe, wKŋJK, ag©Ges MYgva`g, ZLb tmB e`w³i aviYv,tjv GKwJ AmŋPZb fiver`tkŋ gta` mrgvex`_vKtZ cvti| KviY, th wekym Ges gtbvfvτK GKRB e`w³ aviY Ktib, tm,tjv Zvi mŋPZbvi evBti Ae`vb Kti Ges cwieZßbi weKí aviYv,tjv Zvi Ávb KwWtgvv Abgvτb _vτK bv|

Mŋel Yv c×wZi fngKv (Role of Research Methodology)

GKwJ weÁvbmæšZ Mŋel Yv cwipj bvi Rb` e`eüZ nwwZqvi, tKšKj Ges `wófwi/zi msugkY ntjv Mŋel Yv c×wZ| Mŋel Yv c×wZ w`i wbdj wKQy bq, GwJ cōZwμqvτK cwieZßkxj Ges weKvkgvb GKwJ cōμqv| weÁvbxiv c×wZi weKvτk`_i`ZcY©fngKv ivτLb| weÁvbmæšZ AbymÜvτb, Mŋel Yv c×wZ wZbwÜ cāvb DŋíK` mvab Kti| cŋgZt, thvMvthvτMi weagjv cōvb Kti; wZxqZt, thšw³K I h_vh_ hŋ³web`vτmi wbgg`_vcb Kti; Ges ZZxqZt, Avše`w³K thvMvthvτMi wbgg bwwZ cōvb Kti| weLq,tjvτK Avŋv wKQlv we`wii Zfvte Avŋv Pbv Kiv hvK|

weÁvbmæšZ AbymÜvτb
Mŋel Yv c×wZ wZbwÜ cāvb
DŋíK` mvab Kti| cŋgZt,
thvMvthvτMi weagjv cōvb
Kti; wZxqZt, thšw³K I
h_vh_ hŋ³web`vτmi wbgg
_vcb Kti; Ges ZZxqZt,
Avše`w³K thvMvthvτMi
wbgg bwwZ cōvb Kti|

thvMvthvτMi weagjv (Rules for Communications): hLb gvbj GKB AwfÁZvi Askx`vi ntZ cvti bv, ZLb gvbtŋi gta` thvMvthvτM`_wczv nq bv| cŋwJ Z GKwJ Mí w`ŋq weLqWτK tevSv hvK| GKRB AÜ e`w³τK GKwJ Mvŋm`_ŋa cvb KitZ w`tj tmB AÜ e`w³wÜ RvbŋZ PvBtj v:

ŌAvgvτK wK tLŋZ t`qv ntqŋQŌ?

DĒti ej v ntj v: Ō`ŋd|

AÜ e`w³wÜ cvēv cŋkæKi tj v: Ō`ŋa tKgbŌ?

DĒti ej v ntj v: Ō`ŋa mv`vŌ|

Avēvτiv cŋkæKi tj v AÜ e`w³wÜ: Ōmv`v tKgbŌ?

DĒti Rvbvτbv ntj v: Ōmv`v eŋKi gZŌ|

Gevŋi AÜ e`w³wÜi cŋkæntj v: ŌeK tKgbŌ?

DĒti ej v ntj v: ŌeK Kvτ`+ gZŌ|

cvēv cŋkæ ŌKvτ`-tKgbŌ?

Gevŋi DĒi cōvbKvix e`w³wÜ Avŋv mnRfvte tevSvτbvi Rb` tKvb evK` e`envi bv Kti wbtŋRi nvZwÜτK Kvτ`+ gZ evKv Kti AÜ e`w³wÜτK`_ük`KiŋZ etj ej tj b: ŌKvτ`-GgbŌ|

AÜ e`w³wÜ DĒi cōvbKvixi nvZwÜ tbto tŋto wbtŋRi nvZwÜτK GKB iKg fwi/2 Kti ej tj v: ŌI , Gevi eŋŋZ tcti wQ, `ŋa GgbŌ|

GB Kví wK Mí wÜ t_τK GwJ`_úo ntqŋQ th, AÜ e`w³wÜ mwZ`Kvi Aŋ_©`ŋa tKgb Zv eŋŋZ cvtiwb Ges DĒi c`vbKvix e`w³wÜI`_ŋa tKgb Zv tevSvτZ mg_©nqwb| Gi KviY ntj v, `wónxb I`_wómæúbe`ŋRb e`w³i AwfÁZvi GKiv Kg bq| `wónxb e`w³ KLŋbv`_ŋa t`τLwb etj tm eŋŋZ cvti bv`_ŋa tKgb| Ab`w`τK, `wómæúbe`w³wÜ`_wónxb nevi AwfÁZv tbB etj

wb̄tRi eȲvq `p̄ tKgb Zv tevSv̄Z cvītQ bv̄ | A_̄f̄, GKB AwfÁZvi Askv̄vi bq etj G t̄f̄t̄i `̄R̄t̄bi ḡtā thvM̄thvM̄U ̄w̄cZ nqub̄ |

M̄tel Yv c̄x̄w̄Zi Ab̄Zg c̄v̄b K̄vR n̄tjv w̄eÁv̄b̄t̄i i ḡtāK̄vi thvM̄thvM̄t̄K mnR̄Zi K̄ti t̄Zv̄jv | Avi Zv Kiv m̄ē nq w̄K̄Oȳw̄ēāēx̄ w̄bqg Ab̄m̄īt̄Yi ḡv̄āt̄g | M̄tel Yv c̄x̄w̄Zw̄eÁv̄b̄ GB w̄ēw̄aḡv̄jv̄, t̄jv̄t̄K mieiv̄n̄ K̄ti | c̄x̄w̄Zw̄eÁv̄t̄bi w̄bqḡ, t̄jv̄t̄K m̄f̄ūó, Db̄ȳp̄ Ges mnR̄j f̄ K̄ivi ḡā w̄t̄q Av̄ḡiv Áv̄t̄bi úēū Ab̄k̄īY Ges M̄Vb̄ḡj̄K mḡv̄t̄jv̄P̄b̄vi GK̄w̄ K̄v̄w̄t̄ḡv̄ c̄f̄Z̄ Kīt̄Z̄ c̄w̄i | Áv̄t̄bi úēū Ab̄k̄īt̄Yi A_̄n̄t̄jv̄, GK̄w̄ M̄tel Yv̄ḡj̄K Ab̄m̄Úv̄b̄t̄K GKB M̄tel K̄ ev̄ Ab̄ t̄K̄v̄b̄ M̄tel̄t̄Kī ð̄v̄iv̄ GKBf̄v̄t̄ē c̄p̄iv̄ēw̄Ē K̄iv | Gi ḡv̄āt̄ḡ Av̄ḡiv th̄ t̄K̄v̄b̄ āīt̄Yi á̄w̄s̄-ev̄ c̄Z̄vīYvi w̄ēīt̄x̄ GK̄w̄ w̄b̄iv̄c̄Ēvḡj̄K ēēv̄ M̄tō Z̄j̄t̄Z̄ c̄w̄i | M̄Vb̄ḡj̄K mḡv̄t̄jv̄P̄b̄vi ḡā w̄t̄q M̄tel Yvi T̄w̄, t̄jv̄t̄K w̄P̄w̄ȳZ̄ K̄iv hv̄q | Ḡw̄ Kīt̄Z̄ w̄M̄t̄q th̄ m̄K̄j̄ c̄k̄ēD̄l̄ v̄cb̄ K̄iv th̄t̄Z̄ c̄v̄tī t̄m̄, t̄jv̄ n̄t̄jv̄: M̄tel Yv̄q th̄ D̄c̄m̄s̄n̄vī, t̄jv̄ Uv̄bv̄ n̄t̄q̄t̄Q̄ ev̄ ēv̄L̄v̄ c̄f̄v̄b̄ K̄iv n̄t̄q̄t̄Q̄, t̄m̄, t̄jv̄ M̄tel Yv̄q M̄p̄x̄Z̄ cēv̄īYv̄, t̄jv̄ t̄t̄K̄ th̄S̄w̄³K̄f̄v̄t̄ē Ab̄m̄Z̄ n̄t̄q̄t̄Q̄ w̄K̄? ch̄f̄ēf̄l̄Ȳ, t̄jv̄ m̄w̄K̄ n̄t̄q̄t̄Q̄ w̄K̄? ch̄f̄ēf̄l̄Ȳi c̄x̄w̄Z̄, t̄jv̄ w̄K̄ w̄q̄j̄? Ab̄k̄ī c̄ix̄f̄l̄vī c̄x̄w̄Z̄, t̄jv̄ h̄_vh̄_ w̄q̄j̄ w̄K̄? D̄c̄m̄s̄n̄vī Uv̄b̄vī mḡq̄ Ab̄ t̄K̄v̄b̄ D̄c̄v̄v̄b̄ c̄f̄v̄ē t̄d̄t̄j̄t̄Q̄j̄ w̄K̄? ēv̄L̄v̄ī m̄w̄K̄Z̄vī R̄b̄ d̄j̄v̄d̄j̄t̄K̄ c̄ḡv̄Ȳ w̄m̄v̄t̄ē M̄h̄Ȳ K̄iv hv̄q̄ w̄K̄? BZ̄w̄ | M̄tel Yv̄ c̄x̄w̄Zī ḡv̄āt̄ḡ thvM̄thvM̄ ̄v̄c̄t̄bī R̄b̄ GB c̄k̄ē, t̄jv̄ ev̄ī ev̄ī D̄l̄ w̄cZ̄ n̄t̄q̄_ v̄t̄K̄ |

̄eÁv̄b̄m̄s̄Z̄ M̄tel Yvī m̄t̄P̄t̄q̄ c̄f̄q̄v̄R̄b̄x̄q̄ Ges̄, ī Z̄c̄Ȳ³ n̄w̄Z̄q̄vīw̄ n̄t̄jv̄ h̄ȳ³, h̄v̄ ev̄ ēm̄s̄Z̄ ch̄f̄ēf̄l̄Ȳ t̄t̄K̄ w̄m̄x̄v̄s̄ḡj̄K D̄c̄m̄s̄n̄vī Uv̄b̄vī h̄_vh̄_ h̄ȳ³ w̄eb̄v̄t̄m̄ī c̄f̄q̄v̄t̄K̄ w̄b̄t̄ R̄ K̄tī |

h̄ȳ³ w̄eb̄v̄t̄m̄ī b̄w̄Z̄ḡv̄j̄v̄ (Rules for Reasoning): w̄eÁv̄b̄m̄s̄Z̄ c̄x̄w̄Zī t̄ḡš̄j̄ K̄ w̄f̄w̄Ēw̄ n̄t̄jv̄ AwfÁZ̄v̄j̄ ä ch̄f̄ēf̄l̄Ȳ | w̄K̄š̄ w̄eÁv̄b̄m̄s̄Z̄ c̄x̄w̄Z̄, t̄jv̄t̄K̄ Aek̄B̄ m̄k̄;L̄j̄ n̄t̄Z̄ n̄t̄ē I c̄f̄v̄j̄ x̄ēx̄ th̄S̄w̄³K̄ K̄v̄w̄t̄ḡvī m̄v̄t̄_ m̄āú̄m̄K̄Z̄ n̄t̄Z̄ n̄t̄ē | ̄eÁv̄b̄m̄s̄Z̄ c̄x̄w̄Zī m̄t̄P̄t̄q̄ c̄f̄q̄v̄R̄b̄x̄q̄ Ges̄, ī Z̄c̄Ȳ³ n̄w̄Z̄q̄vīw̄ n̄t̄jv̄ h̄ȳ³, h̄v̄ ev̄ ēm̄s̄Z̄ ch̄f̄ēf̄l̄Ȳ t̄t̄K̄ w̄m̄x̄v̄s̄ḡj̄K D̄c̄m̄s̄n̄vī Uv̄b̄vī h̄_vh̄_ h̄ȳ³ w̄eb̄v̄t̄m̄ī c̄f̄q̄v̄t̄K̄ w̄b̄t̄ R̄ K̄tī | ̄eÁv̄b̄m̄s̄Z̄ M̄tel Yv̄ c̄x̄w̄Z̄ c̄w̄i P̄v̄j̄ b̄vī cē³K̄Z̄³ w̄m̄v̄t̄ē th̄S̄w̄³K̄ h̄ȳ³ w̄eb̄v̄m̄ I w̄ēt̄k̄īt̄Yī t̄f̄t̄ī `̄f̄l̄Z̄v̄ GK̄w̄ c̄f̄q̄v̄R̄b̄x̄q̄ D̄c̄v̄v̄b̄ | `̄f̄l̄Z̄v̄ AR̄f̄bī R̄b̄ m̄s̄Áv̄, t̄K̄Ȳw̄eb̄³K̄īȲ, Ges Av̄t̄iv̄n̄x̄ I Aet̄iv̄n̄x̄ w̄m̄x̄v̄t̄s̄t̄ c̄k̄īt̄Yī w̄bqḡ; m̄āv̄eb̄vī Z̄Ē; b̄ḡb̄v̄q̄b̄ c̄x̄w̄Z̄; M̄w̄Ȳw̄Z̄K̄ I ex̄R̄M̄w̄Ȳw̄Z̄K̄ c̄x̄w̄Z̄; Ges c̄w̄i ḡv̄c̄ c̄f̄q̄v̄ī w̄bqḡv̄ēj̄x̄, t̄jv̄ m̄v̄ḡw̄R̄K̄ w̄eÁv̄b̄t̄ī t̄K̄š̄k̄j̄ f̄v̄Ůvī w̄m̄v̄t̄ē K̄v̄R̄ K̄tī | GB c̄x̄w̄Z̄, t̄jv̄ Áv̄b̄ K̄v̄w̄t̄ḡvī Āš̄w̄b̄n̄Z̄ m̄z̄w̄Z̄t̄K̄ k̄w̄³k̄v̄j̄x̄ K̄tī t̄Z̄v̄t̄j̄ |

w̄eÁv̄b̄m̄s̄Z̄ M̄tel Yvī ḡj̄ j̄ f̄l̄w̄B̄ n̄t̄jv̄ Av̄š̄ē³K̄ thvM̄thvM̄ c̄f̄Z̄v̄ K̄iv | c̄x̄w̄Zw̄eÁv̄ GB c̄f̄q̄v̄m̄t̄K̄ w̄b̄v̄ŮZ̄ K̄tī |

Av̄š̄ē³K̄ thvM̄thv̄t̄Mī b̄w̄Z̄ḡv̄j̄v̄ (Rules for Intersubjectivity): h̄L̄b̄ w̄f̄b̄ēc̄Ūf̄v̄ḡ_ v̄K̄v̄ m̄t̄Ēj̄l̄ t̄K̄v̄b̄ c̄Z̄³q̄ ev̄ Z̄Ē; m̄āú̄t̄K̄ w̄ēw̄f̄b̄ēÁv̄b̄x̄ ev̄ M̄tel K̄ GKB D̄c̄j̄ w̄āM̄Z̄ D̄c̄m̄s̄n̄vī t̄c̄f̄Ův̄b̄ Z̄L̄b̄ tev̄S̄v̄ hv̄q̄ th̄, Av̄š̄ē³K̄ thvM̄thv̄M̄ c̄f̄Z̄w̄ŮZ̄ n̄t̄q̄t̄Q̄ | w̄eÁv̄b̄m̄s̄Z̄ M̄tel Yvī ḡj̄ j̄ f̄l̄w̄B̄ n̄t̄jv̄ Av̄š̄ē³K̄ thvM̄thv̄M̄ c̄f̄Z̄Ův̄ K̄iv | c̄x̄w̄Zw̄eÁv̄ GB c̄f̄q̄v̄m̄t̄K̄ w̄b̄v̄ŮZ̄ K̄tī | h̄ȳ³ ī w̄el̄q̄w̄ h̄ȳ³ w̄eb̄v̄t̄m̄ī m̄v̄t̄_ m̄āú̄m̄K̄Z̄, ch̄f̄ēf̄l̄Ȳj̄ ä m̄Z̄³ ev̄ c̄ix̄f̄l̄v̄ w̄b̄ix̄f̄l̄j̄ ä ev̄ ē Z̄t̄³ ī m̄v̄t̄_ b̄q̄ | GK̄w̄ N̄Uv̄ Av̄s̄w̄k̄K̄f̄v̄t̄ē ev̄ m̄āv̄ē³f̄v̄t̄ē m̄Z̄³ n̄t̄Z̄ c̄v̄tī Z̄L̄b̄B̄, h̄L̄b̄ Z̄v̄ ē³w̄b̄Ů c̄ḡv̄t̄Yī D̄cī c̄f̄Z̄w̄ŮZ̄ n̄q̄ | w̄ec̄ix̄Z̄f̄v̄t̄ē, GK̄w̄ w̄el̄q̄ m̄āú̄t̄K̄Áv̄t̄bī `̄v̄ēx̄ Z̄L̄b̄B̄ h̄_v_ n̄t̄ē, h̄L̄b̄ t̄m̄B̄ Áv̄b̄ cē³av̄īYv̄ t̄t̄K̄ th̄S̄w̄³K̄f̄v̄t̄ē Av̄n̄ī Z̄ n̄q̄ | AZ̄Ge, ḠK̄R̄b̄ w̄eÁv̄b̄x̄ c̄ix̄f̄l̄v̄ w̄b̄ix̄f̄l̄j̄ ä ev̄ ē Z̄³ t̄t̄K̄l̄ T̄w̄Ūc̄Ȳ³D̄c̄m̄s̄n̄vī Uv̄b̄t̄Z̄ c̄v̄t̄ib̄, h̄w̄ t̄m̄B̄ cē³av̄īYv̄, t̄jv̄ f̄j̄ h̄ȳ³ ī D̄cī c̄f̄Z̄w̄ŮZ̄ n̄q̄ | Avēvī c̄ix̄f̄l̄v̄ w̄b̄ix̄f̄l̄j̄ ä ev̄ ēw̄f̄w̄ĒK̄ Z̄³ ē³en̄vī b̄v̄ K̄īt̄j̄ īx̄ h̄ȳ³ ī ḡv̄āt̄ḡl̄ T̄w̄Ūc̄Ȳ³w̄m̄x̄v̄s̄-M̄p̄x̄Z̄ n̄t̄Z̄ c̄v̄tī | K̄vīȲ, t̄K̄v̄b̄ ē³t̄ēī m̄Z̄³Z̄v̄ AwfÁZ̄vī m̄v̄t̄_ m̄āú̄m̄K̄Z̄ n̄t̄j̄ I ē³t̄ēī h̄_v_ Z̄w̄Ū ē³t̄ēī Āš̄w̄b̄n̄Z̄ m̄z̄w̄Z̄ ev̄ Gī m̄v̄t̄_ Ab̄³ ē³t̄ēī m̄z̄w̄Zī m̄v̄t̄_ m̄āú̄m̄K̄Z̄ | A_̄f̄, t̄K̄ēj̄ḡv̄l̄ th̄S̄w̄³K̄Z̄vī w̄f̄w̄Ēt̄Z̄ m̄Z̄³ c̄f̄Z̄w̄ŮZ̄ n̄t̄Z̄ c̄v̄tī b̄v̄ | m̄Z̄³t̄K̄ AwfÁZ̄v̄j̄ ä ch̄f̄ēf̄l̄Ȳī ḡv̄āt̄ḡ c̄ḡv̄m̄ȲZ̄ n̄t̄Z̄ n̄t̄ē |

̄eÁv̄b̄m̄s̄Z̄ c̄x̄w̄Zw̄eÁv̄b̄ m̄t̄Z̄³ ī h̄_v_ Z̄v̄ h̄v̄P̄v̄B̄-Gī j̄ t̄f̄l̄ c̄x̄w̄Z̄ I t̄K̄š̄k̄j̄ Ges AwfÁZ̄v̄j̄ ä ē³w̄b̄ŮZ̄vī R̄b̄³ c̄f̄q̄v̄R̄b̄x̄q̄ I M̄h̄Ȳt̄h̄v̄M̄³ ḡv̄b̄`Ů_ t̄jv̄t̄K̄ mieiv̄n̄ K̄tī |

̄eÁv̄b̄m̄s̄Z̄ c̄x̄w̄Zw̄eÁv̄b̄ m̄t̄Z̄³ ī h̄_v_ Z̄v̄ h̄v̄P̄v̄B̄-Gī j̄ t̄f̄l̄ c̄x̄w̄Z̄ I t̄K̄š̄k̄j̄ Ges AwfÁZ̄v̄j̄ ä ē³w̄b̄ŮZ̄vī R̄b̄³ c̄f̄q̄v̄R̄b̄x̄q̄ I M̄h̄Ȳt̄h̄v̄M̄³ ḡv̄b̄`Ů_ t̄jv̄t̄K̄ mieiv̄n̄ K̄tī | GB ḡv̄b̄`Ů_ t̄jv̄

cvi`úwi Kfvte wbfPkj | AwfÁZvj ä e`wbôZv h_v_Źv hvPvB-Gi Dci GZUvB wbfPkj
 th, hZŹY bv h_v_Źv hvPvB Kiv ntqtQ, ZZŹY e`wbôZv`vncZ ntqtQ etj`vex Kiv hvq
 bv| OmZ` wbi¼kfvte cŰĚŰ, Ggb aviYvi wecixZ hw` gtb Kiv nq th, AwfÁZvj ä
 e`wbôZvi gvb`Ű Ges h_vh_Źv hvPvB-Gi c×wZ gvbŹli hy³ev`x gb t_ŹK D™Ź, Zte
 ŀe`wbôZvŰ-Gi (objectivity) cwieŹZ©ŰAvšeŹ³K thvMvthvMŰ (intersubjectivity) cŰZŰv
 AŹbK tekx h_vh_| AvšeŹ³K thvMvthvM cŰZŰv KiŹZ ntj mvariYfvte ÁvŹbK, Ges
 weŹklfvte c×wZŹK, GK gb t_ŹK Ab` gtb tcŰYthvM` ev mÁviYthvM` ntZ nte| A_Ź,
 GKRB MŹelK hw` GKw AbmŰvb cwipvj bv KŹib, Zte Ab` MŹelKl tmB MŹelYvi
 cpiveŹ KiŹZ cviŹeb Ges`wŰ MŹelYvq cŰB Z_ŹK Zj bv KiŹZ cviŹeb| hw` cŰg
 MŹelYvq mwK c×wZ AbmiY Kiv nq, Zte Avgiv Avkv Kitev th,`wŰ MŹelYvq cŰB
 djvdj GKB iKg nte| wKš` ev`Źe f`Lv hvq th, cwiv`wzi cwieZŰ NŹU Ges bZb
 cwiv`wzi RbŹnq| G cwiv`wziŹZ, AvšeŹ³K thvMvthvMŹi ZvrchŰ ntjv th, GKRB MŹelK
 Ab` MŹelŹki e`eüz c×wZŹK eŹŹZ l gj`vqb KiŹZ cvŹib Ges GKB c×wZ e`envi KŹi
 MŹelYv cwipvj bvi gva`tg cŰB djvdŹi h_v_Źv hvPvB KiŹZ cvŹib|

mvivsk

GB cvŹV Avgiv mvgwRK MŹelYvi msÁv, mvariY Ávb Ges MŹelYvq cŰB Ávb-Gi cv_Ź,
 MŹelYvi fwgKv, BZ`w` wbtq AvŹj vPbv KŹiuQ| AvŹj vPbvq Avgiv f`ŹLwQ th, cŹKwZK Ges
 mvgwRK cŰŹÁi mæúKŹŹjvŹK cixŹv wixŹv KŹi f`LvB mvgwRK MŹelYvi Ab`Zg
 DŹŹk`| mvariY Ávb Ges MŹelYvq cŰB ÁvŹbi gŹa` cv_Ź` AvŹj vPbv KiŹZ wŹq Avgiv
 f`ŹLwQ th, mvgwRK MŹelYvq cŰB ÁvŹbi`i`Zi KZUKŹ| cwŹŹkŹl, GUKz ejv hvq th,
 MŹelYvq cŰB Ávb ARŹbi cŹeMŹelYvi mvŹ_ mæúwKŹ tek wKQwŹelq mæúŹKŹAvgvŹ`i`Ź
 aviYv_vKŹZ nte| thgb, gvbŹli gŹa` thvMvthvM`vctbi weŹagvj v, hy³web`vtmi bwwZgvj v,
 mwK chŹeŹY, BZ`w`| GKRB MŹelKŹK DchŹ wŹlq,Źjv weŹePbvq tiŹL MŹelYvi mvŹ_
 hy³ nŹlqv DwPr|

cvfVvEi gj`vqb

`be⁹³K c0ke

mWVK DEti i cvfk WJK (v) wPy w`b -

- 1| MtelYvi Ab`Zg KvR nt`0:
 - K. mgvR m`u`K⁹Pbv tj Lv
 - L. mgvR m`u`K⁹³Zv t`qv
 - M. mvgwRK c0tAi m`u`K⁹tj vfk cixv wbxv Kiv
 - N. mvgwRK c0A`K wPyZ Kiv|

- 2| weAvbm`SZ AbjnUvfb Mtel Yv c`wZ _____ c0vb Dt`i k` mvab Kti |
 - K. GKwU
 - L. `0wU
 - M. wZbwU
 - N. PviwU|

- 3| weAvbm`SZ c`wZi tgSwj K wfvEwU ntj v:
 - K. tgSwj K DcvE msM0h Kiv
 - L. AwfAZij ä chfeY
 - M. DcvE`K chfeY Kiv
 - N. DcvE`K mviwex Kiv|

mswvB c0ke

- 1| Mtel Yv wK?
- 2| mvavi Y Avb I MtelYvi gta` cv`R` wK?

iPbvGj K c0ke

- 1| mvgwRK Mtel Yv wK GKwU weAvb? D`vni Ymn Avtj vPbv Ki`b|
- 2| mvavi Y Avb I MtelYvq c0B Avtbi Zj bvgj K Avtj vPbv Ki`b|

weÁvbi PPF
Practice of Science

GB cvW tkłl hv Rvbn hvte —

- weÁvb wK
- weÁvbi mbvZbx Dc`vcb
- weÁvb m=útk©AmbvZbx avi Yv
- weÁvbi AvaybK PPF

weÁvb wK (What is Science)?

c0KwZK c0Ámgñi (natural phenomena) wbgge× I MwywZK chfeñtYi gva'tg Rieb I RMr m=útk©c0ß ev`e Z`cYweei Ytk mvari Yfvte weÁvb etj | GB mvari Y msÁvU t`tk gtb ntZ cvti th, weÁvb teva nq `i agvı c0KwZK weÁvbi Avl Zvfyß welaq,tjv wbtqB Avtj vPbv Kti | 0c0KwZK c0Á0 ej tZ hw` c0KwZK I mvgwRK Dfq c0Kvi c0ÁtkB tevSvq, Zte GB msÁvi mxgve×Zv wKQyv `i ntj I AtbK c0mıZK c0kie mgvarb cvl qv hvq bv | thgb, AvZc0KZ c0Ámgñi Avtj vPbv wK weÁvbm=SZfvte Kiv hvq? Ávbi th kvLv AvZc0KZ welaq wbtq Avtj vPbv Kti, tm mKj kvLvK wK weÁvb ejv hvq? weÁvb wK tKejgvı wKQy msL`K D`P c0kñYc0ß wetklÁt`i GLwZqvi fyß PPF ev Abkxjb? MwywZKfvte m`ex Kiv hvq bv Ggb welaq,tjv wK weÁvbi Avl Zvfyß bq? G me c0kie Reve LRtZ tMtj t`Lv hvq th, weÁvbi msÁv t`qv Lp mnR bq |

c0KwZK c0Ámgñi
wbgge× I MwywZK
chfeñtYi gva'tg Rieb I
RMr m=útk©c0ß ev`e
Z`cYweei Ytk
mvari Yfvte weÁvb etj |

weÁvb káwU c0Zw`tbi Kt`vcK`tbi gta` ctqkt e`eüZ GKwU ká | c0Z`tkB káwU GK mgq bv GK mgq e`envi Kti tQb, A_P weÁvbi c0Z`OweU GtKK Rtbi gtb GtKKfvte c0ZwevZ ntqtQ | Kvıv KvıQ GwU MwyZkv`j gtZv, Kvıv KvıQ GwU mv`v tKvU Ges Mtel YvMtıi gZ, tKD tKD GwUtk Kr`KStkj i mvt` wj tq tdtj b, Avevi Atb`iv GwUtk`j Ktj tR covtbn weÁvb welaq mvt` mgv`R Kti `vtKb | mvari Y gvıj, bwiZ wbañK, cıUJ Ges weÁvbx etj cwi wPZ e`w³eM`c0Z`tkB weÁvb káwUtk wfbfvte I wfbretc0ñvcıU msÁwqZ Kti tQb | thgb, Kvıv KvıQ gtb ntZ cvti th, weÁvb ntjv GKwU m`wZRıvZ ghP vKi KgRvU, tKD gtb Kti b th, GwU c`v`e`v ev MwyZkv`j gZ Ávbi GKwU kvLv, Avevi Abt`i KvıQ gtb ntZ cvti th, weÁvb AwfÁZvj ä c0Ámgñi GKwU e`wb0 AbynÜvb | weÁvb GKKfvte Gi tKvıÜB bq | weÁvb wK Zv mwZ`Kvi fvte mybw`0 Kiv Kwıb |

weÁvb KvhZt, Avgv`i Pricvıki cıw`extK tevSvi Rb` weıfbaKgrıU | GB KgRvıUı wZbıU c0vıv Dcv`vb itqtQ: eYñv, mvari Y wbtqgi Awe`vi Ges ZtEjı MVb | cıw`Zt, cıw`extZ th mKj e` Ges NUbv `k`gvb GKRB weÁvbx tm,tjvtK chfeñY Kti b Ges eYñv Kti b | wZıqZt, weÁvbx G mKj `k`gvb e` I Nubıi gta` mvari Y wbgg Awe`vıi Dı`vM MñY Kti b | thgb, tKvb wetkl e` A`ev Zvi `eıko`mgñi gta` tKvb m=útkP Aw`Zı itqtQ wK bv Zv chfeñY Kti b | ZZıqZt, AwfÁZvj ä chfeñtYi gva'tg wZıv th mKj mvari Y wbgg Awe`vi Kti b, tm,tjvtK mvari YıKııYi gva'tg GKwU ZtEjı ifc t`qvi tPov Kti b, hv ntjv c0KZctñ weıfbaNubv Ges `eıktó`i gta` m=úKmgñi mvari Y Ges thŠıK eYñv Ges e`vL`v |

weÁvb KvhZP Avgv`i
Pricvıki cıw`extK tevSvi
Rb` weıfbaKgrıU | GB
KgRvıUı wZbıU c0vıv
Dcv`vb itqtQ: eYñv,
mvari Y wbtqgi Awe`vi Ges
ZtEjı MVb |

GmJ gtb ivLv c0qRb th, weAvbx bq Ggb e'w3I weAvtbi GB wZbuJ j q'itK AbyniY Kti
 _vtKb| Avgiv c0Z'itKB Avgvt` i Pvi cvtk hv NUtQ tm,tj vtK chfeqY Kwi Ges eY0v Kwi |
 Avgiv mvariY wbgg LpRtZ tP0v Kwi Ges tm mKj mvariY wbggtgi mfi ati c0Z'wNK RxeTB
 GKwJ w`K wbt`k0vgj K ZEj c0Z0vi tP0v Kwi | GKRB AwfA weAvbxi AbmUvb c0pvcq
 A%eAvbK ntZ cvti Ges GKRB mvariY gvbti i AbmUvb mterP gvtb weAvbm=sZ ntZ
 cvti | c0kentjv, Avgiv Zv wKfvte eStZ m1g ntev? GmJ eStZ ntj Avgvt` i tmB mKj
 `ewkt0i c0Z `w0 c0vb Kiv DwPr, hv GKwJ wetkl KgRvUitK KgteKx weAvbm=sZ Kti
 tZvtj | A_0, Avgvt` i weAvtbi Av`k0ewk0`_tjv wPuyZ Kivi tP0v KitZ nte, hvi gva'tg
 Avgiv eStZ cvitev th, tKvb KgRvUwJ weAvbm=sZ Ges tKvbwJ bq| Zte, weAvb wK Zv
 eStZ ntj weAvtbi `ewk0`_tjvtK AvtjvPbvi cte0wZbuJ `i`Zcy0wel'tqi AvtjvPbv
 c0qRb| tm,tjv ntjv: c0gZt, cwiwPwZgj K weAvb tKvm0tjvtZ mbvZbxfvte weAvbtk
 thfvte QvI-QvI'it`i Kv0Q Dc`vcb Kiv nt`Q tm welqwu0tK; w0ZiqZt, weAvb m=utK0
 AmbvZbx avi YvtK; Ges ZZiqZt, weAvtbi AvajbK Pp0 c0kuztK|

weAvtbi mbvZbx Dc`vcb (Traditional Presentation of Science)

weAvtbi wefba:cwiwPwZgj K tKvm0tjv weAvbtk thfvte Dc`vcb Kti, Zv GmJtK mnR-
 mij, m2 Ges GgbwK w0Z`%0vgwEK GKwJ welq wnmvte c0Zdwj Z Kti | Avgvt` i ejv nq
 th, Rxeb I RMtZi th tKvb welq m=utK0AvM0h I Drmyn w0tq weAvbxiv Zvt` i AbmUvb
 Kvh0ri` Ktib| Zvt` i AvM0h ntZ cvti DwM`ti c0tYi Aw`Zj w0tq, K'vYvti KviY w0Y0
 w0tq, Ab`vb` M0n c0Yxi Aw`Zj w0tq, ev Avt0j tKb MvQ t`_tK cto, Zv w0tq| G mKj
 welqev` w0tq weAvbxiv GKwb0fvte cixqYv w0ixqYv Ktib, djvdj _tjvtK wKQyD`PZI wegZ0
 ct`i (terms) gta` msMwZ Ktib Ges tmB wegZ0c`_tjvtK GKwJ Kvh0KviY m=utK0P
 Kvw0tgi gta` m0ex Ktib| Gfvte weAvbxiv GKwJ ZtEji Rb0t`b, hv M0elYvq ASf0P
 c0Amgt0ni c0kuztK e`vL`vi Rb` KZ _tjv cvi `0wi Kfvte m=umK0Z th0w0K c0vebv wnmvte
 Dc`wcz nq| GB ZvE0K c0vebv _tjvi h_v`Zv cixqYvi Rb` weAvbxiv KZ _tjv AbK0i MvB
 Ktib Ges tm,tjv cixqYvi gva'tg f0el`0vYx KitZ m0P0 nb|

ZEj c0kuzMZFvte wegZ0Ges
 mvariY| AbK0i wKQYv
 m0b0v 0 ntj I mvariYfvte
 Zv wegZ0`_tK hvq|

ZEj c0kuzMZFvte wegZ0Ges mvariY| AbK0i wKQYv m0b0v 0 ntj I mvariYfvte Zv wegZ0
 t`_tK hvq| G _tjvtK chfeqYthvM` Kti Zj'tZ ntj wegZ0c`_tjvtK Kvh0i ct`
 (operational terms) ifc0st`i KitZ nq| weAvbxiv KZ _tjv chfeqYthvM` mPK
 (observable indicators) w0Y0qi gva'tg Zv Kti _vtKb| thgb, hw` GKRB weAvbx tKvb
 wetkl aitYi DwM`ti c00x I weKv0ki Dci Zvcg0v0i c0ve cixqYv KitZ Pvb, Zte ZvtK
 Zvcg0v Ges c00x c0Z`q `0wi cwigvc c0pvcqvtK mP00fvte eY0v KitZ nte| A_0,
 KZ _tjv chfeqYthvM` mP0ki gva'tg wegZ0c`_tjvi Kvh0i msAvqb KitZ nte| Gici,
 wZwb AbK0i cixqYvi Rb` GKwJ Dc0thvMx cixqYti (experiment) eY0v t`teb, cixqY
 cwiPvj bvi Rb` KZUKz mgq jvMte Zv wba0Y Kiteb, Ges cixqYvi djvdj _tjvtK wKfvte
 wj w0ex I wetk0Y Kiv nte Zvi eY0v t`teb|

wba0i Z cwi K0i bv Abjvqx weAvbx Zvi KgRvU`ri` Ktib| DcvE msM0h Kiv nq, DcvE0K
 c0Z Kti Zv wetk0Y Kiv nq Ges cixqYv Kti t`Lv nq th, msMpxZ DcvE ce0wba0i Z
 AbK0i _tjvtK mg_0 Kti0Q wK bv| hw` AbK0i _tjv DcvE 0v0v mgw_0 nq, Zte th ZEj
 t`_tK AbK0i _tjv AvniY Kiv ntq0j tm ZEjUJ mgw_0 nq| hw` AbK0i _tjv w0`v c0wYz
 nq, Zte c0weZ ZtEji h_v`Zv w0tq c0k0D0wcz nq| djvdj hvB tnvK bv tKb, c0B
 djvdj0K weAvbxiv c0vi Ktib Ges bZb GKwJ welq w0tq, ev H wel'tqi Avt0v weKv0ki
 j'tq` bZb Kti `eAvbK AbmUvtbi Rb` m0P0 nb|

mbvZbx avi Yv Abhvqx, thtnZi weÁvbx GKwU thšw³K I e`wbó c×wZ AbjniYi gva`tg Zvi KgRvU cwi Pvj bv Ktib, tmtnZi Zvi Dcmsvi maviY gvb`fli fiveev`x Abgvb I ms`vi t`tk AtbK Dbz gvtbi ntq `vtK etj avi Yv Kiv nq| weÁvbxiv Z` I msL`vi gva`tg Zvt`i e³e`tk Dc`vcb Ktib Ges Avgvt`i ejv nq th, ÓmsL`v wgv`v etj bv| mbvZbx weÁvbxiv gtb Ktib th, ZÉj wgv`Yi Rb` th Kíbvkw³ I cLi epxgÉvi cÓqvRb nq tm Zj bvq DcvÉ msMóh I we`tkH`Yi t`q`t` Zvi Lp GKUv cÓqvRb nq bv| weÁvbx meikQß ce` t`tk wba`Y Kti t`b etj GKRB mnKvix mnt`RB cix`YwU cwi Pvj bv Kitz cvtib Ges cÓß dj vdj e`vL`v Kitz cvtib|

weÁvb m`útk`AmbvZbx avi Yv (Nontraditional Ideas about Science)

weÁvb Ges weÁvbx m`útk`cwÚZMY miv`útkKvtj th wPÍ c`vb Kti`Qb, Zv mbvZbx Dc`vcb t`tk AtbKuv wfb` GB `wófwzi AbjniYi gtb Ktib th, weÁvb I weÁvbx m`útk` th cÓZgvi cÓZ`Qie `Zwi Kiv ntqO`jv, Zv Zviv wePY`Kti weÁvbtK tLvj mgv³ Kti`Qb| Giv AtbKuv cÓZgvi cRmetivax fvgKivq AeZxY`ntq`Qb| Gt`i gtZ, weÁvbxiv Ab`vb` gvb`fli gZ GKB gvbweK AvteM Óviv t`cÓZ (motivated) nb Ges GKB cÓZKj Zvi Óviv mvgvex` nb| weÁvbxiv cÓqkt wbtRt`i `p`Zv ev c`qcvZ`p cÓt`i Óviv c`fweZ ntq Zvt`i Mtel Yvi weiqe`wbe`Pb Ktib| Ggb wK, Zviv Zvt`i mgMÓkw³ wbtqvm Kti wbtRt`i tcvl` avi Yv `tj vtK cÓvY Kivi tPón Ktib| e`wbófvte wvgZ Ges cwi Pwj Z cix`Yi cwi etZ`weÁvbxiv Zvt`i wR`wekymtK `vctbi Rb` wbi jmfvte cÓPón Pwj tq hvb|

weÁvb Ges weÁvbx m`útk` cwÚZMY miv`útkKvtj th wPÍ c`vb Kti`Qb, Zv mbvZbx Dc`vcb t`tk AtbKuv wfb` GB `wófwzi AbjniYi gtb Ktib th, weÁvb I weÁvbx m`útk` th cÓZgvi cÓZ`Qie `Zwi Kiv ntqO`jv, Zv Zviv wePY`Kti weÁvbtK tLvj mgv³ Kti`Qb|

Avtiv hv³ tZijv ntqO th, weÁvbK RMtZi weifb`Pµ Ges Kvtagx `v`št`x gnj wbtRt`i `v`P evBti Ab`wKQ`K `i`Zi t`b bv| thgb, cÓvkvbi Rb` Mtel Yv c`Ú we`Pbvi t`q`t` c`Úi `eÁvbK g`j`i tP`q Mtel`Ki wMó, c`ex Ges cÓZóvbK msikéZvtK Awak cwi gvtY `i`Zi t`qv nq| GKRB we`kl weÁvbxiv ÓvÍ Óviv m`úw` Z mvgvqKtZ Ab` weÁvbxiv Aaxtb w`qvcÓß ÓvÍ t`i c`Ú emvZj Kti t`evi Awf`thvMI i`q`q| cPwj Z avi YvtK P`vtj Á Kti bZb D`w`vbxq avi Yv m`új Z c`Ú Awakvsk t`q`t`B cÓvkvZ nq bv|

cwÚZ` Ges tgvj K Ae`vbi tP`q cÓt`vlt`Ki, ev cÓt`vlt`KZv t`q, Ggb cÓZóvbi `v`K cÓavb` w`tq H cÓZóvb KZ`R wbtqvmRZ we`kl Át`i ch`jv vPbv cÓZte`vbi gva`tg Mtel Yv cÓk`i i` Abt`g`v b t`qv nq| G mKj ch`jv vPK we`kl Át`i thvM`Zv wbtq| AtbK cÓk`etZvjv ntq`Q| t`Lv tM`Q th, Mtel Yv cÓvebvKvixi tP`q AtbK Kg thvM`Zv I `qZv m`úvbe`w³ i Óviv tm me Mtel Yv cÓk`i i` cÓvebv`K ch`jv vPbv Kiv ntq `vtK| wQyL`wZgvb Mtel`Ki AvZ`R`x`bgj`K t`j Lv cÓk`vki dtj weÁvbi eZ`gvb mgvtj vPbv `tjv Avtiv tekx Zxe`ntq`Q| tm me t`j Lvq, Mtel Kiv Zvt`i Mtel Yv m`útk`GKwU `Q `wófwz `Zwi i Rb` Ges bexb I D`PvKv`q`x Mtel Kt`i c`_ cÓk`bi Rb` wQygv³ Avtj vPbv Kti`Qb| thtnZi G mKj cÓvkvb `eÁvbK Mtel Yvi Í`wU, AmveavbZvekZt fj Ges Ab`vb` ev`e mgm`vtK Ztj atit`Q, tmtnZi weÁvbi AtbK miv`útkK mgvtj vPK tm `tj vtK weÁvb th GKwU dvkv tLvj m Zvi Af`š`xY `kvti w³ etj Awf`wZ Kti`Qb|

weÁvbi G mKj mgvtj vPbvi c`vb wec`wU ntjv th, G `tjv weÁvbtK tevSvi th Amjeav tmB Amjeav `tjv t`tk cvj vt`bvi GKwU mnR c`_ Kti w`Z cvti| GKRB ÓvÍ ev ÓvÍxi c`q` cwi msL`vb ev `eÁvbK Mtel Yvi hv³ `tjv tkLvi tP`q weÁvbtK GKwU A`v`b AvPvi Abp`vbgj`K D`t`wM wmvte wPwY`Z Kivi mnR mthvM mwó Kti w`Z cvti| th me KgRvU`tk Ó`eÁvbKÓ etj Awf`wZ Kiv nq, hv I Zvi me `tjvB `eÁvbK bq, Zeyl AtbK `eÁvbK KgRvU Ab`vb` gvbe KgRvU t`tk wfb` GB wfb`z`v `tjv Dcj wä Kiv LpB `i`ZcY`Ges

weÁvbi G mKj mgvtj vPbvi c`vb wec`wU ntjv th, G `tjv weÁvbtK tevSvi th Amjeav tmB Amjeav `tjv t`tk cvj vt`bvi GKwU mnR c`_ Kti w`Z cvti|

Ri`ix| GKw` tK, thgb weÁvb m`úK`mbvZbx aviYv,tjv Achfß Ges mxgve×Zvq `p, Ab`w` tK, tZgub `eÁvbK KgRvÚtK g` etj Mvj g` Kivl mWk bq| AZGe, Avgv` i AvaybK weÁvb PPF cKwZtK Rvrb cÓqvRb|

weÁv`bi AvaybK PPF(Modern Practice of Science)

mbvZbx `wofw/2 G iKg aviYv t`q th, GKRB weÁvbx tKvb cÓtÁi cÓZ Zvi AvMh t`tK mi vmi ZÉj Avni`Y AeZxY`nb| wKŠ` cKZc`q, K`wPr Ggbw NtU| tKvb cÓtÁi cÓZ weÁvbx cÓwK AvMh cÓqB Rb`tbq tKvb ce@Zx`AwfÁZvj ä MtelYv t`tK| m`eZt, Zvi wbtRi MtelYvi tKvb e`wZµgx ev A`vfwEK djvdj, A`ev Ab` tKvb Mtel`tKi MtelYv t`tK Zvi AvMhni Rb`nq | Ab` K`vq, GKRB weÁvbx GKw mvaviY Awe`vi (thgb, `wU Pj`tKi cvi`umiK m`úK) t`tK `i` Kti welqwtK Avtiv Mfxi fvtē tevSvi Rb` wbtRtK `Zwi Ktib|

weÁv`bi mbvZbx Dc`vctb Aetivnx hv`i clav` j`q` Kiv hvq| Avtivnx c`wZ e`envt`i gva`tgi maviY chfeyY t`tK maviYxKiY Kti ZÉj wbgfY Kiv nq|

weÁv`bi mbvZbx Dc`vctb Aetivnx hv`i clav` j`q` Kiv hvq| wKŠ` ZÉj m`úYfvtē Aetivnx c`wZi djvdj bq| Avtivnx c`wZ e`envt`i gva`tgi maviY chfeyY t`tK maviYxKiY Kti ZÉj wbgfY Kiv nq| ZÉj maviYfvtē A`bK AwfÁZvj ä Avtivnx Ges Aetivnxgj K KgRvÚi tkl djvdj | GK chfeyY weÁvbx nqtZv GKw AwfÁZvj ä m`úK`P Rb` GKw cix`qvgj K ev AvcvZtw`iKZ e`vL`v `vd KivZ cvtib, wZwb Avtiv Z` msMhni gva`tg Gw`tK AvsukKfvtē cix`qv KitZ cvtib, bZb djvdj i Dci wfwE Kti wZwb Zvi e`vL`v`tK cwigwRZ KitZ cvtib, A`ev Avtiv Z` msMh Kti cÓwqwtK Ae`vNZ ivL`tZ cvtib| AZGe, ZÉjMVb gj Zt Aetivn Ges chfeyY`ti GKw w`w`q|

hLb GKw ZÉj enr cwigvY AwfÁZvj ä chfeyYtK e`vL`v KitZ m`qg nq, ZLb ZÉj MhYthvM` etj wetePZ ntZ cvti |

weÁv`bi Lp Kg MtelYvB i`qtQ, thLvtb tKvb ZÉj c`v`v`i MnxZ nq ev cÓ`vL`vZ nq| Zvi cwietZ`eis `xNf` tbi cÓvY Ges mg` msMh mvtc`q GKw ZÉj µgvMZfvtē cwigwRZ nq| me ZÉB µgvMZfvtē cwietZ` I cwigwR`bi gva`tg weKwZ nq| tKvb weÁvbx KLtbv c`v`v` mZ`w Awe`vi KitZ cvtib bv| KviY, Awakvsk `eÁvbK cÓ`tqi wefwbaAwfÁZvj ä e`vL`v i`qtQ| MtelK maviYZt, cÓ`qmg`ni A`vqx KvRi msÁv cÓvb Kti `v`Kb| hLb GKw ZÉj enr cwigvY AwfÁZvj ä chfeyYtK e`vL`v KitZ m`qg nq, ZLb ZÉj MhYthvM` etj wetePZ ntZ cvti |

cÓ`tqi KvRi msÁvqb KLbB m`úYfvtē m`úo `v`K bv Ges cix`qY ev` evqtbi wefwbach`q tm,tj v`K Avtiv m`w` Kti Zj`tZ nq|

weÁv`bi mbvZbx aviYwU Avgv` i etj th, ZÉjMVb Ges cix`qv wbgfYi Rb` Awak cwigvY ey`gÉvi cÓqvRb Ges cix`qwtK KvRi fvtē ev`evqb Kivi welqwt tZgb D`w`v`xgj K bq, Zv tKej wKQy`bwg`EK KgRvÚ gw` | GB mbvZbx aviYwU m`úYfvtē fj | KvRt, GKw cix`qYi ev`evqb Ges AwfÁZvgj K DcvE msMhni Rb` AmsL` RwUj w`v`t`Št` cÓqvRb nq| KviY, cix`qY ev`evqbKvtj AcÓ`w`KZ cwit`w`zi D`w` NU`Z cvti, cwigvcgj K áwš`- dtj A`w` iKtgi chfeyY wj w`cex` ntZ cvti, DcvE nwi`q thtZ cvti, ev fj etj cÓvYZ ntZ cvti, BZ`w` |

cÓ`tqi KvRi msÁvqb KLbB m`úYfvtē m`úo `v`K bv Ges cix`qY ev`evqtbi wefwba chfeyY tm,tj v`K Avtiv m`w` Kti Zj`tZ nq| G aitYi cÓZwU cwit`w`tZ m`w`šZ w`v`t`Št` cÓqvRb nq, hv MtelYvi djvdj tK c`fwEZ KitZ cvti | A`w`, GKw MtelYv cK`i`i gvb wbfP Kti A`bK cw`w` w`v`š-Ges KgRvÚi Dci, hv DcvE msMh t`tK cÓwqKiY chS`-we`ZZ ntZ cvti | GKRB MtelYv cK`i`i cwivj K hv wbtRtK Gme KgRvÚi gta` m`ú,3 bv Ktib, Zte wZwb GKw A`w`x MtelYv cK`i`i cwivj bvi gZ

gviVZ#K S#Ki m#šLxb n#Z cv#i b| h_vh_ m#vš-M#Y Ges T`UcY#m#v#š# m#e` Kdj
m#ú#K#ng`K Dcj wä n#j v weÁvb PPA t`#t` Acwi nvh#ceRZ#

mivisk

mvgw#RK M#elYvi Ab`Zg D#i`k` n#`Q weÁvb#f#E#K a`vb-aviYvi Rb# t`qv| Avi ZvB th
#Kvb M#elYv`i`i` Kivi Av#M weÁvb #K, weÁv#bi `e#kó` #K, Zv f#v#j v#f#v#e t#R#b t#bqv D#Pr|
eZ#v#b cv#V G we#l#q_#t#j vB Av#j w#PZ n#q#Q| we#k#l K#i, Dc`v#cb Kiv n#q#Q weÁvb m#ú#K#
mbvZbx I AmbvZbx aviYv, weÁv#bi Av#b#K PPA I Zvi `e#kó`| M#elYv`i`i`i` ceRZ#m#v#e
H we#l#q_#t#j v GKRb M#elK#K e#S w#b#q M#elYv`i`i` Kivi DciB w#f#P Kite M#elYvi
gvbm#Z dj v#dj |

cvfVvEi gj`vqb

`be³K cġæ

mWVK DĒti i cvfk WJK (√) wPý w`b -

- 1| gvb|li AvPi tYi MwZ cġwZ m=útk³fel`0vYx Kiv hvq bv| Kvi Y,
 - K. gvb| m|oi tmi v Rxe
 - L. gvb|li AvPi Y AtbK tekx wfbzv c0 k0 Kti
 - M. gvb| cwi tētki mvt_ mntrB wotrK gwbtq tbq
 - N. gvb|li AvPi tY kμ Ges wgt DfqB c0 wkZ ntq _vtK|

2| ZĒj cġwZMZFvte:

- K. gZ³Ges mavi Y
- L. wegZ³Ges mavi Y
- M. %Zwi nq
- N. msL`v w`tq e`vL`v Kiv nq|

3| ZĒj mgw_Z nq hLb:

- K. AbKí DcvĒ 0vivi mgw_Z nq
- L. AbKí Mtel Kt`i 0vivi`xKwZ cvq
- M. AbKí wj wLZ AvKvti cġvk cvq
- N. AbKí m=útk³Mtel Yvi RMtZ weZtk³ m|o nq|

msw|B cġæ

- 1| weÁvb wK?
- 2| weÁvb m=útk³weÁvbi v wK fvtēb?

iPbvj K cġæ

- 1| weÁvtbi msÁv w`b| weÁvb m=útk³mbvZbx Ges AvajbK avi Yvi cv_ġ` Avtj vPbv Ki`b|
- 2| weÁvtbi Avaji K PPPAvtj vPbv Ki`b|

mvgwRK weÁvtbi hñ³
Logic of Social Science

GB cW tkłI hv Rvbr hvte —

- mvgwRK weÁvb wK weÁvb
- mvgwRK cłtÁi chñeññY I cwi gvc
- mvgwRK mvavi Y wbtqgi Awie®vi
- mvgwRK ZtÉj D™e I weKvk
- mvgwRK weÁvtbi j ññ

mvgwRK weÁvb wK weÁvb (Is Social Science a Science)?

mvgwRK weÁvtbi Aaxtb AaxZ wełq,tjvi (thgb, mgyRweÁvb, ivóteÁvb, A_ĐwZ, bñeÁvb, mvgwRK gtbweÁvb, Ggb wK, fñMvj, BwZnm I thvMvthvM wełq wełqmgn) `eÁvbK ghñv wbtq GKwU cwÚZ`cYweZK©itqtQ| G weZtKñ gj wełqW ntjv gvbe AvPiYtK weÁvbmsZfñte Mtel Yv Kiv hvq wK bv| mvgwRK weÁvbtk weÁvb wnmñte weťepbvi wełq th AvciÉ,tjv tZvjv nq, tm,tjv ntjv:

cłgZt, gvbtłi AvPiY GK gúZ©_tK AvtiK gúZ©Lp tekx cwi ewZñ nq etj Zv mwK fñel`ĐvYxKiYtK Amæe Kti tZvtj | gvbtłi AvPiY RñUj Ges AtbK tekx wfbzñ cłkñ Kti | gvbtłi AvPiYtK tkYx wef³ Kiv Lp KwB| dtj, Zvi MwZ cłkñZ mæútk©fñel`ĐvYx Kiv hvq bv| gvbe AvPiYi gta` memgq GK aiYi AwbñwZ weivR Kti | GKB cwi w`wZtZ mKj gvbtłi GKB iKg AvPiY Kti bv| Ggb wK GKB e`w³ memgq GKB iKg AvPiY Kti bv| GKRB e`w³ GK iKg cwi w`wZtZ wfbñAvPiY Kti etj mvavi Y wbtqgi avivewnKZv iññZ nq bv|

wZñqZt, gvbtłi AvPiY LpB we`šwZcñY, m² Ges RñUj | gvbtłi AvPiYi wefñbññ K,tjv gb`weñK cłkñZi ntq _vtK Ges m² fñte cwi gvc Kiv hvq bv| thgb, `ñRb e`w³ i gta`Kvi eÚtZj mæútkñK cwi gvc Kiv tek KwB|

ZZñqZt, thñZi gvbtłi AvPiY tKejgvñ gvbtłi ĐvivB chñeññYi gva`tg weťkñwZ nq, tmñZi gvbtłi cñcvZ`pZvi KviY Zt`i weKZ Dc`vcb ntZ cvti | Avi Zv hw` NñU Zte mZ` ARñbi Rb`tkvb e`wó cñwZ _vtK bv|

PZñZt, thñZi gvbtłi B fñel`ĐvYxi wełqe`, tmñZi gvbtłi Rb` Avgiv fñel`ĐvYxi th j ññ wK Kvi Zv gvbtłi mñtRB Dñl`k`gj Kfñte e`_Kti w`tZ cvti | dtj, gvbtłi mvñ`msñkñ` Abññvñtbi cñwZ cłqñM Kiv KwB ntq cto| AZGe, wbfñthvM` eÁvbK DcvÉ msMñ Kiv memgq mæe ntq Dñv bv|

mvgwRK weÁvbtk weÁvb wnmñte `ñkñZ `vtbi weťivaxZñw mvgwRK weÁvtbi wñZi Ges ewni, `ññ K t`tkB Rbñ wbtqñQ| mvgwRK weÁvtbi wñZi t`tk weťivaxZvi tñññ, Gi weťkI vqñ,tjvB (specialization) AtbKuv `vqx| thgb, ivóteÁvb miKvi I ivRbñwZ,

mvgwRK weÁvbtk weÁvb wnmñte `ñkñZ `vtbi weťivaxZñw mvgwRK weÁvtbi wñZi Ges ewni `ññ K t`tkB Rbñ wbtqñQ| mvgwRK weÁvtbi wñZi t`tk weťivaxZvi tñññ Gi weťkI vqñ,tjvB AtbKuv `vqx|

A_ÖwnZtZ BtKvtbvrtgwUK& BwZnvtm wnt÷wii lMönd, BZ`w`i gZ wetklvqb,tj vtK eZGvrb
tekn ,i`tZji mvt_ Aa`qb Kiv ntt`Q| mvgwRK weÁvbi mbvZbx cÜZMY GwU cÜ>` Kti bub
Ges gtb KtiQtb th, wetklwqZ Ávb ntjv mwgZ, m=úY`Ávb bq| Ab`w`tK, wetklÁ
ch&qi cÜZMY gtb KtiQtb th, th tKvb wetqi Dci Ávb tK m² l wetkl fvre mybw`
ntZ nte| Gi dtj , mvgwRK weÁvbi cÜZt`i gta` GKwU cvi`úwi K wetivtai m=úK`Zwi
ntqtQ|

c`v_&e`, RxeÁvbx Ges
i mvgbwe`t`i gtZ, gvbftli
mvgwRK AvPiYtK
weÁvbm=SZfvte Mtel Yv Kiv
hvq bv|

mvgwRK weÁvbi ewntii wetiwaZwU GtmtQ c`v_&e`, RxeÁvbx Ges imvgbwe`t`i gZ
cÜKwZK weÁvbi cÜZt`i KvQ t_tK| Gt`i gtZ, gvbftli mvgwRK AvPiYtK
weÁvbm=SZfvte Mtel Yv Kiv hvq bv| hLb mvgwRK weÁvbxiv wbtRt`i %ÁwmbK ghP v
`vcftbi Rb` cÜZwZ weÁvbmgnini AvPvi l tKSkj ,tjv AUfvte AbjmiY KitZ `ii`
KtiQtb, ZLb GB weZKwU Avtivr tRvi`vi nttqtQ| G aiYi AbKiy wetrbfvte NtUtQ|
thgb, Mtel Ywvti hšcwzi e`envi, cwimsL`vb l MwYZ kvf`j AthSw³K cÜqvM, A`úo
c`vej xi weKiv Ges cÜKwZK weÁvte e`eüz ZÉj l c`vej xi evQ-wePvixb e`envi | AwZ
Drmvnx mvgwRK weÁvbxiv mvgwRK AvPiYtK tevSvi Rb` Ggb me cxwZ e`enviti tPóv
KtiQtb, hv AtbK mgq cÜKwZK weÁvbi tTtT B KvhRi nq vb|

cÜKwZK weÁvbi gtZv
mvgwRK weÁvbi mvari Y
wbqg Abjmtvbi tPóv Kiv
nq| mvgwRK weÁvbx
mvgwRK AvPiYi mvari Y
wbqgtK eštZ tPóv Ktib,
Ges GwU wZwb Ktib mZK`
chfeYI l cwi gvc,
m=úKfngñi Awie`vi Ges
ZÉj MVtbi gva`tg|

Zte, cÜKwZK weÁvbi wetrb:c=üZ, c`vej x l tKSkj AbKiy bv Kti l GwU cÜvY Kiv
m=é th, Aby ctY-tKvl, BZ`w`i gtZv mvgwRK AvPiYtKI weÁvbm=SZfvte Mtel Yv Kiv
hvq| KviY, cÜKwZK weÁvbi gtZv mvgwRK weÁvbi mvari Y wbqg Abjmtvbi tPóv Kiv
nq| mvgwRK weÁvbx mvgwRK AvPiYi mvari Y wbqgtK eštZ tPóv Ktib, Ges GwU wZwb
Ktib mZK` chfeYI l cwi gvc, m=úKfngñi Awie`vi Ges ZÉj MVtbi gva`tg|
wel q ,tj vtK wKQjv ve`wii Zfvte Avtj vPbv Kiv hvK|

mvgwRK cÜtÁi chfeYI l cwi gvc (**Observation and Measurement of Social Phenomena**)

weÁvbi weKvtki cÜg avcÜw ntjv cwi gvc Ges wbqgeX chfeYI| mvgwRK weÁvbxiv tKb
mvgwRK cÜÁ ,tjvi cwi gvc KitZ cvitéb bv Zvi tKvb tgsWj K KviY tB| gvbftli eqm,
wj ½, wkYv, BZ`w` thgb cwi gvc Kiv m=é, tZgnb gvbftli `eewnK ghP v Ges Mo AvgtKI
cwi gvc Kiv m=é| mgwMZ mvgwRK AvPiYtKI mjmx=fvte cwi gvc Kiv hvq| thgb,
GKRb ivóteÁvbx Lp mntRB tfvtUi AvPiY cwi gvc Kti tfvtUi w`tb tFvU`vbKvixiv m=é`
wK AvPiY KitZ cvtib tmwU wbaftY KitZ cvtib| GKBfvte, agföZv, D`vi %bwZKZv,
iYkxj Zv, BZ`w`i gtZv Pj K ,tjvtKI cwi gvc Kiv m=é| gtbvfvtei cwi gvc tK cÜqkt
A%ÁwmbK etj P`vtj Á Kiv ntq `vtK| wKŠ` GwU gtb ivLv cÜqvRb th, `iitZ me aiYi
cwi gvcB t`^0vPwqZ wmxvš`-t`K D`mZ nq| GKRb mvgwRK weÁvbx GKRb gvbJ tK KLtbvB
0`_fxbfvte awgR ev AwgR etj AwfwZ KitZ cvtib bv, eis wZwb gvbJ tK AvtcvYKfvte
Kg ev teKx awgR etj eYbV Kitéb| GwU `iaymvgwRK weÁvbi tTtT B Abb` bq| cÜKwZK
weÁvte fvgKt=úii Rb` Richter Scale, ev Hardness Scale cÜqvtMi tTtT l AvtcvYKZvi
gV wU cwi j wYZ nq|

me aiYi `eÁwmbK
cwi gvc tK Pevšfvte
Abjmtvbi DcthwMxZvi
wfwÉtZ wePvi Kiv DwPr,
wbi %k mZ`i wfwÉtZ bq|

me aiYi `eÁwmbK cwi gvc tK Pevšfvte Abjmtvbi DcthwMxZvi wfwÉtZ wePvi Kiv DwPr,
wbi %k mZ`i wfwÉtZ bq| GKRb imvgbwe` thgb GKwU Dcv`vbtK wbi %kfvte KwB etj
eYbV KitZ cvitéb bv, tZgnbfvte GKRb mvgwRK weÁvbx GKRb gvbJ tK wbi %kfvte
awgR etj AwfwZ KitZ cvtib bv| GKRb e`w³i awgRZv, ev tKvb Dcv`vbtbi KwBZvi
A_wU tKej gvU Ab` e`w³ ev Dcv`vbtbi tCvYtZ A_ön ntq DVtZ cvti | GwU AwfthwM tZvj v

nq th, mvgwRK weÁvbxiv µgvMZfvte Zvt`i Pj Kmgfni cwi gvtK mstkvab Ktib Ges`
`ŸRb mvgwRK weÁvbx GKB mgtq cwi gvtci c×wZ wbtq wŸgZ tcvlY Ktib| wKŠ' GwU
i'agvI mvgwRK weÁvbx i'ŸtT B cŸhvR' bq| weÁvtbi gyß Ÿvi `eikówU memgq µgvMZ
cwi eZŸtK Avnevb Kti |

mvgwRK mvariY wbtqgi Awe®vi (Discovering Social Regularities)

mvgwRK weÁvtbi Zj bvq cŸkwZK weÁvtbi welq, tj vtK tekx wbtqge× etj weŸPbv Kivi
GkwU cŸYZv itqtQ| thgb, Avgiv tRtbiw th, hZ evi GkwU fvix e`tK Ÿto gvi v nte, ZZ
evi tmB e`wU cŸex cŸŸ Gtm cotel wKŠ' GKRb gvbj GkwU weŸPtb GKRb cŸŸK tŸvU
w`tj I Ab' weŸPtb Zvi weŸvaxZv KitZ cvtib| GKBfvte, ZvcgvI v ew×i mvt_ mvt_ eid
memgq Mj tZ _vtK, wKŠ' AvcvZt` wŸtZ agvŸ etj cŸZqgvb GKRb gvbj wbtqgZfvte ag`
MŸ' cvw bvl KitZ cvtib| G aitYi welq DŸtj E-Kti eü D`vniY t`qv thtZ cvti | wKŠ'
Gfvte mvgwRK mvariY wbtqgi Aw`ZtK A`ŸKvi Kivi dtj GK aitYi wec` `Zwi ntZ
cvti | mgvtRi `ŸKZ cŸZŸvb, tj v wKŸy mvgwRK wbtqgK wbaŸY Kti t`q| thgb, GkwU
wbr` Ÿ eqtmB tKej gvI tŸvUwaKvi cŸqM Kiv m×e, cj`I I bvi xi gta` weevn eÜtb Ave×
nl qvi gva`tgB mvariYZt cwi evi MvB Kiv nq, BZ`w` | G aitYi AvbŸvmbK wevawarb, tj v
gvbtI i AvPiYtK cwi PwŸj Z Kti |

AvbŸvmbKfvte i×wZm× wbtqgejxi evBtiI AŸbK i×wZb×Z chŸeŸY Kiv m×e| thgb,
GKRb mekpe``vj tqi wKŸK GKRb ktgtKi Zj bvq tekx Avq Kti _vtKb, bvi xiv cj`tI i
Zj bvq tekx awgŸ nŸq _vtKb, BZ`w` | G aitYi mvariY wbtqgi eYŸtK mvariYZt wZb
aitYi mgvtj vPbvi m×Ÿx b nŸZ nq| cŸgZt, G aitYi mvariY wbtq eYŸvi gta` tKvb
bZbZj tbB| KviY, G, tj v Avgiv mevB Rmb| wŸZxqZt, chŸeŸY cŸivcŸi mZ` bv nevi dtj
ci`úi weŸvax dj vdtj i RbŸ ntZ cvti | ZZxqZt, gvbj hw` B`Ÿv Kti, Zvntj Zvi Hw`ŸK
AvPiŸYi gva`tg chŸeŸYKZ mvariY wbtqgK fj etj cŸwYZ KitZ cvti |

cŸg mgvtj vPbwU i wei`t× ej v hvq th, Avgiv mevB hv Rmb, Zvi eYŸv Ges Dc`vcb th
tKvb weÁvtbi GkwU `i`ZcY`KvR, Zv cŸkwZK ev mvgwRK hvB tnvK bv tKb| th tKvb
`eÁvmbK DŸ`vtMi wei`t× GwU tKvb KvhŸi mgvtj vPbv ntZ cvti bv| Wvi DBb Zvi AŸbK
MŸelYvi tŸtT tKtKti 'Fool's Experiment' c`wU tK e`envi Kti tŸQb| KviY, memgq
Zvi gŸb ntqtQ th, wZwb hv KitŸQb Zv m×eZt mevi Rvbv| wZwb teva nq bZb wKŸyej tŸQb
bv|

wŸZxq mgvtj vPbwU h_vh_ bq| KviY, mvgwRK mvariY wbtq GkwU m×e vbgj K ifctK
cŸZwbwZj Kti | `ŸwU Pj tKi gta` th mvariY m×uKŸ tŸtQ Zv GkK fvM mZ` ntZ nte Ggb
tKvb K_v tbB| cŸkwZK weÁvbl G aitYi mgvtj vPbvi ewnti bq| thgb, eskMwZ welqK
weÁvb (genetics) AbŸvqx GKRb bxj tPvLm×úbe`w³ i mvt_ GKRb ev`vgx tPvLm×úbe
e`w³ i wj tbi dtj GKRb ev`vgx tPvLm×úbe`w³ i RbŸ nevi m×ebv itqtQ| wKŠ', Zvi
cwi etZ`hw` GKRb bxj tPvLm×úbe`w³ i RbŸ nq, ZvtZ Kti chŸeŸYmZ ev chŸeŸYKZ
mvariY wbtqgK P`vtj Á Kiv nq bv| KviY, eskMwZ welqK weÁvbxiv m×ebvi AvKviti etj
vtKb th, GKRb bxj tPvLm×úbe`w³ i mvt GKRb ev`vgx tPvLm×úbe`w³ i wj tbi dtj
GKRb ev`vgx tPvLm×úbe`w³ i RbŸ tbevi m×ebv tekx| GKBfvte, GKRb mvgwRK weÁvbx
m×ebvi AvKviti fivel`ŸvYx Kti _vtKb th, bvi xiv cj`tI i Zj bvq tekx awgŸ nŸZ cvtib
Ges h_vh_ cwi gvc c×wZ I tKŠktj i gva`tg wZwb Gi kZKiv nviwU wbyŸ Kti t`LvZ
cvtib|

mvgmRK wqbtgi Aw-Zjev-
te itqtQ Ges mvgmRK
weAvbx tm,tj vtK chfeqY
KitZ cvtib| hLb `xNmgq
cti mvgmRK wqbg cwi ewZ
nq, ZLb mvgmRK weAvbx
tmB cwi eZB,tj vtK
chfeqY Ges e`vL`v KitZ
cvtib|

ZZxq mgvtj vPbwU i tqtT ejv hvq th, hw I cOkwZK weAvtb G aitYi mgvstij cwiw`wZi D`me NtU bv, Zeyl mgvtj vPbwU h_vh_ bq| GwU A`xkvi Kivi Dcvq tbB th, GKRB i v`iteAvbxi tfvtUi AvPiY wclqK fweL`OvYmU bvKP Kti t`eri Rb` tfvUvii vfbceAvPiY KitZ cvtib| wKs' G aitYi NUbv ht_o wqbgZfvte NtU bv etj Zv mvgmRK mvaviY wqbtgi chfeqYtk ugvKi m`x`xb KitZ cvti bv| cOkZctq, mvgmRK wqbtgi Aw-Zj ev`te itqtQ Ges mvgmRK weAvbx tm,tj vtK chfeqY KitZ cvtib| hLb `xNmgq cti mvgmRK wqbg cwi ewZ nq, ZLb mvgmRK weAvbx tmB cwi eZB,tj vtK chfeqY Ges e`vL`v KitZ cvtib|

mvgmRK ZtEj D`me I weKvk (Origin and Development of Social Theories)

weAvtbi cOkwZ m`utK`fj
tevSvejSi KvitYI mvgmRK
weAvtbi `eAvbK weKvk
evawM`ntqtQ|

GwU mZ` th, GLb chS-mvgmRK weAvbxiv cOkwZK weAvbxt` i Ovi weKvkZ ZtEj mgvvtbi ZEj Awe`vi KitZ cvtib w| mvgmRK weAvtbi eu ZEj itqtQ, hv chfB etj mgw`Z nq w| wKs' cOkwZK weAvtbi Ggb AtbK ZEj itqtQ, hv eZgvb AchfB etj cOvYz ntqtQ| cOkwZK weAvtbi gtZv ghv`vm`ubeZEj mvgmRK weAvtb bv `vKvi `mU cAvb Kvi Y itqtQ| cOgZt, cOkwZK cOAmg`ni gta` hZw` b ati m`msexfvte `eAvbK c`wZi e`envi ntq AvmtQ, mvgmRK AvPiYtk MtelYvi tqtT tm,tj v ZZw` b ati e`envi Kiv nqwb| wDZiqZt, mvgmRK AvPiYtk `eAvbKfvte MtelYv Kiv hvte bv etj th aviYmU cOvij Z wJ, Zv mvgmRK weAvtbi weKvtk cOqvRbxq c`wZ I tKSk`j i Awe`vitK mgvex Kti titL`tQ| Dci s', weAvtbi cOkwZ m`utK`fj tevSvejSi KvitYI mvgmRK weAvtbi `eAvbK weKvk evawM`ntqtQ| weAvb PPF cwi etZ`weAvtbi mbvZbx Dc`vctbi cOZ AwakZi `i`Zit`evi KvitYB GwU NtUtQ| mvgmRK weAvb weAvb wK bv, ev mvgmRK weAvbtk weAvtbi gh`vq AwawOZ Kiv hvte wK bv tmU eStZ ntj mvgmRK weAvtbi j`q` wK Zv Rvbw cOqvRb Ges weAvtbi `enkto`i Avtj vtK mvgmRK weAvtbi `enkO` ,tj vtK chfj vPbv Kti t`Lv cOqvRb|

mvgmRK weAvtbi j`q` (Goals of Social Science)

mvgmRK weAvtbi Pavis
j`q`w ntj v, th tKvb wclq
m`utK`b`f`thM` I
weAvbm`S`Z Avtbi Rb`
t`qv|

mvgmRK weAvtbi Pavis-j`q`w ntj v, th tKvb wclq m`utK`b`f`thM` I weAvbm`S`Z Avtbi Rb` t`qv| Avgiv th mKj wclq AvM`bx, tm mKj AwfAZvj a cO`fAi e`vL`v, fweL`OvYx Ges Dcj wAtZ tmB Avb Avgvt`i mrvh` Kite| cOkentjv, G tqtT weAvb wK Ae`vb ivL`tZ cvti? G cOkie DEi tctZ ntj Avgvt`i RvbtZ nte `eAvbK e`vL`v wK? KLb Avgiv fweL`OvYx KitZ cwi? Ges KLb Avgiv h_vh_fvte `vex KitZ cwi th, Avgiv AwfAZvj a cO`fK Dcj wAt Kitz cwi?

weAvbm`S`Z e`vL`v (Scientific Explanation): hw` cOkwKiv nq th, gvbyl Aciva Kti tKb? tKD ejtZ cvtib th, OkOy gvbyl Lvivc etj Zviv Aciva KitZ Pvc|O G aitYi e`vL`v mvaviY gvbyl`K mS`o Kitj I mvgmRK weAvbxi Rb` GwU ht_o bq| KviY, tKb gvbyl wtkl aitYi AvPiY Kti, ev Kti bv, Zvi e`vL`wU hLb mvgmRK weAvbxiv RvbtZ Pvb, ZLb Zviv gj Zt AvPiYmU tKb NtU, ev NtU bv, Zvi Rb` `vqx ceOZr`KviY,tjvi cOvij xex I AwfAZvj a wtkL`Y KitZ Pvb| A`f, mvaviY wqbtgi gva`tg GKwU cO`fK Ab` cO`fAi gva`tg e`vL`v KivB ntj v mvgmRK weAvbxi j`q`| th weAvb weKvtki hZ D`P chfqi nte, tmB weAvtbi mvaviY wqbg,tj v ZZteKx DbZ gvvti nte| th weAvb weKvtki cO`fK chf`q `vtK, tmB weAvtbi mvaviY wqbg,tj v tKej gv` wewfbawel`qi tkYxe`KvitYi gv`vq `vtK| weAvtbi weKvtki gv`vi mv`_mv`_ e`vL`vi gv`vL`v cwi ewZ nq| weAvbm`S`Z e`vL`v,tj v th

gvĭvq mvavi YxKiY cĭvb Kti Zvi wfiĖtZ eĭvLĭvi `ŃU cĖKiY itqtQ: Aeti vnxgj K eĭvLĭv Ges mæbevgj K ev Avti vnxgj K eĭvLĭv|

Aeti vnx eĭvLĭvi Rbĭ mveRbxb mvavi YxKiY, th cwi wĭZtZ mvavi YxKiY tĭjv mZĭ etj cĖŃwYZ nte Zvi eYĖ, eYĖvthvMĭ NUBv Ges AvbĖwĭbK hĭjĭi wĭbqg cĖqRb| Aeti vnx eĭvLĭvi tĭĭtĭ, cĖZwĭZ mveRbxb wĭbqg tĭtK Avni Z Abgĭvtbi gvaĭtg GKĭU NUBvtK eĭvLĭv Kiv nq| thgb, GKĭU eĭkĭbĭ Qto wĭtj Zv Avevi feĭtĖ Gĭm covi wĭlqĭU eĭvLĭv Kiv hvte gvaĭvKĭY wĭbqtgi wfiĖtZ| mveRbxb wĭbqtgi Rbĭ cĖqRbxq kZŃU ntĭjv th, GĭU Gi Aaxĭb AaxZ me wĭlqĭtĭvtK Ašfĭß Kti| Aeti vnx hĭjĭi wĭbĭvtm, hĭjĭi wfiĖĭU Dcmsnvi tĖtĖQvtbi wĭK wĭtĭR Kti| AĭŃ, wfiĖĭU hĭwĭ mZĭ nq, Zte Dcmsnvi mZĭ ntZ evaĭ| hĭwĭ wfiĖĭU mZĭ bv nq, Zte Dcmsnvi l mZĭ nte bv|

Aeti vnx eĭvLĭvi tĭĭtĭ,
cĖZwĭZ mveRbxb wĭbqg
tĭtK Avni Z Abgĭvtbi
gvaĭtg GKĭU NUBvtK eĭvLĭv
Kiv nq|

wKšĭ me ĭeĀwĭbK eĭvLĭvB mveRbxb wĭbqtgi Dci cĖZwĭZ bq| G eĭvLĭv mvgwĭRK wĭĀvtbi tĭĭtĭ wĭtĭkl fĭte cĖhvRĭ| Kvi Y, mvgwĭRK wĭĀvtb Lĭ KGB AĭŃ mveRbxb mvavi YxKiY Kiv mæbe nq| mvgwĭRK wĭĀvtbiv cĖvbZt mæbevgj K ev Avti vnx eĭvLĭvtK eĭenvi Kti ĭvtK| thgb, tĭvb GK eQĭi miKvix eĭq eĭjĭi wĭlqĭUĭtK eĭvLĭv Kiv hvq Gfĭte th, tĭtĭki msKŪvcĖĀĭŃwZK Aeĭvi KviĭY Kĭl l wĭkĭ LvZ fZŃx cĖvb Kiv ntqtQ etj miKvix eĭq eĭjĭi tĖtĖQĭtĭjv| GB eĭvLĭwU th wĭlqĭUĭtK eĭvLĭv KiĭZ nte (miKvix eĭq eĭjĭi) Zv ceĖZxĭ NUBvi mvĭtĭ hĭjĭi KtiĭQ (tĭtĭki AĭŃwZK msKŪ)| GB mæúKŪĭtK GKĭU mveRbxb wĭbqg Ŗiv eĭvLĭv Kiv hvte bv| Kvi Y, me aiĭYi AĭŃwZK msKŪĭi tĭĭtĭB fZŃx cĖvtbi gvaĭtg miKvix eĭq Kiv nq bv| G tĭĭtĭ hv ejv hvq Zv ntĭjv, th mKj cwi wĭZ wĭtĭkĭY Kiv ntqtQ tm mKj cwi wĭZi AwaKvsk tĭĭtĭ AĭŃwZK msKŪvcĖĀĭŃwZK miKvix eĭq eĭjĭi tĖtĖQĭ| G aiĭYi mvavi Y eĭvLĭvtK mæbevgj K ev Avti vnxgj K eĭvLĭv ejv nq Ges Gĭtĭjv mæbevgj K mvavi YxKiY tĭtK Avni Z nq| wKšĭ mveRbxb wĭbqtgi Zj bvq Avti vnx ev mæbevgj K mvavi YxKiĭi cĖvb mgmĭwU ntĭjv th, wĭwĭ Ŗ NUBv mæúĭtKĭtĭvb mĭwĭ Ŗ Dcmsnvi Ubv hvq bv| Kvi Y, GKĭU NUBvi wĖQĭb GĭKi AwaK Kvi Y ĭvtK, hvi meĭtĭjvB MtelĭKi Rbv ĭvtK bv|

fĭelĭŖYxKiY (Prediction): mĭwK fĭelĭŖYx KiĭZ cvivi ŃlgZv th tĭvb wĭĀvtbi Rbĭ GKĭU wĭkĖ ĭY| tĭvb wĭlqĭ mæúĭtKĭĀvtbi NvUwZ ĭKĭj fĭelĭŖYxKiY Amæbe ntq cĖtĖ| thgb, hĭwĭ Rbv ĭvtK th, AĭŃwZK msKŪĭi mgq miKvix eĭq eĭjĭi cvq, Zte GKRB fĭelĭŖYx KiĭZ cvĭib th, fĭelĭtZ AĭŃwZK msKŪĭi mgq miKvix eĭq eĭjĭi cvĭe| GKBFĭte, hĭwĭ Rbv ĭvtK th, Mĭtg Mĭtg hĭe DbĖb Kve Mto tZjvi gvaĭtg hĭeKĭĭi DbĖb KgŃvtŪ mæúĭĭ KiĭZ cvĭtĭ Acivĭtai gvĭv AtĭbK Kĭtg hvq, Zte mntĭRB fĭelĭŖYx Kiv hvte th, hĭe DbĖb Kĭtei msLĭv eĭjĭi Kiĭj Acivĭtai gvĭv Kgte| AĭŃ, wĭĀvbmæSZ Āvtbi gvaĭtg mĭwK fĭelĭŖYx Rbĭtĭ evi th cĖZĭvkv, Zv GB avi Yvi Dci wfiĖĭ Kti ĭwotq ĭvtK th, hĭwĭ GĭU Rbv ĭvtK th, ŖLŖ NŪevi wĖQĭb ŖKŖ Kvi Y wĭmĭte KivR KtiĭQ Ges tĭvb cwi wĭZtZ ŖKŖ-Gi DcwĭZ hĭwĭ wĭĭgvb nq, Zte fĭelĭŖYx Kiv hvte th, ŖLŖ NŪte| GB hĭjĭi AšwĭŃZ avi YwU ntĭjv th, hĭwĭ GKĭU mveRbxb wĭbqg Aĭev mæbevgj K mvavi YxKiY Rbv ĭvtK Ges mZĭ nq (AĭŃ, djvdjĭtK fĭelĭŖYxKiĭi Rbĭ hĭwĭ ceĖZŃĀeĭwU hĭtĖ Ŗ nq), Zte fĭelĭŖYxĭ eĭĖĭvi Kvi YwU ntZ cvĭi, nq mveRbxb wĭbqg ev mæbevgj K mvavi YxKi YwU mZĭ bq, bZev ceĖZxĭĀeĭwUĭtK fĭj fĭte Abgĭvb Kiv ntqtQ|

Dcj wä (Understanding): wĭĀvbmæSZ Āvtbi ZZxq ĭi "ZcYĖDcvĭvbwU ntĭjv Dcj wä| Dcj wä kĀwĭi AĭŃtĭgŃj Kfĭte `ŃU wĭfĖeĭwĭfĖwĭ tĭtK eĭenvi Kiv ntqtQ| GKĭU ntĭjv Verstehen ev empathic Dcj wä Ges AbĭwU eĭeüz ntqtQ fĭelĭŖYxgj K Dcj wäMZ AtĭŃ

ʼŋU KviʼY GB wfbæeʼenvʼi i weKvk NʼUʼQ – cŋgZt, mvgwRK weÁvb GKB mvt_
 gvbeZvev`x I weÁvbmʼSZ etj, Ges wZiqZt, mvgwRK weÁvb GKvavʼi chʼeŋYKvix I
 AskMŋYKvix etj | G KviʼYB cŋæDʼVʼQ th, cŋKwZK weÁvʼb Abjnz weÁvbmʼSZ c×wZi
 gvaʼtg wK gvbe AvPiʼYi Abjnvb KvhʼcwiPvj bv Kiv hvq? gvbe AvPiʼYi RvUj Zv Ges
 AbbʼZvi KviʼY wK mvgwRK weÁvʼbi Rbʼ wfbæweÁvbmʼSZ c×wZ weKvʼtki cŋqvRb itqʼQ?
 mvgwRK weÁvʼbʼK wK Zvʼi welqeʼʼK tevSvi Rbʼ tm_ʼtjvi Afʼšʼi XʼKʼZ nʼe?
 Verstehen c×wZ Abjvqx gʼb Kiv nq th, welqeʼʼi cŋwZMZ %wPʼŋi KviʼY cŋKwZK I
 mvgwRK weÁvʼbʼK weÁvʼbi ʼŋU ʼZš;Ávb kvLv wmvte wetePbv Kiv DvPr Ges cŋKwZK I
 mvgwRK weÁvʼb wfbæMʼtelYv c×wZ Abjny Kiv DvPr | tKbbv, mvgwRK weÁvʼbʼK gvbe
 AvPiʼYi HwZnvwK cUfng Ges gvbe AwfÁZvi AvZMZ welqʼK Abjvab Kiv cŋqvRb |
 Verstehen c×wZi cŋ³v gʼvK&ʼtefʼvʼi gʼZ, hw mvgwRK weÁvʼbʼK eʼw³ I tMvŋxi
 AvPiʼYʼK Dcj wä KiʼZ nq, Zʼe Zvʼi AekʼB Abjnvʼbi welqeʼʼi gʼaʼ wʼtRʼK wgvkʼtq
 tdj ʼZ nʼe | Zvʼi AekʼB evʼeZv mʼúʼtKʼAʼbʼi ʼwʼfʼwʼʼtK Dcj wä KiʼZ nʼe |

Verstehen c×wZi weciʼZ fweʼʼŋvYxgʼK Dcj wäi HwZnʼ aʼi thšwʼK AwfÁZvev`xiv
 (logical empiricists) gʼb Kʼib th, mvgwRK weÁvʼbʼv cŋKwZK I mvgwRK evʼeZvi
 Abjnvʼb GKB c×wZ eʼenvʼi i gvaʼtg eʼwʼbô Ávb ARʼ KiʼZ cvʼib | A_ŋ, GKB
 ʼeÁvwbK c×wZ eʼenvi Kʼi cŋKwZK I mvgwRK weÁvʼbi welqeʼʼK Aaʼqb Kiv mʼæ |
 thšwʼK AwfÁZvev`xiv Verstehen c×wZʼK Aweʼvʼi i GKwU mnvqK tKšKj wmvte wetePbv
 KʼiʼtQb | wKšʼ Aweʼvi ʼtj vʼK hw weÁvbmʼSZ Ávʼbi gʼaʼ Ašʼfʼ KiʼZ nq, Zʼe
 tm_ʼtj vʼK AekʼB cixŋv wbi xŋvi gvaʼtg hvPvB Kʼi wʼtZ nʼe |

mvivsk

mvgwRK MʼtelYvi AbʼZg ceRZʼhʼʼQ weÁvb mʼúʼtKʼ^o aviYv ARʼ | weÁvʼbi cŋg avc
 ntjv cwi gvc Ges wʼbqgex chʼeŋY | GB cvʼV Avgiv mvgwRK weÁvʼbi msÁv, cŋtʼÁi
 chʼeŋY I cwi gvc, mvgwRK weÁvʼbi j ŋʼ, BZʼwʼ wʼtq Avʼtj vPbv Kʼi wʼQ | Avgiv tʼ tLwQ
 th, mvgwRK weÁvb weÁvb wmvte wetePZ nI qvi tŋʼʼt wKfvʼte gvʼtʼI AvPiʼY, AvPiʼYi
 wefbæwʼK Ges AvPiʼY chʼeŋYʼi tŋʼʼt cŋcivZnxbZv KvR Kʼi ʼvʼK | G Qvovl,
 mvgwMʼKfvʼte weÁvʼbi ʼenkóʼ Ges Gi mvt_ mvgwRK MʼtelYvi mʼúʼKʼKfvʼte KvR Kʼi Zvi
 Avgiv Avʼtj vPbv Kʼi wʼQ |

cvtVvEi gj `vqb

`be⁹³ K cġæ

mWVK DĒti i cvtk WJK (√) WPy w` b –

1| mvgwRK weÁvxi j ġi` nt`Q:

- K. GKW cġĀtK eYĖv Kiv
- L. GKW cġĀi mvt_ Ab` cġĀi Zj bv Kiv
- M. GKW cġĀtK Ab` cġĀi gra`tg e`vL`v Kiv
- N. Dcti i me|

2| weÁvb PPPntj v:

- K. Av` k⁹Ges m⁹te` ev` eZvi gta` GKW mg⁹ġ
- L. Av` k⁹avi Yvi ci xġv vbi xġv
- M. Av` k⁹avi YvtK AwZ-Av` tk⁹fcvŠt- Kiv
- N. ev` e Ges AwZev` ŋei m⁹úK⁹ci gvc Kiv|

3| Ūel qe`i cġWZMZ `eiPġi Kvi tY cġWZK I mvgwRK weÁvb tK `ŪW `Zšj Ávb kvLv
wmmvte weŋePbv Kiv DvPrŪ — tKvb c⁹WZ Abġvqx?

- K. gvK⁹xq c⁹WZ Abġvqx
- L. Zj bvgj K c⁹WZ Abġvqx
- M. Verstehen c⁹WZ Abġvqx
- N. W⁹qev` x c⁹WZ Abġvqx|

msvġB cġæ

1| mvgwRK weÁvtbi j ġi` Wk?

2| mvgwRK ZtĒj D⁹te I weKvk m⁹útk⁹stġtġc Avtj vPbv Ki`b|

i Pbv gj K cġæ

1| ŪmvgwRK weÁvb Wk weÁvb?Ū – Avcbvi gġZi cġġ h⁹³ w` b|

2| weÁvtbi msÁv w` b| mvgwRK weÁvtbi j ġi` Avtj vPbv Ki`b|

weÁvb Ges mvgwRK weÁvtbi `enkó`
Characteristics of Science and Social Science

GB cW tkłl hv Rvbr hvte —

- weÁvtbi `enkó`
- mvgwRK weÁvtbi `enkó`
- weÁvb Ges mvgwRK weÁvtbi gta` Zj bv

weÁvtbi `enkó` (Characteristics of Science)

weÁvb thšr³K h³³web`v³mi
Dci cłZwóZ|

weÁvb thšr³K (Science is Logical): weÁvb tgšj Kfvte GKw thšr³K KgRvÜ| Kvi Y, weÁvb thšr³K h³³web`v³mi Dci cłZwóZ| tKvb GKw NUBv, hv Ab` GKw NUBvi c³e` NtUžQ, Zv tmB NUBvi djvdj ntZ cvti bv| thgb, OKÓ hw` OLÓ-Gi c³e`NtU Ges OLÓ hw` OMÓ-Gi c³e`NtU, Zte OMÓ OLÓ wKsev OKÓ-Gi c³e`NUžZ cvti bv| weÁvtbi h³³žZ, GKw e` GKB mvt_` žW djvdj cŁvb KižZ cvti bv| thgb, GKw gy` žW w` ž gv_v Ges tj R GKB mvt_ AvmžZ cvti bv| nq gv_v Avmžte, bZev tj R Avmžte| GKRb e`w³ GKB mvt_ abx Ges `wi` ntZ cvti bv| weÁvb m³šZ KgRvÜ Avtivnx Ges Aektivnx `ž aižYi h³³ we` gvb| Aektivnx h³³i gva`žg tKvb ZĖj ž_tK Avnwi Z AbKí cix`vi gva`žg ZĖji h_v_Zv cžyY Kiv ntq _vtK|

weÁvb wbaŕYgj K (Science is Deterministic): weÁvtbi Ab`Zg wfvĖ ntjv Kvh³Kvi Y m³útkP avi Yv| tKvb wKQyGgmbžZB NtU bv| cŁZw NUBvi wCžb tKvb Kvi Y _vtK etj B Zv NtU| hLb tKvb gvb| ti vMv³š-nq, hLb e³w nq, hLb tKD KvĖ, ZLb weÁvbx avi Yv Kti b th, cŁZw NUBvi wCžb tKvb bv tKvb Kvi Y ižžQ| tKvb wKQž ce³Zx³Kvi Y Qrov NtU bv| Zte Gw gtb ivLv cŁqvRb th, weÁvbx NUGvb mKj NUBvi Kvi Y Rvžbb bv, GgbwK Rvbi fvb| Kti b bv| Zte, wZwb Kvi Y žjvi Aw`ZžK Abggb Kti b Ges Gl avi Yv Kti b th, tm žjv wbyĖ Kiv m³e| thgb, GKRb e`w³ hLb Zvi tfvUwaKvi cŁqvM Kti GKw wtkl cŁ_x³ev` j žK tfvU ž`b, ZLb Zvi wCžb GKw ev AžbK Kvi Y _vKžZ cvti|` žRb e`w³ GKB cŁ_x³K wfbearfbekvi žy tfvU w` žZ cvti b| A_ŕ, weÁvbx eü-Kvi Y wfvĖK wtklY Kti _vtKb, GK-Kvi Y wfvĖK bq| thžnZi weÁvbx me Kvi Y Rvžbb bv Ges GKB NUBvi wCžb eü Kvi Y we` gvb _vtK, tmžnZi me weÁvžb wbi žk w³i xZvq Kvh³Kvi Y m³úK³wtklY m³e nq bv|

AskžK Aek`B weÁvbx
ešž Pvb, Zte Zvi gj
j ž` ntjv m³úYžK tevSv|

weÁvb mvavi Y (Science is General): tKvb GKw wtkl NUBv wtklH³Yi cwi etZ³ngm³vi mvavi Y e`vL`vB weÁvtbi j ž`| thgb, GKw cv_tii byo tKb cvno ž_tK Mwožg cto, Zvi žžg eis me byo tKb Mwožg cto, weÁvbx cāvžZt tmB e`vL`vB LžR tčž tekx AvMžx nb| AskžK Aek`B weÁvbx ešž Pvb, Zte Zvi gj j ž` ntjv m³úYžK tevSv| weÁvtbi GB `enkó`w m³ebvgj K wbaŕ žyi e`vL`vi mvt_ m³úK³ž| thžnZi AwfÁZvj ä ch³ežžYi gva`žg mvavi YxKiYB ntjv weÁvtbi gj j ž`, tmžnZi weÁvbx `vfvKfvteB wtkl NUBvi cwi etZ³mvavi Y Dcj wai cŁZ AvMžx ntq _vtKb|

weÁvb m² fivte e`vL`vthvM` (Science is Parsimonious): tKvb NUbvtK wbañY Kti Ggb KviY ,tj v Awe®vti i j tññ weÁvbx Zvi AwaKvsk mgq e`q Ktib| cvkvcvsk, th KviY ,tj v NUbvUtk wbañY Kti bv tm ,tj v Awe®vti l wZvb mtpó nb| GuU KiTZ wMtq wZvb hZUKy m²e Kg msL`K e`vL`vthvM` Dcv`vbtk e`envi KiTZ tPóv Ktib| GuU wK th, tekx msL`K Dcv`vbtk Ašfš Kti tKvb welaqtK e`vL`v KiTj wbañtYi gvÍv ep× cvq| thgb, GKRB ivóteÁvbx tfvñUi AvPiY e`vL`v KiTZ wMtq, `tj i cōZ AvbMz` l mvgwRK tkYvMZ Ae`vb, G`ñtUv Dcv`vb w`tq hZUKz wbañtYi gvÍv AR® Kiteb, wbtmt` ñ AvtiKRb ivóteÁvbx eim`vb, wj ½, wKñv, eY, tMvōx, BZ`w` Dcv`vb w`tq Avtiv tekx wbañtYi gvÍv AR® KiTZ cviñeb| Zte cñentjv, th mKj bZb Dcv`vb hš Kiv ntqtQ Zvi gva`tg wbañtYi gvÍv KZUKz ep× tcj Zv ,i`ZcYñ hw` t`Lv hvq th, PviU AwZwi³ Dcv`vb hš Kivi dtj wbañtYi gvÍv gvÍ `š kZvsk ep× tctqtQ, tm tñññ weÁvbxK wvš`wbZ nte th, wZvb Zvi e`vL`vq H PviU Dcv`vb ivL`teb wK bv| G wvš`wU wbfñ Kti `ñU ,i`ZcYñ welaqi Dci| GKwU ntjv e`vL`vi mvij` Ges AbñU ntjv e`vL`vi gvÍv| AtbK mgq weÁvbx `š kZvsk AwZwi³ e`vL`vi gvÍvi tPtq e`vL`vi mvij`tK cñavb` t`b| Avevi KLtbv KLtbv weÁvbx KvtQ e`vL`vi gvÍv ,i`ZcYñ ntq DñV| wKš` e`vL`vi gvÍv ep×i mvñ_ mvñ_ e`vL`vi RuUj Zvi ep× cvq| GB `ñtUv welaqi mg²q KiTZ cviñB GKRB AvfÁ weÁvbx mvdj`tK wPñZ Kti |

weÁvb mybñ` (Science is Specific): Avgiv cñeñtRtñv th, weÁvb tKvb NUbvi mybñ` welaqtK Rvbi tPtq mvaviYfivte welaqi mvgwMK w KvuñK Rvbi tPóv Kti | wKš` Avgiv GI Rvb th, AwaKvsk cñ`tqiB wewfñw Kg KvñRi msÁv itqtQ| KvñRB, hLb GKRB mvgwRK weÁvbx iñYKxj Zvi KviY e`vL`v KiTZ Pvb, ZLb ZvtK memgq gñb ivL`tZ nq th, iñYKxj Zvi eú gvÍv itqtQ| MtelKtK Aek`B iñYKxj Zv cñ`ñU GKwU mybñ` KvñRi msÁvqb KiTZ nte| MtelYvi djvdj Dc`vcbi mgq mZñZvi mvñ_ tmB KvñRi msÁvqñbi we`wi Z weeiY w`tZ nte, hvñZ Kti cñ`ñU wKfvte cwi gvc Kiv ntqtQ cvK Zv eštZ cviñb| GñZ Kti cvK Zvi KvñRi msÁvqñbi mvñ_ wñgZ tcvY KiTj l wZvb Rvñteb th, Mtel K welaqi Dc`vcb KiTZ wMtq wK ej tZ tPtqtQb |

weÁvb AvfÁZvj äfvte cixññvthvM` (Science is Empirically Verifiable): weÁvñbi mteñKó djvdj ,tj v wewfñwZÉj Ges mgxKiñYi gva`tg Avgvñ` i Pviñvñki cñ`extK eYñv Kti | wKš` G mKj ZÉj Ges mgxKiY ZZñY DcñvMx ntq DVñe bv, hZñY bv tm ,tj vtK DcvÉ msMñ Ges wetañYi gva`tg cixññv Kti t`Lv nq| th tKvb ZÉj ZLbB e`envñvñvñvMx ntq DVñe, hLb tmB ZÉj cñvñYi Rb` wKfvte DcvÉ msMñ KiTZ nte Ges wKfvte msMñZ DcvÉ wetañY Kti Zvi fñel`ñvñv KiTZ nte, Zvi c×wZ wñ`R Kti | weÁvñbi GB `enikó`wU i agvñ ZtÉj h_v`ZvñKB cñvñY Kti bv, ZÉj wKfvte fj cñvñYZ nte Zvi etj t`q| thgb, gva`vKIñ ZÉj Abñvñv Avgiv Rvb th, tñšZ c`v_ñtj vi gñ` GKwU AvKIñ`_vKvi KvñtY th tKvb e`ñ feñó cñZZ nq Ges AvKIñYi GB m²úKñ wbfñ Kti e`ñ AvKviMZ cwi gñtYi Dci | thñZvñv GKwU eo AvKvñi e`ñ, tmñZvñv GKwU ej Oñv w`tj cñ`ex cñóB Gñm cñó | G welaqi AvfÁZvj äfvte cixññvthvM` | GKRB Mtel K GKwU ej Oñv w`tj B t`Lteb th, tmñU gñvñZ Gñm coñQ| wKš` hw` ej wU cñ`ex cñó Gñm bv cñó, Zte cñvñYZ nte th, ZÉjU mñvK bq| A_ñ, hLb Avgiv ewj th, GKwU `eÁvñK e`vL`vtK Aek`B cixññvthvM` ntZ nte, ZLb Avgiv tevñvB th, ZÉjK fj cñvñYZ Kivi Rb` kZ`ñtjv Mtel K mñ`úófvte wbañY Kti t`ñeb| hLb Mtel K Dchñwi ZÉjK fj cñvñY KiTZ e`ñ`ñteb, ZLb wZvb AwaKzi wñvñZ nteb th Zvi ZÉjU wbfñ |

th tKvb ZÉj ZLbB e`envñvñvñvMx ntq DVñe, hLb tmB ZÉj cñvñYi Rb` wKfvte DcvÉ msMñ KiTZ nte Ges wKfvte msMñZ DcvÉ wetañY Kti Zvi fñel`ñvñv KiTZ nte, Zvi c×wZ wñ`R Kti |

*eštbôZvġK cġZwôZ KġtZ
ntj weĀvġbi AvšfveMZ
`enkô`wġġK ARĖ KġtZ
nte/*

weĀvb AvšfveMZ (Science is Intersubjective): Gwġ cġqkt Lp `pZvi mvġ_ ej v nq th, weĀvb e`wbô| wġš`G aiġYi `p tNvl Yv e`wbôZv m`uġġKġGKwġ cġkġe Dġ`K Kġi | Kvi Y, tKvb weĀvbx B cġivcġi e`wbô ntZ cvġib bv| cġZwġ weĀvbx B Zvi wġġRi e`w³MZ tġŲ Yv Ųviv cġfveZ ntq tKvb bv tKvb fġve fveev`x nb| hLb wfbœ`wôfġwġ m`ubœ`ġRb weĀvbx GKwġ Mġel Yv cwġ Pvj bv Kġi GKB Dcmsnvġi tġŲQteb, ZLb weĀvġbi AvšfveMZ `enkô`wġi A_`cġZwôZ nte| A_ġ, GKRb weĀvbx hġ` GKwġ cġZ`qġK msĀwqZ Kġib Ges mKj weĀvbx Zv ešġZ cvġib, ZLb tKej gvġ cġKZ e`wbôZv cġZwôZ ntZ cvġi | weĀvbx `i gġa` cġqkt gġZi wfbœZv NġU Ges GB wfbœZv, tġv mġaviYZt cġZ`qġi KvġRi msĀvqb | cwġ gvc cġuqvġi gġa` ntq _vġK | wfbœgZ tcvġYKvix weĀvbx hġ` Mġel YwġġK cġivq cwġ Pvj bv Kġib Ges GKB djvdj cvb, ZLb gZ%ZZv `ġ nq | GwġB ntjv weĀvġbi AvšfveMZ `enkô` | weĀvbx hLb e`wbôZvi kZ`ġjv Avġivc Kġib, ZLb wZvb wġġRi cġZwôZ gvb`Ų w`ġq Zv cġZwôZ Kġib | thġnZi wZvb wġġRi GKRb e`w³-gvbġ, tmġnZi tmLġb fveMZ cġġcvZ`p wġšġi cġfve cġo | KvġRB, eštbôZvġK cġZwôZ KġtZ ntj weĀvġbi AvšfveMZ `enkô`wġġK ARĖ KġtZ nte |

*`eĀvbK ZĒġK Zvi mġVKZv
ev wġfġZvi wfbœġZ wePvi
Kiv DġPr bq, eis Zv nl qv
DġPr Avgġġ`i Pvi cvġki
cġ_extK tevSvi Rb` Zv
KZUKzDcġhvMx Zvi
wfbœġZ/*

weĀvb cwġeZġbi Rb` Dbġġ (Science is Open to Modification): GZġġY Gwġ tevSv wġġqŲ th, mġZ`i AbġmŲvb weĀvb tKvb mġR c_`wġġ`R Kġi bv | cġe`Dġj weZ me `enkô`ġK Abġmġ Kġi `ġRb weĀvbx GKB cġĀ m`uġġKġcġivcġi wfbœe`vL`vq DcbxZ ntZ cvġib | GKwġ weġkl mgġq G`ġwġ e`vL`vi Zj bvgj K`_Yv`Y wePvi Kivi tKvb c_`nqġZv _vKte bv | hġ` `ġwġ e`vL`v ci`ui wecixZgġx nq, Zġe Abgġv KġtZ nte th, `ġġUvB GKmvġ_ mġVK bq, th tKvb GKwġ fj | G i Kg eġ ZĒġcieZġmgġq fj etj cġwġYZ ntqŲ Ges DbġZi ZĒġ Ųviv cġZ`wcz ntqŲ | Zġe Gwġ gġb ivLv cġqvrb th, `eĀvbK ZĒġK Zvi mġVKZv ev wġfġZvi wfbœġZ wePvi Kiv DġPr bq, eis Zv nl qv DġPr Avgġġ`i Pvi cvġki cġ_extK tevSvi Rb` Zv KZUKzDcġhvMx Zvi wfbœġZ |

mvġwġRK weĀvġbi `enkô` (Characteristics of Social Science)

*mvġwġRK weĀvġbi ġj j ġġwġ
ntjv mvġwġRK AvPiYġK
thšġ³Kfġte ešġZ tPôv
Kiv/*

mvġwġRK weĀvb thšġ³K (Social Science is Logical): mvġwġRK weĀvġbi ġj j ġġwġ ntjv mvġwġRK AvPiYġK thšġ³Kfġte ešġZ tPôv Kiv | Gi A_`GB bq th, me mvġwġRK AvPiYB thšġ³K | wġQy mvġwġRK AvPiY iġqŲ, hv hġ³nxb Ges wġQy iġqŲ, hv A`thšġ³K | wġš` mvġwġRK weĀvbx me aiġYi AvPiY tevSvi Rb` Zj bvgj Kfġte thšġ³K ntq _vġKb | cġkġZK weĀvġbi gġZv mvġwġRK weĀvbx | GKB iKg hġ³wb`vġmi cġZeĲKZvi Ųviv mvġve`x | thgb, th NUbwġ cġi i NUbwġi KviY, tmġġġK cġeB NŲZ nte, cġi bq | GKB mvġ_ GKwġ NUbvi `ġwġ djvdj NŲZ cvġi bv | mvġwġRK weĀvġbi Aetġvnx Ges Avġivnx hġ³i h_vh_ e`envi ntq _vġK |

mvġwġRK weĀvb wbaġYġj K (Social Science is Deterministic): cġkġZK weĀvbxġi gġZv mvġwġRK weĀvbxġi G aviYvi Dci cġZwôZ th, th tKvb NUbvi wġQtb tKvb bv tKvb KviY iġqŲ | tKvb NUbvB `i ayġayGġwġZB NġU bv | cġZwġ NUbvi cġe`GKwġ NUbv KviY wġmvġe KvR Kġi | thgb, tKvb e`w³ ev tMvôxi i ġġYkġj Zv ev D`vi %wZKZvi gvġwġ wġfġ Kġi tmB e`w³ ev tMvôxi wġġVMZ thvM`Zvi Dci | mvġwġRK weĀvġbi wbaġYġj K `enkô`wġ mvġwġRK AvPiYġi gvbeZvgj K e`vL`vi wecixZ Ae`vb Kġi | gvbeZvgj K weġePbv th tKvb KgġvġŲi fveMZ AvPiYġK weġePbv Kġi | Ab`w`ġK, wbaġYġj K `wôfġwġ GKwġ e`MZ weġkġġYi Dci weġePZ nq | thLġb GKRb gvbeZvex hġ³ t`ġeb th, GKwġ `fveRvZ cġuqvġi djvdj wġmvġe gvbġ | GKwġ wġvġš`-tġŲ, tmLġb mvġwġRK weĀvbx ej ġeb th, Gwġ GKwġ mġaviY iġci djvdj |

mvgwRK weÁvb mvariY (Social Science is General): mvgwRK weÁvb tKvb NUbv ev cõtÁi mvgwRK ifc Ges mæúKPK tevSvi Rb` mþÓ nq| mvariYxKiþYi gra`tgB GKwU mvgwRK ZËj ev mvgwRK mnmæútkP DcþhvMxZv ep`x cvq| GKwU ZËj GKwU mvgwRK cõtÁi hZ e`vcK e`vL`v w` tZ m`fjg nte, tmuU ZZ tekx DcþhvMx etj wefepZ nte| AZGe, tfrvtUi AvPiþYi GKwU Abgvb hw` hþ mæcðvtqi cõtZ cõhvR` nq, Zte Zv eq` gvbþi i t`fj tZgb DcþhvMx bvl ntZ cvti | GKBFvte, agfðZvi GKwU ZËj Lkõvb` i cõtZ cõhvR` ntj Zv gmj gvbþ` i cõtZ tZgb DcþhvMx nte bvl | hw` I mvgwRK weÁvb mvgZ cwiwai mvgwRK AvPiY, ev RbþMvõxi GKwU mvgZ Astki e`vL`v w` tq`i` Ktib, tkl chS` Zvi j`fjw` _vtK Zvi djvdtj i e`vL`vtK cõmwi Z Kti epEi RbþMvõxi Ab`vb` AvPiYtKI e`vL`v Kiv|

hw` I mvgwRK weÁvb mvgZ cwiwai mvgwRK AvPiY, ev RbþMvõxi GKwU mvgZ Astki e`vL`v w` tq`i` Ktib, tkl chS` Zvi j`fjw` _vtK Zvi djvdtj i e`vL`vtK cõmwi Z Kti epEi RbþMvõxi Ab`vb` AvPiYtKI e`vL`v Kiv|

mvgwRK weÁvb m`fvte e`vL`vthvM` (Social Science is Parsimonious): cõKwZK weÁvbxl gtZv mvgwRK weÁvbxl tKvb weqtk Aí msL`K Pj tki gra`tg e`vL`v w` tZ mþÓ nb| AþBK t`fj tB, bZb Pj tki msthvRb e`vL`vi fjgZvtK ep`x Kti etU, Zte Zv Zvi e`vL`vtK AþKUV RwUj I Kti tZvtj | e`Ztct`fj, Awak Pj tki msthvRb cõtqB e`vL`vi mvariYxKiYtK e`vnZ Kti | KviY, wKQyPj K GKwU mjbw` RbþMvõxi Dci GK aiþYi cõfve tdj tZ cvti, Ges Ab` RbþMvõxi Dci wfbæcõfve tdj tZ cvti | Gw Dþj E-Kiv cõtqvRb th, mvgwRK weÁvbi m`fvte e`vL`vthvM` `enkõwU gvbeZver`x` w`fiv` mæubæcõUZt` i KvQ t`tk mgvtj vPbvi mæfjxb nq| A`f, gvbeZver`xiv hþ` tZvtj b th, tKvb cõtÁtK wZbwU ev Pviw Pj tki gra`tg e`vL`v cõvb Kij tmB e`vL`wU m` ntZ cvti, wKŠ` tmB e`vL`v mæúY` bvl ntZ cvti | KviY, tmB cõtÁi wCõtþ Avtiv AþBK Pj K w`qvkvxj _vktZ cvti | Avgiv weÁvbi `enkõ`i Avtj vPbvq Dþj E-Ki wQ th, hw` weÁvbxl j`fj nq e`vL`vi m`Zv I mvi j`, Zvntj Aí msL`K Pj K wbeþb nte _i`ZcY` Avi hw` j`fjw` nq e`vL`vi fjgZv` I fwe`vYxi fjgZv ep`x, Zte AwakmsL`K Pj tki msthvRb nte ht`vchþ|

mvgwRK weÁvb mjbw` R (Social Science is Specific): cõKwZK weÁvbxl gtZv mvgwRK weÁvbxl Zvi cwi gvtci c`wZtK mjbw` R Kitz Pvb| mvgwRK weÁvbi Rb` mjbw` R msAv cõtvtbi weqU weþkl frte _i`ZcY` KviY, mvgwRK weÁvbxl v Ggb me cL`q e`envi Ktib hv A`úofvte msÁwqZ _vtK| thgb, agfðZv, i`fjYkxj Zv, wekþm I AvPvi, BZ`w` | hLb GKrb cõKwZK weÁvb MwZtK Lþ mjbw` Rfvte msÁwqZ Ktib, ZLb Zv weqU mæútk` mvariY Abþvetbi tþq Lþ tekx wfbæng bvl | wKŠ` hLb mvgwRK weÁvb agfðZv Ges i`fjYkxj ZvtK msÁwqZ Ktib, ZLb mvariY fvlvq cþvj Z msAv Ges m`fvte cõE msAvi gta` AþBK cv`R` cwi j`fjZ nq| GB cv`R` _tj vtK wZwb cix`fjv wbi`fjvi gra`tg Kwgtq AvbþZ tþón Ktib|

cõKwZK weÁvbxl gtZv mvgwRK weÁvbxl Zvi cwi gvtci c`wZtK mjbw` R Kitz Pvb|

mvgwRK weÁvb AwfÁZvj äfvte cix`fjvthvM` (Social Science is Empirically Verifiable): mvgwRK weÁvbi cõvebv Ges ZËj tjtK e`envi thvM` ntZ ntj G` tjtK ev`e RMtZ cix`fjvthvM` ntZ nte| `iagvI Ggb e`e` Dc`vcB Kij B þte bv th, awgR`Zvi mvt` i`fjYkxj Zvi GKwU FYvZK mæúK`i` tqtQ| GB cõvebvi Ašfß` `wU Pj K wKfvte cwi gvc Ges cix`fjv Kiv nte Zvi c`wZtKI wþ` R Kitz nte| þh cwi w` wZtZ GKwU cõE cõvebv fj etj cõwYZ nte, tmB AwfÁZvi thvM` cwi w` wZwZtK eYþvi fjgZv cõKwZK weÁvbi gtZv mvgwRK weÁvbxl _vktZ nte| wK c`wZtZ GuUtK fj etj cõwY Kiv hvte Zvi I wek` eYþv _vktZ nte| thgb, agxq wekþm _tj vtK thgb chþe`fjy Kti cix`fjv wbi`fjv Kiv hvq bv, tZgwb GKwU weþkl ag`ev etY` RbþMvõx Zvt` i wekþtmi Abþvmb _tj v Abþxj b Kij I gtb cõtY tm _tj v Zviv wekþm Ktib bv Ggb e`e`tKI

mvgwRK weÁvbi cõvebv Ges ZËj tjtK e`envi thvM` ntZ ntj G` tjtK ev`e RMtZ cix`fjvthvM` ntZ nte|

chēŋt̄Yi gva'tg cixŋv Kiv hvq bv | AZGe, AwfÁZij ä cixŋvi Rb" mvgwRK cĉÄ, t̄jvi eYŋvi mvt_ mvt_ tm, t̄jvi cwigvc | cixŋv c×wZi wek` weeiY_vKt̄Z nte |

GKwU mvgwRK `eÁmbK cixŋvŋK th gvŋvq chŋŋfite mjbw` ŋ c×wZi gva'tg eYŋv Kiv nte, Ab'vb" mvgwRK weÁvbx` i | GKB gvŋvq tmB c×wZt̄K Dcj wä Kti GKB iKg djvdj cĉBi Rb" cbi vq cixŋvU cwi Pj b vq mŋg n̄Z nte | hw` Zv bv nq, Zvntj tevSv hvte th, welquU h_vh_fvte emYŋ nq vb Ges GKRb mvgwRK weÁvbx t̄t̄K Ab" mvgwRK weÁvbx i gta" avi YwU i Av'vb cĉvb Nt̄U vb | At̄bK mvgwRK Mtel Yvq, G ai t̄Yi thvMvthvMi Afve j ŋ" Kiv hvq | dj` t̄fc, wfbetĉŋvct̄U mvgwRK weÁvbxMY wfbewfbedjvdj, Ggb wK, ci` ūi wetivax djvdj | t̄ctq_vt̄Kb | gj K_wU nt̄jv, Mtel YvŋK e`wō n̄Z nt̄j Gi cĉ"q, cwi gvc, c×wZi AvšFveMZ thvMvthvMwU `vncZ n̄Z nte |

mvgwRK weÁvb AvšFveMZ (Social Science is Intersubjective): GKwU mvgwRK `eÁmbK cixŋvŋK th gvŋvq chŋŋfite mjbw` ŋ c×wZi gva'tg eYŋv Kiv nte, Ab'vb" mvgwRK weÁvbx` i | GKB gvŋvq tmB c×wZt̄K Dcj wä Kti GKB iKg djvdj cĉBi Rb" cbi vq cixŋvU cwi Pj b vq mŋg n̄Z nte | hw` Zv bv nq, Zvntj tevSv hvte th, welquU h_vh_fvte emYŋ nq vb Ges GKRb mvgwRK weÁvbx t̄t̄K Ab" mvgwRK weÁvbx i gta" avi YwU i Av'vb cĉvb Nt̄U vb | At̄bK mvgwRK Mtel Yvq, G ai t̄Yi thvMvthvMi Afve j ŋ" Kiv hvq | dj` t̄fc, wfbetĉŋvct̄U mvgwRK weÁvbxMY wfbewfbedjvdj, Ggb wK, ci` ūi wetivax djvdj | t̄ctq_vt̄Kb | gj K_wU nt̄jv, Mtel YvŋK e`wō n̄Z nt̄j Gi cĉ"q, cwi gvc, c×wZi AvšFveMZ thvMvthvMwU `vncZ n̄Z nte |

mvgwRK weÁvbt̄K weÁvbt̄i ghP` v t̄ctZ nt̄j cŋwZ avi Yv Ges wekjm̄t̄K cĉZwbqZ P'vtj Ä Ki t̄Z nte Ges ev`eZvi m̄t̄/2 msMwZcy`bZb e'vL'v cĉvb Ki t̄Z nte |

mvgwRK weÁvb cwi eZŋbi Rb" DbŋP (Social Science is Open to Modification): t̄Kvb mvgwRK ZĚB Awb w ŋKuj ati wŋt̄K_vt̄K bv | Kvi Y, mgvR cĉZwbqZ cwi eZŋkuj | dt̄j mvgwRK AvPi YI cĉZwbqZ cwi ewZŋ n̄Z_vt̄K | GB cwi ewZŋ cwi w`wZt̄Z bZb ZĚ; D̄t̄eŋwPZ nq, hvi Dci wfiE Kti bZb e'vL'v `Zwi nq | KvhZt, mvgwRK weÁvb At̄bK cĉÄ wbt̄q KivR Kti, hv ivR%wZK, `vkōK, agŋq Ges mvs`wZK gj` teva I `kŋ ŋviv cŋweZ nq | GB mvgwRK `kŋ Ges gj` teva, t̄jv weÁvbt̄i Zj b vq Avt̄cŋŋKfvte Kg cwi eZŋkuj | hLb GKRb mvgwRK weÁvbx awgRZvŋK Ab" `ewkō" w` t̄q e'vL'v Ktib, ZLb wZwb `bwZK AvPi Y, Abjvmb j sNt̄bi kw`-, BZ`w` m`ūmKZ tgŋj K agŋq wekjm, t̄j vt̄K P'vtj Ä Ktib | GLvfb wec`wU nt̄jv th, GKRb mvgwRK weÁvbx wbt̄Ri G ai t̄Yi wekjm ŋviv cŋweZ n̄Z cvtib | hw` mvgwRK weÁvbx tmB me wekjmgy³ bv n̄tq Mtel Yv Kti_vt̄Kb, Zte Zv cwi eZŋbi Rb" DbŋP_vt̄K bv | mvgwRK weÁvbt̄K weÁvbt̄i ghP` v t̄ctZ nt̄j cŋwZ avi Yv Ges wekjm̄t̄K cĉZwbqZ P'vtj Ä Ki t̄Z nte Ges ev`eZvi m̄t̄/2 msMwZcy`bZb e'vL'v cĉvb Ki t̄Z nte |

weÁvb Ges mvgwRK weÁvbt̄i gta" Zj bv (Comparison between Science and Social Science)

`eÁmbK KgRvU cĉqkt AvteM, T̄wU Ges KLt̄bv hŋ³ nxbZv ŋviv wbt̄`KZ nt̄j | `eÁmbK KgRvU Ab'vb" KgRvU t̄t̄K ZvrcheYfvte Abb" |

hw` I kZ kZ eQi ati weÁvbt̄i Aw`Zj Avgvŋ` i mvt_ we`gvb Ges G chŋ-weÁvb wel t̄qi Dci mvgvnx msL`K cŋ`K | cĉÜ t̄j Lv n̄t̄qQ, wKš` weÁvbx bq Ggb e`w³ Ges wŋŋvberk weÁvbx` i KvŋQ GLbI wel quU tnqj xcYŋt̄q t̄MŋQ | weÁvb KLt̄bv i nm`RbK, Avevi KLt̄bv cweĀ AvPvi wmvte cĉZfvZ n̄t̄qQ | weÁvb c`wU cĉKZ A_wU tevSv memgqB LwŪZ t̄t̄K t̄MŋQ | weÁvb t̄Kvb i nm`RbK ev cweĀ AvPvi PPPbq | Ab'vb" gvbe KgRvŋÜi gZ weÁvb PPP nt̄jv Av`kGes m`te" ev`eZvi gta" GKwU mgŋq | `eÁmbK KgRvU cĉqkt AvteM, T̄wU Ges KLt̄bv hŋ³ nxbZv ŋviv wbt̄`KZ nt̄j | `eÁmbK KgRvU Ab'vb" KgRvU t̄t̄K ZvrcheYfvte Abb" |

weÁvbt̄K msÁwqZ Kivi t̄ŋt̄t̄ weÁvbt̄i welqe`i mvt_ c×wZt̄K_wj t̄q t̄jvi cĉYZwU gj Zt cĉvb mgm'v mwō Kti t̄Q | Kvi Y, At̄bK gtb Ktib th, weÁvbt̄i ghP` v t̄ctZ nt̄j weÁvm=ŋZ welqe`' wbt̄q Aa`qb Ki t̄Z nte | cĉk̄ent̄jv th, G ai t̄Yi welqe`' t̄jv wK? weÁvbt̄i wR`welqe`' i t̄q t̄Q wK? Aby cigvYy cŋY-t̄Kvl, BZ`w` i gZv wKQy wel t̄qi D̄t̄j Kiv t̄Mŋ | GwU wōwōZ Kti ejv hvte bv th weÁvbt̄i wR`^t̄Kvb wōwō ŋ welqe`' i t̄q t̄Q | Kvi Y, weÁvbm=ŋZ c×wZ Abjvi Y Kti Aa`qbKZ th t̄Kvb welqe`B weÁvbt̄i welqe`' n̄Z cvtib | Zte hv wōwōZ Kti ejv hvte Zv nt̄jv, me wel t̄qi Aa`qbB weÁvb bq | thgb, Mh

bŕŕĪ wbtq c`v_ŕeÁvb I tR`wZIZĒ; Dfŕtqb Aa`qb Kti | wKŠ`c`v_ŕeÁvb weÁvtbi ghŕ v
cvq, A_P tR`wZIZĒ; cvq bv| tR`wZIZĒ; Mŕ bŕŕĪĪ Ae`vb I gvbe Rŕetbi weŕfbŕeNUbv
wbtq Aa`qb Kti Ges Zvŕ`i gŕa` m=úK`vcŕbi gva`tg fiel`r NUBvej xi fiel`ŕYx Kivi
tPŕv Kti | tR`wZIZĒ; G mKj KgŕvŪ m=ŕj Z Ávtbi GB kvLv weÁvb wnmvŕe weteŕPZ nq
bv| th KviŕY tR`wZIZĒ;K weÁvb wnmvŕe wetePbv Kiv nq bv, tmiŪ ntjv Gi welqe`
Aa`qtb e`eüZ c×wZ, welqe`bq|

G Qivl, weÁvtbi AwaKvsk welqe` cŕZwbqZ cwi ewZŕ nt`Q| weÁvbm=SZ tKvb Ávb G
gŕtZ`eÁwbK gtb ntj I fiel`tZ Zv A`eÁwbK etj weteŕPZ ntZ cvŕi| Ávtbi tKvb
mvari Y ev weŕkl welqe`i Rb`bq, weÁvb Gi c×wZi Rb`B Abb`| AZGe, mvgwRK weÁvb
weÁvb wKbv, G weZKŕŪ AaxZ welqe`i cwi tŕŕŕtZ wetePbv bv Kti c×wZi cwi tŕŕŕtZ
wetePbv Kij mgvavbŪ mnR ntq hvq| tKvb cŕŕŠK weZtK`bv wŕtq `ŕaitYi weÁvtbi gŕa`
wŕj I Awŕj ŕj vŕK chŕŕj vPbv Kti weÁvbm=SZ MŕelYvi c×wZ I tKŠkj cŕŕŕMi tŕŕĪ
Gi dj vŕj ŕj v wetePbv Kiv DŕPr| hŕ I weÁvtbi tŕŕĪĪ, me`ewkŕ` cŕivcŕi mZ Zvi mŕt`
mvgwRK weÁvtbi tŕŕĪĪ cŕŕŕM Kiv hvq bv Ges AtbK tŕŕĪĪ, Zvi cŕŕŕRbi nq bv, Zel
mvgwRK weÁvtbi weÁvbm=SZ ghŕ vŕK A`ŕKvi Kiv hvq bv| KviY, Avŕiv AvŕMB Dŕj
KtiwQ th, weÁvtbi ghŕ v Zvi c×wZ ŕviv wbaŕŕi Z nq, welqe` ŕviv bq| mvgwRK weÁvtbi
AbŕiŪŕtb chŕŕŕY I cwi gŕc, cixŕŕv wixŕŕvi gva`tg hvPvB Ges fiel`ŕYxKiŕYi mKj
weÁvbm=SZ c×wZB cŕivcŕi AbŕiY Kiv nq|

*mvgwRK weÁvtbi AbŕiŪŕtb
chŕŕŕY I cwi gŕc, cixŕŕv
wixŕŕvi gva`tg hvPvB Ges
fiel`ŕYxKiŕYi mKj
weÁvbm=SZ c×wZB cŕivcŕi
AbŕiY Kiv nq|*

mvi vsk

GB cvŕV weÁvb I mvgwRK weÁvtbi `ewkŕ` wbtq Avŕj vPbv Kiv ntŕtŕQ| weÁvtbi h_vh_Zv
wŕfŕ Kti Zvi c×wZ cŕŕŕMi gŕa`, welŕqi gŕa` bq| A_ŕ, th tKvb welq wbtq MŕelYv
Kiv gvŕtb `eÁwbK MŕelYv bq, eis tKvb c×wZ wKŕŕe e`envi Kiv ntŕtŕQ Zvi Dci wŕfŕ
Kite Mŕew Z welqŕŕi `eÁwbK ghŕ v| mvgwRK weÁvtbi gj jŕŕŕŪ ntjv, mvgwRK
AvPiYŕK thŕŕKŕŕe eŕŕZ tPŕv Kiv| GKRb mgvR MŕelŕKi KvŕŕK ZLbB weÁvtbi
ghŕ v t`qv nŕe, hLb t`Lv hvŕe th, mvgwRK weÁvbx weÁvtbi wŕqg-bŕwZ AbŕiY Kti Zvi
MŕelYwŪ cwi Pŕj bv KtiŕQb|

cvfVvEi gj`vqb

`be⁹³K c0ke

mWVK DEti i cvfk WJK (v) wPy w`b -

1| weAvbxi v _____ wfvEK wetkLW Kti _vtKb|

- K. GK-Kvi Y
- L. `0-Kvi Y
- M. eü-Kvi Y
- N. me Kvi Y

2| weAvbx` i gta` gtZi wfbZv NtU _vtK:

- K. DcvEi ai tYi tqtT
- L. KvRi msAv I cwi gvtci tqtT
- M. DcvE msMni tqtT
- N. KvRi DcvE e`envti i tqtT |

3| mvgwRK weAvbtK weAvtbi ghP v tctZ ntj :

- K. cPij Z avi YvtK ci xqv-wbi xqv Ki tZ nte
- L. cPij Z avi YvtK Mtel Yv wi tcvU@cKvk Ki tZ nte
- M. cPij Z avi Yv I wekymtK cieZxcRtbv Kvto tctQvtZ nte
- N. cPij Z avi Yv I wekymtK c0ZwbqZ P`vtj Ä Ki tZ nte |

msvqtB c0ke

1| ÖweAvb AvfAZij äfvte ci xqvthvM0 - e`vL`v Ki`b|

2| ÖmvgwRK weAvb cwi eZtbi Rb` DbvP0 - e`vL`v Ki`b|

i Pbv gj K c0ke

1| weAvtbi `enkó` Avtj vPbv Ki`b|

2| mvgwRK weAvtbi `enkó` Avtj vPbv Ki`b|

3| weAvb I mvgwRK weAvtbi cv_R` D`vni Ymn Avtj vPbv Ki`b|

Mtel Yv cōμqv
Research Process

GB cvW tk̄t̄l hv Rvbn hvte —

- Mtel Yv cōμqv wK
- Mtel Yv cōμqvi avcmgn
- Mtel Yv cōμqvi `enkó`

Mtel Yv cōμqv wK (What is Research Process)?

cōμj Z avi Yv Abhvqx, Mtel Yv cōμqv nt̄jv Ggb wKQy KgRvŪ, hv Z` m̄sMōni gva`tg mgvt̄Ri weifb̄ael q m̄=út̄K[©]D^m m̄gm̄vi mgravb t̄ct̄Z m̄vnh` K̄ti | D^m m̄gm̄v, t̄jv t̄Kvb m̄ybw` ō wełt̄qi Dci nt̄Z cv̄ti | thgb, GKwU w̄bw` ō Gj vKvq N̄ti N̄ti `v` t̄mev t̄ct̄Q t̄` qvi j̄t̄ŋ` b̄xwZ w̄baŋ KMY w̄m̄x̄v̄š-w̄b̄t̄Z cv̄i t̄Qb bv th, wK aīt̄Yi KgŋPx MōY Kīteb | GKwU KgŋPx nt̄Z cv̄ti, ōvti ōvti `v` KgŋKZŋ t̄mev cōv̄t̄bi gva`tg Ges Ab`wU nt̄Z cv̄ti, t̄mev MhxZv̄t̄K `v` t̄mev t̄Kt̄` a w̄łt̄q t̄mev Mōt̄Y Dōx Kivi gva`tg | w̄m̄x̄v̄š-Mōt̄Y m̄gm̄v %Zwi nevi Kvi Y nt̄jv th, b̄xwZ w̄baŋ K̄t̄i K̄v̄t̄Q G wełt̄q t̄Kvb Z` t̄b | G i Kg cwi w̄w̄Zt̄Z, `ŋU w̄f̄b̄e Gj vKvq `ŋU KgŋPx̄t̄K w̄f̄b̄e v̄t̄e cwi Pw̄j Z K̄ti Zvi djv̄t̄j i w̄f̄w̄Ēt̄Z b̄xwZ w̄baŋ KMY w̄ K w̄b̄t̄ Rbv t̄ct̄Z cv̄ti b | Mtel Yv cōμqv Ab̄j̄ni Y K̄ti m̄vgw̄RK weÁv̄t̄bi th t̄Kvb ZĒMZ cōk̄ie mgravb | Ab̄j̄m̄Ūvb K̄ti cv̄l qv th̄t̄Z cv̄ti | thgb, w̄k̄i w̄qZ mgvt̄R t̄Kb Av̄ḡj vZw̄šKZv Ges t̄ck̄iMZ wēt̄kl̄v̄qy ep̄x t̄ct̄q̄t̄Q, ev m̄vgw̄RK m̄=út̄K[©] ḡt̄a` Am̄gZv ep̄x t̄ct̄j `w̄i` a ep̄x cv̄q wK bv, G aīt̄Yi cōk̄ie mgravb Mtel Yvi gva`tgB m̄wK f̄v̄t̄e cv̄l qv hvq |

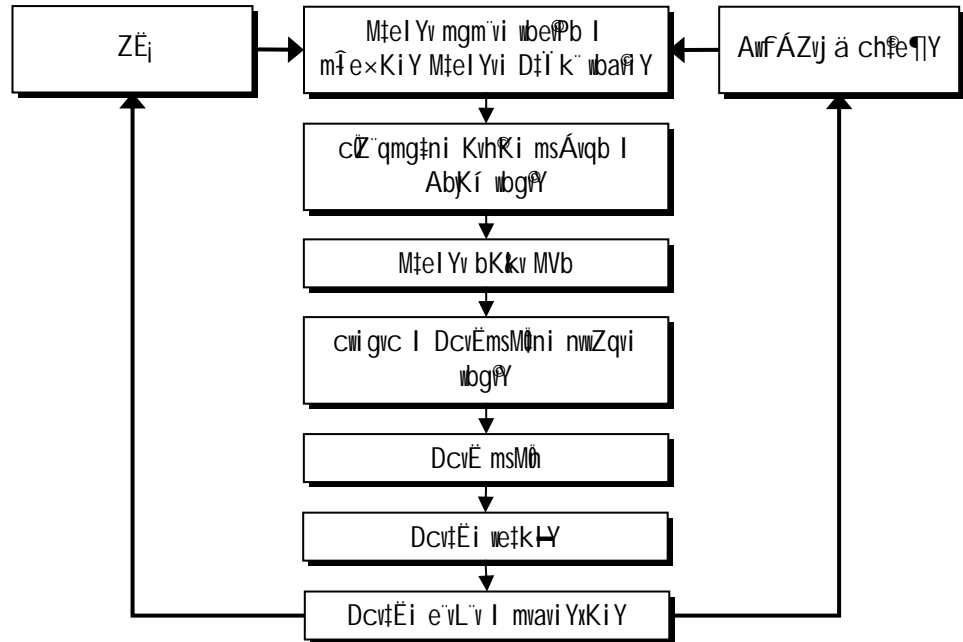
m̄vgw̄RK weÁv̄t̄bi Ašf̄ß DcvĒ m̄sMōni t̄Kškj, t̄jvi cōμj Z e`env̄t̄i Ašw̄b̄h̄Z avi YwU Mtel Yv c̄x̄w̄Z̄t̄K j̄ŋ` AR̄t̄bi Dcvq w̄nm̄v̄t̄e wēt̄ePbv K̄ti t̄Q | GB `w̄ó f̄w̄z Abhvqx, m̄vgw̄RK m̄gm̄v mgravb ev m̄vgw̄RK weÁv̄t̄bi ZwiĒK Ab̄ḡv̄b, t̄jv t̄K cix̄ŋv Kivi j̄t̄ŋ` Z` m̄sMōni Dcvq w̄nm̄v̄t̄e Mtel Yv c̄x̄w̄Z̄t̄K e`env̄i Kiv nt̄q̄t̄Q | wKš` m̄= cōZ Mtel Yv c̄x̄w̄Z̄t̄K m̄vgw̄RK weÁv̄t̄bi cwi w̄ai evB̄t̄i l e`env̄i Kiv nt̄`Q | thgb, c̄t̄Yi evRvi RvZK̄i t̄Yi Rb`, w̄beŋP̄t̄b gZvgZ Rix̄t̄ci Rb`, Ggb wK, wēt̄kl̄ t̄Kvb wełt̄qi Dci gZvgZ hvP̄vB-Gi Rb` | th D̄t̄l̄t̄k`B e`env̄i Kiv nDK bv t̄Kb, Mtel Yvi gj j̄ŋ` GKwUB Ges t̄m̄U nt̄jv R̄xeb l RMr m̄=út̄K[©] th t̄Kvb m̄gm̄v̄t̄K m̄wK f̄v̄t̄e Dcj w̄ai gva`tg weÁv̄b̄m̄=šZ Ávb AR̄ŋ Kiv | weÁv̄b̄m̄=šZ Ávb h̄y³ Ges Awf̄ÁZvi Dci w̄f̄w̄Ē K̄ti AwR̄Z nq | weÁv̄b̄xi v GB AwR̄Z Áv̄t̄bi `v̄ext̄K gj `v̄q̄t̄bi Rb` thšw̄³ K l Awf̄ÁZvj ä h_v_Zvi (logical and empirical validity) gvb` Ū `ŋU cōq̄m̄ K̄ti b | GB `ŋU gvb` Ū t̄K th KgR̄v̄t̄Ūi gva`tg ev`t̄e i f̄cw̄qZ Kiv nq t̄mB KgR̄v̄Ūm̄gn̄t̄K Mtel Yv cōμqv et̄j | Av̄t̄iv m̄ybw` ō K̄ti ejv hvq th, Mtel Yv cōμqv nt̄jv t̄mB m̄Kj KgR̄v̄t̄Ūi GKwU m̄weR̄ cwi K̄i bv, hvi gva`tg weÁv̄bx Áv̄t̄bi Āt̄š̄t̄v̄q w̄b̄t̄R̄t̄K w̄b̄t̄q̄m̄RZ K̄ti b | GwU weÁw̄b̄K Ab̄j̄m̄Ūv̄t̄bi GKwU Av` k̄ŋ f̄c |

Mtel Yvi gj j̄ŋ` GKwUB
Ges t̄m̄U nt̄jv R̄xeb l RMr
m̄=út̄K[©] th t̄Kvb m̄gm̄v̄t̄K
m̄wK f̄v̄t̄e Dcj w̄ai gva`tg
weÁv̄b̄m̄=šZ Ávb AR̄ŋ Kiv |

Mtel Yv cōμqvi weifb̄oavc (Different Stages in a Research Process)

Mtel Yv cōμqvi m̄weR̄ cwi K̄i bv ev`ev̄q̄t̄bi Rb` KZ, t̄jv w̄bw` ō avc Ab̄j̄ni Y Kīt̄Z nq | Mtel Yv cōμqv th m̄ybw` ō avc, t̄jv Ab̄j̄ni Y Kiv nq t̄m, t̄jv nt̄jv: Mtel Yv m̄gm̄vi w̄beŋP̄b

I m̄fexKiY; cZ̄qmḡni Kv̄hR̄i ms̄Ávqb I Ab̄K̄i w̄bḡŲ; M̄tel Yv bK̄kv MVb; cwi gvc I Dcv̄ĒmsM̄ōni n̄wZ̄qvi w̄bḡŲ; Dcv̄Ē ms̄M̄ō; Dcv̄Ēi w̄tk̄Ų; Ges Dcv̄Ēi ēvL̄v I m̄vavi YxKiY | GB avc̄, t̄j v̄t̄K μg Ab̄m̄v̄i m̄vR̄v̄j w̄t̄ḡē³ ijc̄ t̄b̄t̄e |



ŲP̄T̄ 1: M̄tel Yv c̄Ųq̄vi w̄w̄f̄b̄r̄avc

M̄tel Yv c̄Ųq̄vi c̄ŲZ̄w̄ avc̄ cvī ūwi K̄fv̄t̄e GK̄w̄i Dci Av̄t̄i K̄w̄ w̄b̄f̄Ųk̄j | thgb, Dcv̄Ē ms̄M̄ō Kivi c̄t̄ēthgb Dcv̄Ē w̄tk̄Ų m̄ǣ bq, t̄Z̄ḡwb̄ M̄tel Yvi w̄el qē ūm̄Ųt̄K̄h̄t̄_ō avi Yv bv̄ ūK̄t̄j Dc̄th̄M̄x̄ Ab̄K̄i MVb Kiv m̄ǣ n̄t̄ē bv̄ Ges h̄_vh_ Dcv̄Ē w̄tk̄ŲYi c̄x̄w̄Z̄ w̄baŲY Kiv h̄v̄t̄ē bv̄ | GK̄B̄fv̄t̄e, h̄w̄ Dcv̄Ē w̄tk̄ŲYi c̄x̄w̄Z̄ I t̄K̄Ųkj Av̄t̄M̄ t̄_ŲK̄ w̄baŲY Kiv bv̄ nq, Z̄t̄e h̄_vh_ M̄tel Yv bK̄kv MVb Kiv h̄v̄t̄ē bv̄, ev̄ Dcv̄Ē ms̄M̄ōni n̄wZ̄qvi w̄bḡŲ Kiv h̄v̄t̄ē bv̄ | Ach̄ŲB̄ bḡbv̄ w̄bēP̄b ev̄ Ac̄ix̄ŲŲth̄M̄ Ab̄K̄i w̄bḡŲYi ḡv̄āt̄ḡ GK̄R̄b̄ M̄tel K̄ Z̄vi M̄tel Yvi R̄b̄ Ac̄i Yx̄q̄ ŲŲZ̄m̄v̄ab̄ Ki t̄Z̄ cv̄t̄i b̄ |

h̄w̄ M̄tel Yw̄U ēvL̄ v̄ḡj K̄ bv̄ n̄t̄q̄ ēȲŲv̄ḡj K̄ nq, Z̄t̄e M̄tel Yv c̄Ųq̄vi w̄ŲZ̄x̄q̄ av̄t̄c̄ Ab̄K̄i w̄bḡŲYi t̄K̄ib̄ c̄Ųq̄R̄b̄ n̄t̄ē bv̄ |

m̄vavi Yfv̄t̄e, GB avc̄, t̄j v̄ Ḡw̄Ųt̄ḡ GK̄w̄U M̄tel Yv c̄Ųq̄v̄t̄K̄ m̄ǣŲb̄K̄iv̄ h̄v̄q̄ bv̄ | Z̄t̄e Ḡw̄U ḡt̄b̄ i vL̄v c̄Ųq̄R̄b̄ th, m̄v̄ḡw̄RK̄ M̄tel Yvi c̄K̄w̄Z̄, t̄c̄ŲŲvc̄U, m̄ḡq̄ I ūŲf̄w̄Z̄ w̄f̄b̄z̄vi K̄vi t̄Y GB avc̄, t̄j vi w̄ēw̄i Z̄ w̄ēi t̄Yi t̄Ųt̄Ī w̄f̄b̄z̄v̄ ūK̄t̄Z̄ cv̄t̄i | thgb, h̄w̄ M̄tel Yw̄U ēvL̄ v̄ḡj K̄ bv̄ n̄t̄q̄ ēȲŲv̄ḡj K̄ nq, Z̄t̄e M̄tel Yv c̄Ųq̄vi w̄ŲZ̄x̄q̄ av̄t̄c̄ Ab̄K̄i w̄bḡŲYi t̄K̄ib̄ c̄Ųq̄R̄b̄ n̄t̄ē bv̄ | K̄vi Y, ēȲŲv̄ḡj K̄ M̄tel Yvq̄ Aur̄ĀZ̄ij ä m̄vavi Yx̄Ki t̄Yi ḡv̄āt̄ḡ Ab̄K̄i w̄bḡŲY Kiv nq̄ f̄w̄el̄r̄ M̄tel Yvq̄ c̄ix̄ŲŲv̄ K̄t̄i t̄_Lvi R̄b̄ | GK̄ḡv̄Ī ēvL̄ v̄ḡj K̄ M̄tel Yvq̄ Ab̄K̄i c̄ix̄ŲŲv̄ Kiv nq̄ | M̄tel Yvi c̄K̄w̄Z̄ h̄v̄B̄ t̄nv̄K̄ bv̄ t̄K̄b̄, M̄tel Yv c̄Ųq̄vi avc̄, t̄j v̄t̄K̄ Av̄t̄iv̄ w̄ēw̄i Z̄fv̄t̄ē m̄vR̄v̄t̄bv̄ th̄t̄Z̄ cv̄t̄i | h̄w̄ I c̄Ųiv̄ M̄ŲŲt̄Z̄ GB avc̄, t̄j vi w̄ēw̄i Z̄ Av̄t̄j v̄P̄bv̄ Kiv n̄t̄q̄Ų, Z̄ēl GK̄w̄U avi Yv t̄_evi R̄b̄ M̄tel Yv c̄Ųq̄vi avc̄, t̄j v̄ w̄K̄ŲŲv̄ m̄s̄ŲŲŲB̄fv̄t̄ē Av̄t̄j v̄P̄bv̄ Kiv n̄t̄j v̄ |

M̄tel Yv m̄gm̄vi w̄bēP̄b I m̄fexKiY (Selection and Formulation of Research Problem): GK̄w̄U M̄tel Yv c̄wi P̄j̄ b̄vi t̄Ųt̄Ī M̄tel K̄t̄K̄ c̄Ųt̄ḡB̄ M̄tel Yv̄th̄M̄ GK̄w̄U m̄gm̄v̄ w̄bēP̄b̄ Ki t̄Z̄ nq̄ | M̄tel Yv m̄gm̄vi D̄m̄ē n̄t̄Z̄ cv̄t̄i t̄K̄vb̄ Z̄w̄ĒK̄ c̄Ųw̄ebv̄ t̄_ŲK̄, ev̄ t̄K̄vb̄ m̄v̄ḡw̄RK̄ m̄gm̄v̄ t̄_ŲK̄ | ŲK̄Ų Z̄w̄ĒK̄ c̄Ųw̄ebv̄ ev̄ m̄v̄ḡw̄RK̄ m̄gm̄v̄, t̄j v̄ GZ̄ ēv̄c̄K̄ Ges m̄vavi Y

n tq _vtK th, MtelYv cõuqvi gva`tg KgRvU cwi Pvj bv Kiv Mtel`Ki ct`l Am`e ntq cto | Kv`RB mgm`vU`K (tmU Zwi`EK ev cõtqwmK, hvB tnvK bv tKb) MtelYv`thvM` Kivi Rb` mjbw`õfvte Zx² Kti Zj`tZ nte | tm j`t`l, AZxtZ cwi Pwj Z MtelYv ev Zwi`EK we`tk`Y m`nj Z eB cy`K ch`fj vPbv Ki`tZ nte | Gi dtj, MtelK th we`tq MtelYvi Rb` AvMõx, tm we`tqi Dci we``gvb Ávtbi GKU mst`k`-`Zwi nq, we``gvb Ávtbi gta` wK wK dvK i`tqQ Zv aiv cto Ges we`l qe`-`tK mjbw`õfvte MtelYv`thvM` Kti Zj`tZ mrvh` Kti |

GKU D`vniY t`qv hvK | aiv hvK, GKRb MtelK õmsNvZõ we`tq MtelYv Ki`tZ Pvb | wKŠ` mgm`v ntj v, msNvZ we`l qW GZ e`vcK th, G we`tq mi vmi MtelYvq AeZxY`nl qv Am`e | msNvZ we`rfb`ecKvi ntq _vtK | thgb, ivR`õwZK msNvZ, mvgw`RK msNvZ, RvMZm`E`v`f`v`EK msNvZ, A_`õwZK msNvZ, agr`õ msNvZ, cwi ewi K msNvZ, BZ`w` | MtelK Gi tKvbU wbtq MtelYv Ki`teb cõ`tg Zv wba`f`Y Kti wbtZ nte | aiv hvK, MtelK w`x`v`š`-wbtj b th, wZwb õcwi ewi K msNvZõ wbtq MtelYv Ki`teb | wKŠ` cwi ewi K msNvZi | A`tbK cKvi t`f` i`tqQ | thgb, `õU cwi evti i gta` eskv`õ`ugK msNvZ, GKB cwi evti i we`rfb`am` m`t` i gta` msNvZ, wZvi mv`_` c`f`i ev Kb`vi msNvZ, `xi mv`_` `õgxi msNvZ, bvixi mv`_` cj`t`li msNvZ, BZ`w` | t`mLv`b | MtelK`K w`x`v`š`-wbtZ nte th, wZwb cwi ewi K msNvZi tKvb w` K`U wbtq MtelYv Ki`tZ Pvb | Gici wZwb t`L`teb th, tmB we`tqi Dci wK wK ait`Yi MtelYv cwi Pwj Z ntqQ, tmB MtelYv`_`tj v cwi Pvj bvi t`f`t` c`x`w`ZMZ tKvb mgm`v i`tqQ wK bv, MtelYv`_`tj v t`-`tK cõB dj vdtj i mv`_` Z`E`j tKvb AmsMvZ i`tqQ wK bv | G me KgRvU cwi Pvj bvi ciB t`Kej gv` GKRb MtelK Zvi MtelYvi D`f`k` wba`f`Y Ki`tZ cvi`teb | hLb MtelK Zvi mjbw`õ MtelYvi D`f`k` wba`f`Y Kti t`dj`tj b ZLbB wZwb cõvY Ki`tZ m`f`lg ntj b th, MtelYv`K GKU m`vK wbt`Rbv t`qv w`M`t`q`Q |

hLb MtelK Zvi mjbw`õ MtelYvi D`f`k` wba`f`Y Kti t`dj`tj b, ZLbB wZwb cõvY Ki`tZ m`f`lg ntj b th, MtelYv`K GKU m`vK wbt`Rbv t`qv w`M`t`q`Q |

cZ`qmg`ni Kvh`Ki msÁvqb | AbK`i wbg`f` (Operationalization of Concepts and Derivation of Hypothesis): MtelYvi mgm`v wbe`Pb, MtelYv`thvM` KiY Ges MtelYvi mjbw`õ D`f`k` wba`f`Y Kivi ci cõ`tg th KvRvU m`úbe`Ki`tZ nq, tmU ntj v Zwi`EK ev Avr`ÁZvj ä cõ`veb`_`tj vi gta` wK wK cZ`q i`tqQ Ges cZ`q`_`tj vi gta` wK wK m`ú`K`P` eYõv i`tqQ tm`_`tj v w`Pw`YZ Kiv | G`_`tj v m`vK`f`vte w`Pw`YZ Ki`tZ bv cvi`tj h`_`h`_` AbK`i MVb Kiv hvte bv | i`ay`cZ`q`_`tj v`K w`Pw`YZ Ki`tj B nte bv, tm`_`tj vi Kvh`Ki msÁvqb Ki`tZ nte | KviY, wKQy`wKQy`cZ`q` Pj`tKi AvKv`ti mi vmi ch`f`e`f`Y`thvM` ntj | mvgw`RK we`Ávtbi Avakvsk cZ`q we`gZ`õ mi vmi ch`f`e`f`Y`thvM` bq | G iKg eú cZ`tqi D`tj`-`Kiv th`tZ cvi`tj | thgb, Av`_`mvgw`RK gh`P`v, tK`Yx, msNvZ, Abf`vZ, i`f`Y`k`j`Zv, m`P`Z`b`Zv, f`lgZv, BZ`w` | GB cZ`q`_`tj v`K wK wK Pj`tKi gva`tg msÁwqZ Kiv hvq, Zv w`Pw`YZ Ki`tZ nte Ges tmB Pj`K`_`tj v`K mi vmi ch`f`e`f`Y`thvM` m`P`tKi gva`tg msÁwqZ Ki`tZ nte | Gici cõZ`wU m`P`tKi Rb` GKU Kti AvcvZtw`i`KZ e³e` (tentative statement) MVb Ki`tZ nte, MtelK hvi h`_`v`_`Zv cõvY Ki`tZ Pvb Zvi MtelYvi gva`tg | GB AvcvZtw`i`KZ e³e``_`tj vB ntj v MtelYvi AbK`i | GB AbK`i`_`tj v we`rfb`ecõ`vebvi gva`tg we`rfb`e`Pj`tKi gta` m`ú`K`P` e`v`L`v cõ`vb Kti _vtK | Ab`_`K`_`vq, MtelK GLb w`õZ`f`vte Rv`bb th, Zv`K wK Ki`tZ nte |

MtelYv bKkv (Research Design): MtelYv bKkvq, gj Zt c`x`w`ZMZ we`l q`_`tj v wbtq MtelK`K w`x`v`š`-wbtZ nq | cõ`gZt, th mgm`vU wbtq MtelYvi w`x`v`š`-`b | qv ntqQ tm mgm`vi mv`_` m`ú`³ c`f`iv mgM`K`K we`te`Pbvq Avb`tZ nte | h`w` mgM`KU f`j`ª`nq, tm t`f`t` c`f`iv mgM`K wbtq MtelYv Kvh`õm`úbe`Kiv m`e` | wKŠ` t`Lv hvq th, Avakvsk t`f`t` mgM`KU tek eo AvKv`ti i`ntq _vtK | dtj, mgq Ges m`ú`-`i` AcZj Zv`_`v`Kvi Kvi`Y c`f`iv mgM`K wbtq MtelYv Kiv m`e` nq bv | tm t`f`t`t, MtelK`K tmB mgM`Ki GKU Ask wbe`P`bi gva`tg MtelYv Kvh`õ m`ú`v`b Ki`tZ nq | Ab`_`K`_`vq, MtelYvi Rb` wba`f`i Z mgM`Ki GKU

MtelYv bKkvq, gj Zt c`x`w`ZMZ we`l q`_`tj v wbtq MtelK`K w`x`v`š`-wbtZ nq |

weeiY w`tq tmB mgMkK cZubwZ; Kti Ggb GKwU wbow` Ask ev bgbvtK wbePb KitZ nq| Ask ev bgbv wbePti GB cUqvK bgbvqbj ej v nq| bgbvqbj cUqv wewfbocxwZ itqtQ| wK aiYi bgbvqbj cxwZ e`envi Kiv nte tmwU MtelYvi DfK` Ges mgMkKi cKwZi Dci wbfP Kti| wbePZ bgbvqbj cxwZi thSwKZv, bgbvi AvKvi wbaYmn Gi we`wi Z weeiY w`tZ nte MtelYv bKkvq| DcvE msMni wK cxwZ e`envi Kiv nte Ges DcvE wetkHYi wK wK tKSkj e`envi Kiv nte, Zvl G chiq my`uofvte Dj E-KitZ nte| MtelYvq tKvb AbKf cixqv Kiv nte wK bv, Kiv ntj AbKf cixqv wK wK cxwZ e`envi Kiv nte, Zvl MtelKtK wbaY Kti wbtZ nte|

ckambePti tqt cKie gta` ka Pqb, cKie ugavi, cKie mste`bkj Zv I m/wZ eRvq _vKtQ wK bv, BZ`w` wela, tjv MtelKtK Lp mZKZvi mvt_ j` i vLtz nte|

ciwgv I DcvE msMni nwiZqvi wbgf (Measurement and Construction of Data Collection Instrument): bgbv wbePti ci MtelK `fveZB DcvE msMni K_v fvef| wKs` DcvE msMni cteZvtK wmxvS-wbtZ nte th, DcvE msMni tKvb cxwZwU wZwb e`envi Kiteb| KviY, DcvE msMni cxwZi Dci wbfP Kite DcvE msMni nwiZqviwU tKgb nte| A_@, DcvE wK bgbvq wbePZ Dcv`vb ev DEi`vZvi mvt_ gflvgyl mvqrvKvii gva`tg msMh Kiv nte, bv wK DEi`vZvi KvQ cKwvWtq msMh Kiv nte? DcvE msMni Dcvq wmwte mmsmwZ ckegvj v (structured questionnaire) e`envi Kiv nte, bv wK AmsmwZ mvqrvKvi wbt`Rbqv (Interview Guide) e`envi Kiv nte? hw` mmsmwZ KvwrgwfiEK ckegvj v e`envi Kiv nq, tm tqt ckegvj wK DbP`_vKte, eU cKwZi _vKte, bv `jaiYiB wky`_vKte, tm mautKp MtelKtK my`u wmxvS-MhY KitZ nte| DcvE msMni cxwZwU „ZcyG Kvty th, DcvE msMni nwiZqvi wbgfYi tqt Gil GKwU Zvrchey`fugKv ivL| cZ`tqi ciwgv cUqv wela wbowZ nevi ci MtelK DEi`vZvi KvQ cUqvRbxq DcvE msMni Rb` wK wK ckwZwb Kiteb tm wela wmxvS-wbteb| ckambePti tqt ZvtK memqb j` i vLtz nte th, ckegvj gva`tg MtelYvi wela mautKwZwb hv RvbtZ Pvb Zv tewtq Avmte wK bv| ckambePti tqt cKie gta` ka Pqb, cKie ugavi, cKie mste`bkj Zv I m/wZ eRvq _vKtQ wK bv, BZ`w` wela, tjv MtelKtK Lp mZKZvi mvt_ j` i vLtz nte|

DcvE msMh (Data Collection): Avgiv cteB Dj E-Kitiw th, DcvE msMni nwiZqvi wbgfYi Rb` DcvE msMni cxwZwU „ZcyG hw` MtelK wmxvS-tbb th, gflvgyl mvqrvKvi MhYi gva`tg wZwb Zvi DcvE msMh Kiteb, tm tqt thwM` mvqrvKvi MhYKvix wbtqvM KitZ bv cvi tj MtelYvi cfiv DfK`wU fUj nta thZ cvf| tm Rb` MtelK wK cUqvq mvqrvKvi MhYKvix wbePb Kiteb, wKfite wZwb Zvt`i cKqvY t`teb Ges gvV chiq DcvE msMni cfiv cUqvU KvhRi Kiteb, G mtei we`wi Z eYv G chiq _vKtZ nte| cUqvRbtefa ZvrqYKfite ciYKZ ckegvj maut`bvi e`vi K_vl Dj E _vKtZ nte|

DcvEi gta` fj` I`w hvPvB Kti tm, tj vtK Pj tKi `ewk`K cZubwZ; Kti, Ggb msL`vZwEK mstKZ ev cZvtK ifcswi Z KitZ nq|

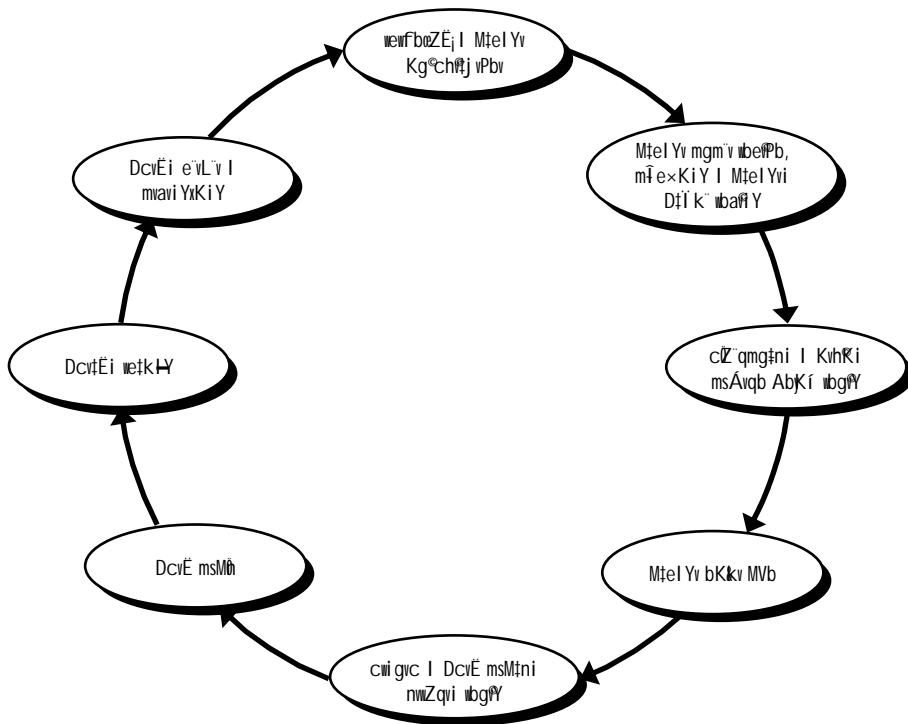
DcvEi wetkHY (Analysis of Data): DcvE msMni ci MtelYv bKkvq wbaY Z ciw Kf bv Abhvqx msMnxZ DcvEi maut`bv, wetkHY I e`vL`vi KvrwU MtelKtK KvQ cawb nta `wovq| DcvEi wetkHY I e`vL`vi wela MtelYv cUqv GKwU „Zcy`chfq| KviY, msMnxZ DcvEi wK wbtR t`tK tKvb A_`enb Kti bv, hw` bv tm, tj v t`tK MtelYvi i`tZ w`iKZ ckegvj DEi mnxefvte tei Kti Avbv hvq| wetkHYi cteDcvE tK cUqvKiY KitZ nq| A_@, DcvEi gta` fj` I`w hvPvB Kti tm, tj vtK Pj tKi `ewk`K cZubwZ; Kti, Ggb msL`vZwEK mstKZ ev cZvtK ifcswi Z KitZ nq| Zvi ci tm, tj vtK KwuDUvti cKw Kwi ta wetkHYi Rb` cZ` KitZ nte| wetkHYi cUg c`tq wmwte DcvE tK mswqBKtiYi ci tK`iq cEYv, we`wZ, mnm`uK, BZ`w` ciwgv, tjvi gva`tg eYv

Kiž nte| hw` DcvÉ weťkĤYi ce® wbaŋi Z cwiKí bvi gta` Kvh®KviY weťkĤYi cŕqvRbxqZv _vtK, Zte eúPj K weťkĤYi cŕmwzK tKŠKj _tj v cŕqvŤMi Dťj Ľ-Kiž nte|

DcvŤĚi e`vL`v I mvavi YxKiY (**Interpretation of Data and Generalization**): Mťel Yv cŕŕqv i tkl avťc Gtm Mťel tKi mvgťb th KvRwU _vtK, tmiU ntjv weťkĤZ DcvŤĚi e`vL`v Ges Dcmsnvi gj K mvavi YxKiY Kiv| hw` AbĤŤi i wfvĚŤZ cŕ`wkZ dj vdťj i mvt_ DcvÉ weťkĤYi djvdj Zvrch®YŤŤe wfbœbv nq, Zte th ZĚj t_ťK AbĤŤi _tj v AvniY Kiv ntqťQ, tmB ZĚj _tj v mg_ŤthM` eťj MŕY Kiv nq| Ab`_vq, ZťĚj mstkvatbi cŕqvRb t`Lv t`q| hw` Mťel YwU tKvb AbĤŤi Qvov i i` Kiv nq, tm tŤŤŤ fweł`ťZi Mťel Yvq cixŤv Kti t`Lvi Rb` dj vdťj i mvavi YxKiY _tj v t_ťK wKQyAbĤŤi AvniY Kiv thťZ cvťi |

Mťel Yv cŕŕqv i `ewkŕ` (Characteristics of Research Process)

GkwU Mťel Yv cŕŕqv tek wKQy _i`Zcy®Dcv` vťbi Ťv i v `ewkŕ` gwUZ| tm _tj v ntj v: eĚveZ®, cbi veyĚ Ges AvZŤmstkvab| GB Dcv` vb _tj v tK wKQy v we`wi Zfvťe Avťj vPbv Kiv hvK|



ŵŤ 2: Mťel Yvi eĚveZ®

eĚveZ®(Circularity): Mťel Yv cŕŕqv ntjv GkwU eĚvetZ® gZ| ŵŤ 2-G Avgiv t`LťZ cvB th, GKRB Mťel K Zvi Mťel Yv cŕŕqv i i` Kti b weřFbœZĚj I Mťel Yv Kg`chŤj vPbv Kti Mťel Yvi wełqe` ůbeŤŤbi gva`tg Ges tkl Kti b msMŤxZ ZťĚj weťkĤY I e`vL`vi wfvĚŤZ mvavi YxKiY gj K wmvťš-DcbxZ nevi gva`tg| wKŠ` Mťel Yv cŕŕqv i mgwŤB GLvťbB NťU bv| hw` Mťel YwU mdj bv nq, ev AvsŤkKfvťe mdj nq, ZLb Mťel K ce®Zx`th tKvb avťc wMťq cŕivq Mťel YwU i i` Kiž cvťb| tKvb avťc wMťq Mťel K cŕivq Mťel Yv cŕŕqv i i` Kiťeb, tmiU ůbf® Kiťe tKvb chŤq wMťq Mťel YwU Amdj ntqťQ Zvi Dci |

thgb, hw` t`Lv hvq th, msMpxZ DcvE ZZxq avtc cO weZ AbKí ,tj vtK mg_B Kti wb, Zte wZnb ZZxq avtc wdti wMtg wekl tkvb AbKí ev me AbKí tK mstkvab Ki teb Ges MtelYv cOqvri ZZxq t_tK Aóg avc chS-cpivq cwi Pvj bv Ki teb| hw` t`Lv hvq th, AbKí i gta` tkvb mgm`v tbB, mgm`wU ntqtQ` f msL`K bgbv wbeP`bi Kvi tY PZL` avtc| tm t`TtT, Mtel K PZL` avtc wMtg tmB mgm`v mstkvatbi gva`tg cpivq Zvi Mtel Yv cOqv mgvB Ki tZ cvti b|

cbivevE (Replication): hw` MtelYv KgwU mdj etj ati tbqv nq Ges mBsg avtc mavi YxKiY ,tj v wZxq avtc MpxZ AbKí ,tj vtK mZ` etj cOvY Kti, Zvicil MtelYv KgwU tK cpivq cwi Pvj bvi gva`tg cOvY Kiv hvq th, MtelYvq cOß dj vdj ,tj v tkvb`Øe NUbv bq| hw` Mtel YwU GKwU wfbæbgvvi Dci cwi Pvj bv Kti cpivq`pfvte cizcbeKiv hvq, Zte Mtel Yvq cOß dj vdj i h`v` ,tj vi` c`T` Avtiv tRvi mg_B cvl qv hvq|

Mtel Yv cOqvri ntj v AvZmstkvabgj K| weAvb Zvi mavi YxKiY ,tj vtK memgq AvcvZtw`i KZ etj ati tbb, Povšfivte bq|

AvZmstkvab (Selfcorrection): MtelYv cOqvri ntj v AvZmstkvabgj K| weAvb Zvi mavi YxKiY ,tj vtK memgq AvcvZtw`i KZ (tentative) etj ati tbb, Povšfivte bq| MtelYv mgm`v m`utK` GB AvcvZtw`i KZ mavi YxKiY ,tj v ev AbKí ,tj vtK weAvbx thS`K fivte Ges AwfÁZvj äfivte cix`v Ktib| hw` mavi YxKiY ,tj v cL`vL`vZ nq, ZLb weAvbx bZb AbKí wbg`v Ktib Ges tm ,tj vtK cix`v Ktib| cbtwbg`vi GB cOqvri weAvbx Zvi MtelYv KgrvU ,tj vtK cpog`vq`bi mthvM cvb| Kvi Y, MtelYv KgrvU cwi Pvj bvi t`TtT` T`wU nevi Kvi tY GKwU AvcvZtw`i KZ mavi YxKiY cL`vL`vZ ntZ cvti | thgb, A`wZK g`vi mgq wefbcLvZ fZRx cOvtbi gva`tg miKvix e`q evx` cvq etj Mtel K th mavi YxKiY KitiQb, Zvi h_v`Zv hw` thS`K fivte Ges AwfÁZvj äfivte cOvY Kiv bv hvq, Zte mavi YxKiYwU cL`vL`vZ nte| wKŠ` KLt`bv KLt`bv h_v`Zv I hvPvB-Gi c`wZi (thgb, bgbvqb, c`wZ, cwi gvc, DcvE wekl`Y, BZ`w`) gta` T`wU`vKvi Kvi tY GKwU mZ` mavi YxKiYI cL`vL`vZ ntZ cvti | mZ` mavi YxKiY tK cL`vL`vb Kivi S`mK tK Kgv`bvi Rb` Mtel K bZb Kti mavi YxKiY i cte`Mtel Yv cOqvri cOZwU avctK ch`v jPbv Kti t`Lb, hv Mtel Yv cOqvri tK GKwU AvZmstkvabgj K e`e`v` wnmvte cwi YZ Kti |

metk`l etj hvq th, MtelYv cOqvri tK fivte Dc`vcb Kiv ntqtQ, Zv ntj v GKwU Av`k` i`c| wKŠ` c`KZc`T, GKwU MtelYv cOqvri wefbcwv w`vZtZ m`ubekiv nq| thgb, MtelYv KLt`bv Zvov`tov Kti nq, Avevi AtbK mgq Lp` axi MwZtZ nq; KLt`bv D`P gv`vi m`Zv I Avb`vmbKZvi mvt`, Avevi KLt`bv Amt`PZbfivte Ges Lp`B`w`gw`EK fivte Kiv nq; KLt`bv wefbcwv etkl`t`Ai ev e`w`i (thgb, c`wZw`e`, wekl`Á, c`Kí cwi Pvj K, mv`vrvKvi M`hYKvix, BZ`w`) mgš`tg Avt`vPbvi gva`tg Mtel Yv cOqvri m`ubekiv nq, Avevi KLt`bv GKK fivte GK e`w`i cO`Povq m`ubekiv nq| AZGe, gj` K`wU ntj v, MtelYv cOqvri tKv Kt`vvi wbgv`v`wZ`Rv wnmvte bq, eis GwU tK GKwU w` K wbt`Rbv wnmvte t`Lv cOqvRb|

mvi vsk

GB cvt`v GKwU Mtel Yv cwi Pwj Z Ki tZ wMtg th avc ,tj v Abjni Y Ki tZ nq, tm ,tj v m`utK` we`wv Z Avt`vPbv Dc`vcb Kiv ntqtQ| Avgiv t`LwQ th, th tkvb MtelYvB GKwU wbgg`b`wZ Abjni Y Kti Ptj | MtelYvi cOg` avc nt`Q mgm`v wbeP`b Ges Gi ciB wbeP`Z mgm`vi msÁv t`qv, AbKí wbg`v Kiv, AbKí Ges mgm`v Abjvqx MtelYv bKkv`Zwi Kiv, Z` msM` Ges tkl` ch`vq cOß Zt`i mavi YxKiY I cieZx`MtelYvi we`qe`m`v`v` t`TtT``Zwi Kiv| GB cOqvri tK h_vh` fivte cwi Pwj Z Kivi t`TtT` Mtel K tK Aek`B mgm`vi c`KwZ, ,i`Zi Ges Gi Mfxi Zv m`utK` ch`v` avi Yv`vKtZ nte|

cvřVvĚi gj ıvqb

ıbe⁹³ K cġæ

mıVK DĚři i cvřk ıJK (√) ıPý ı` b –

1| AbĶı cıxřıv Kiv nq GKgvı̄ :

- K. e`vL`ıvgj K Mřel Yvq
- L. eYŲıvgj K Mřel Yvq
- M. cŲvi Yvgj K Mřel Yvq
- N. cŲıqMgj K Mřel Yvq |

2| Mřel Yv mgm`vi D^me nřZ cvři :

- K. mıgvıRK mgm`v ř_řK
- L. mıgvıRK AıřfÁZv ř_řK
- M. ZıwĚĶ cŲıvebv ř_řK
- N. Dcři i me |

3| Mřel Yvq řKıv aiřYi bgıvıqb cııZ e`envi Kiv nře ZııbfŲ Kři :

- K. Mřel Yvi Dřı k` Ges mgMŲKi msL`vi Dci
- L. Mřel Yvi Dřı k` Ges mgMŲKi cĶıZi Dci
- M. Mřel Yvi ı`vb Ges mgřıqi Dci
- N. Mřel Yvi ı`vb Ges mgMŲKi msL`vi Dci |

mıřıřıB cġæ

1| Mřel Yv bĶĶıv ıK?

2| DcvřĚi weřkıY Mřel Yvi řKıv chřıq cto?

iPıvgj K cġæ

1| Mřel Yv cŲııqıv AřfŲ avc_řj v mıúřKıAvřj vPıv Ki`b |

2| GKıD`vni Ymn Mřel Yvi avc_řj v chřıj vPıv Ki`b |

mvgwRK Mtel Yvq `bwZKZvi wel q
Ethical Issues in Social Research

GB cW tkfi hv Rvbr hvte —

- mvgwRK Mtel Yvq %bwZKZvi wel q, tj v wK
- %bwZKZv wetePbvq `jw Awakvti i 00
- wKfvte `bwZK _vKv hvq
- AwicZ m3sZ
- e`w3MZ tMvcbxqZv

mvgwRK Mtel Yvq %bwZKZvi wel q, tj v wK (What are the Ethical Issues in Social Research)?

*AwfambK At_© Mtel Yvq
`bwZKZvi A_© ntj v,
tckvMZ Abkxj tbi
MhYthvM` bmxZgvj v, tj vtK
tgb Pj v|*

AwfambK At_© Mtel Yvq `bwZKZvi A_© ntj v, tckvMZ Abkxj tbi MhYthvM` bmxZgvj v, tj vtK tgb Pj v| hw`l GB tgb Pj vi wel quU `xNw` b ati mvgwRK Mtel Kt` i Rvbr Ges G, tj v gfl gfl cPwi Z ntq GtmQ, wKs` wj wLZfvte Gme wel tq cagZKiY Ges gvb` UwfweK e`vL`v I mvs`KwZKxKiY Kiv ntqtQ mva`c0ZKKvtj | Mtel Yvq `bwZKZvi bmxZgvj v, tj v wbtq Mtel Kt` i gta` GKwU mvavi Y mgtSvZv _vKtj I `bwZKZvi cagZKiYi wel tq ka e`envi Ges th mKj t`qf`T `t`P msNvZ itqtQ, tm mKj t`qf`T wK KiYvq nte Zv wbtq w0gZ itqtQ| thgb, Avgiv Rvrb th, GKw` tK msL`vMwi toi thgb Rvbevi Awakvi itqtQ, Ab`w` tK msL`vMwi toi tZgb tMvcbxqZv i`qvil Awakvi itqtQ| G aiYi cwi w`wZtZ `bwZKZvi Abkxj tbi wK aiYi bmxZgvj v AbmiY Kiv nte, Zv wbtq Mtel Kiv GKgZ ntZ cvti b w|

GwU mvavi Yfvte mevB tgb wbtqtQb th, Mtel Yv Ki tZ wMtq Kv tiv qWZ Kiv Mtel tKi Rb` A%bwZK, wtkl Kti hw` tKvb e`w3i AbgvZ Qvov Zv cwi Pwj Z nq| GwU ntZ cvti, GKRb DEi`vZvtK Mtel Yvi Df`I k` m3utK`bv Rvrbtq tKvb wel q m3utK`RvrbtZ Pvl qv, ev Ggb tKvb cKewRAvmv Kiv hv ZvtK gviV`Kfvte jw3Z Ki tZ cvti, ev Zvi tKvb AmLKi AwfAZvi K_v `sY Kwitq w`tq gvbwmKfvte wech`-Kti tZjv, ev Zvi Acivateva RvMtq tZjv, A_ev Zvi e`w3MZ tMvcbxqZvq n`f`c Kiv| tMvcbxqZvi kZ`K j`Nb Kiv ev DEi`vZvi AA`vZmvti Mtel Yv cwi Pvj bv Kivl DEi`vZvtK AvnZ Ki tZ cvti | Dcv`Ei avS`-Dc`vcb, djvd`j i wq`v eY`v, tcv`vvc`Ui AwZwi`3 Zt`i Dc`vcb, ev Avs`wKfvte Z` cKvk Kivi gra`tgI GKRb Mtel K A%bwZK wnmvte wPvjZ ntZ cvti b|

mvavi Yfvte, Mtel KMY `bwZKZv eRvq ivL`Z Pvb| KviY, hw` tKvb Mtel K A%bwZK etj cwi wPZ ntq Df`Vb, Zvntj t`Lv hvte th, wZwb Mtel Yvi Rtb` Avi tKvb AwL`R mrvh` ev c0t`vL KZv cvteb bv Ges Mtel Yvi mrt` mswk0-DEi`vZvt` i l tKvb mnthwMzv cvteb bv| wKs` Mtel Yvq c0B djvdj wba`wi Z AbK`i, tj vtK mg`B bv Kij, `bwZKZvi gvb` U`K Kt`Vvi fvte AbmiY Ki tZ wMtq KLt`bv KLt`bv Mtel K Zvi c0B djvdj m3utK`0`_fvaK Dw`3 i gra`tg we`av`S`-mwi i w` tK c0j` ja ntZ cvti b| GwU AtbKuv mi Kvix A_`e`w3MZ KvtR avi tbevi gtZv| w`wL A_`wL avi Kt`Qb wZwb gtb gtb fvteb th, hLb Zvi wvtZ c0qvRbxq cwi gvY A_`mgvMg nte, ZLb wZwb Zv tdiZ w`tq t`teb| wKs` hw` Mtel Yvq G aiYi

wg_`vPiY aiv cto, Zte Zvi cōZm̄uqwu nq cPŪ | DcvĒ wbtq wg_`vPiYi NUBv eū NtūŪQ Ges tm mKj Mtel K Zvt` i `wqZj; t_ tK Ae`vnuZI tctqtQb |

tKb GKRb tectivqv Mtel K DcvĒEi wg_`vPiY Ktib ev DĒi `vZvtK ¶m̄ZMŌ' Kti Mtel Yv cwi Pvj bv Ktib? GB cōkwi Reve Lp̄tZ tM̄j Mtel Yvi GKwU cwi nvmgj K `ewkó' aiv cto, hv mvaviYZt Ggb me mgm̄v wbtq `Zwi nq, hv t_ tK Avgiv memgj cwi ūvY tctZ PvB | thgb, GKRb e`w³ my' tKb, ev GKRb e`w³ AvZhnZ'v Kti bv tKb, Avgiv Zv wbtq Mtel Yv Kwi bv, eis GKRb gvby tKb Amy' nq, ev tKb AvZhnZ'v Kti tm̄U Rvbi Rb`B AvMōx nB | GLvtbB ōōwi i i" | KviY, Avgiv Rwb th, Amy' Zv ev AvZhnZ'v gvbtli Rb` ¶m̄ZKi | G mKj ¶m̄ZKi wēl q wbtq Avgiv Mtel Yv Ki tZ PvB, G mKj mgm̄vtK fvtj vfvte Dcj wā Kti tm me mgm̄v mgvatbi GKwU c_ wbt` fki Rb` | thgb, tKvb tivtMi cōZtlaK cvl qvi Rb` Avgvt` i tK cōtg tmB tivtMi KviY m̄utK`RvbtZ nte | hLb tKvb Kvi YtK Abgvb Kiv nq, ZLb Zvi Aw`Z; cōvtYi cōqvRb nq cto | A_ŕ, GwU cōvtYi Rb` Mtel Yvaxb e`w³ ev wēlqtK tmB tivtM Avp̄vš-n̄Z nte | Ab` K_vq, GKRb my' gvbtli kixti tmB tivtMi Rxebycōek Kwi t̄g t` Lv th̄Z cvti th, tmB e`w³ i kixti cōZtiva ¶lgZv KZUKz KvhRi, tivMwU wKfvte Qovt`Q Ges cōZtlaKwU wKfvte KvR Ki t̄Q | AvcvZt` wōtZ, GwU GKwU A%ōwZK KvR gtb n̄j | Mtel K hy³ t` teb th, GwU bv Kij whub Amy' Zvi Amy' nevi KviY_ t̄j v t̄Zv Rvbi hvte bv | tKb bv tm̄U Mtel Yvi cteB Ntū tM̄Q | KviY wbyē Ki t̄Z bv cvitj cōZtlaK Awē`vi Kiv m̄e b̄q | Zvi KviY hw` RvbiB _vtK, Zvntj t̄Zv KviY wbyēqi Mtel Yvi cōqvRb n̄Zv bv | tivtMi KviY_ t̄j v Rvbi tM̄j B ZLb GKRb Amy' e`w³ tK wbtq cōZtlaKwU KvhRi nq wK bv Zv wbtq Mtel Yv Kiv th̄Z cvti |

`bwZKZv m̄utK`G ait̄Yi ōōgj K cwi w`wzi Avt̄iv D̄tj L-Kiv th̄Z cvti | thgb, GKRb Mtel K hLb WwKthvtM GKwU cōk̄vj v DĒi `vZvi Kv̄tQ cvWv, ZLb Mtel K tKvb bv tKvbfvte DĒi `vZvtK wKQybv wKQyvj` w` t̄Z eva` Ktib | thgb, wKQybv mgq tbevi gva`tg, ev wKQybv gvbwK Pv̄tci gta` t̄d̄tj, ev DĒi `vZvi e`w³MZ Rxētbi Z_` m̄Mōh Kti | Mtel K DĒi `vZvtK tKvb m̄thvM m̄jeav bv w` t̄q, eis wbt̄R wKQym̄jeav t̄fvM Kti _vtKb A_ŕ mgtqi m̄k̄t̄ Kti | hw` `bwZKZvi Lp̄ m̄² wētk̄t̄Y hv l̄ qv hvq, Zvntj t` Lv hvte th, Mtel Yv Kiv Avi m̄ēci n̄t`Q bv | AZGe, Mtel Yvq `bwZKZvi wēl qwU hZUv mnR etj gtb nq, GwU Avmtj ZZUv mnR b̄q | m̄gvwRK wēAv̄tbi cwi wa hZ e`vcK n̄t̄qQ Ges Mtel Yv I wētk̄t̄Yi c×wZ hZUv m̄² Zi I cwi kw̄j Z n̄t̄qQ, m̄gvwRK Mtel Yv cwi Pvj bvq `bwZKZvi wēl q wbtq D̄t̄OMI ZZ̄tēkx ēw× tctqtQ | Mtel Yvq AskMōhYKvi t̄` i AwaKvi, Kj`vY Ges Mtel t̄Ki `wqZ; I KZē`teva m̄ūwKZ wēl q_ t̄j v wbtq m̄gvwRK wēAv̄tbi cōZwU tckvq Avt̄j vPbv | Āt̄bK ēw× tctqtQ | dj v̄dj w̄mv̄te, AwaKisk `eÁw̄bK m̄gvR `^`^ t̄q̄t̄ AvPiY wēwa cwi MōhY Kti t̄Q |

GwU `úóZt cōZxqgvb th, Mtel Yvq AskMōhYKvi t̄` i AwaKvi j·Nb I AKj`vY mvātbi tKvb B`Qv ev AvMōh m̄gvwRK Mtel t̄Ki _vtK bv, Zēl Āt̄bK mgq Zv Ntū hvq | Mtel Yvi Ašw̄b̄n̄Z D̄t̄i k` n̄t̄j v m̄jsex I cix¶v̄thvM` Av̄tbi wēKv̄tK Ae`vb ivLv | m̄jsex I cix¶v̄thvM` Av̄b Drcv` tbi Rb` wēAv̄bxiv th m̄wēR KgR̄vŪ cwi Pvj bv Ktib, tm̄U n̄t̄j v Mtel Yv cōuq̄ | `eÁw̄bK c×wZi cvkvcwK Mtel Yv cōuq̄vi cōZwU av̄t̄c `bwZKZvi wēl qwU wēwēPZ n̄tq _vtK | `bwZKZvi cōk̄wU KZ tēkx gl` I _i`ZcY`n̄te, Zv wbfP̄ Ki tē Mtel Yv m̄gm̄vi cōk̄wU I Mtel Yv c×wZi Dci | thgb, t̄R̄t̄b̄w̄UK BwÁw̄b̄q̄wis, ēw×bv¼ wbyē, ev Kḡm̄Px gj`vqb, BZ`w̄ i t̄q̄t̄ `bwZKZvi wēl qwU hZUv mZKZvi m̄vt_ wēwēPZ nq, mvavi Y Mtel Yvi t̄q̄t̄ Zv ZZUv w̄L̄Zfvte t` Lv nq bv |

`bwZKZvi cōk̄wU KZ tēkx gl` I _i`ZcY`n̄te, Zv wbfP̄ Ki tē Mtel Yv m̄gm̄vi cōk̄wU I Mtel Yv c×wZi Dci |

th tçŋvçtU GKwU Mtel Yv cwi Pwj Z nq tmlU „i“ZçYŦ thgb, nvmcvZvj , KviMvi , ĩĵ , BZ“w“ ĩvrb th cwi w“wZtZ cixŋYgĵ K tMvöxi Dci Mtel Yv cwi Pwj bv Kiv nq Zv AþBK mgq hvŦ i Dci cixŋwU cwi Pwj bv Kiv nŦ“Q ZvŦ i ŋwZ KitZ cvŦi | DcvĒ msMöni c×wZi welqwu tŋŦĪ weþkŦl LpB „i“ZçYŦntq DŦV | hviv Mtel Yvq AskMöY KŦi ZvŦ i ĩenkó“l ĩbwZKZvi welq wetePbvi tŋŦĪ „i“ZçYŦ thgb, ĩwi ĩ“ RbŦMvöx, wki, gvbwmK tivMx, ivRbxwZwe, gv Kvk³ gvbĵ, GBWŋn tivMx, BZ“w“ | weþkŦl, wK aiŦYi DcvĒ msMöni Kiv nŦ“Q Zvĵ „i“ZçYŦ thgb, mste bKxĵ | e“w³MZ tMvcbxq Z“ msMöni tŋŦĪ ĩbwZKZvi bmxZgvĵ v Ŧĵ vŦK weþkŦl fite Abmi Y KitZ nq |

%bwZKZv wetePbvq ĩwU AwaKvŦi i ÖŦ (Conflicts of Two Rights in Ethical Consideration)

mvgwRK weAvbxi v Mtel Yv KitZ wŦŋ AwaKvsk tŋŦĪB ĩwU AwaKvŦi i gŦa“ ÖŦ i mæŧxb nb | GKwU ntĵv, Mtel Yv I Avb ARŦbi AwaKvi Ges Ab“wU ntĵv, Mtel Yvq AskMöYKvixŦ i AvZġhŦ v I tMvcbxqZv i ŋvi AwaKvi | Mtel Yvq AskMöYKvixŦ i Kĵ vŦYi K_v wŦŦv KŦi GKwU cwi Kwĵ Z Mtel Yv KvŦŦi bv Kivi wmxvš-cŦġ AwaKviwŦK LeŦKŦi | Ab“w ŦK, ĩbwZKZvi w K ŦŦK çkçŦZvj v hvq Ggb Mtel Yv cwi Pwj bv Kivi wmxvš-wŦZxq AwaKviŦK LeŦKŦi | GB ÖŦ ĩwŦK wKfite mgvavb Kiv hvq Zvi tKvb mnR, wbfŦ ev mwVK Reve ŦB | mvgwRK Mtel Yvi ġĵ“ | mŦŦĵi çŦZ Mtel ŦKi „Zi çŦvŦi gvŦv wbfŦ KŦi ZvŦ i çUfŠ, ĩp çŦ“q Ges AwfÁZvi Dci | thgb, GKRb bmxZ weþkŦK memgq mwVKfite fweĪ ÖvYxKiŦYi gvaġġ Mtel Yvi djvdŦĵi Dci „Zi wŦġ vŦKb | Ab“w ŦK, D“vi çwšiv memgq gvbŦli ĩvxbZv, AvZŦwŦqšŸ I tMvcbxqZvi çŦZ mæŦ“ mKĵ çKvi SŦK ŦŦK mZK“vKvi Dci tRvi wŦġ vŦKb |

mvgwRK weAvbxi v Mtel Yv KitZ wŦŋ AwaKvsk tŋŦĪB ĩwU AwaKvŦi i gŦa“ ÖŦ i mæŧxb nb | GKwU ntĵv, Mtel Yv I Avb ARŦbi AwaKvi Ges Ab“wU ntĵv, Mtel Yvq AskMöYKvixŦ i AvZġhŦ v I tMvcbxqZv i ŋvi AwaKvi | Mtel Yvq AskMöYKvixŦ i Kĵ vŦYi K_v wŦŦv KŦi GKwU cwi Kwĵ Z Mtel Yv KvŦŦi bv Kivi wmxvš-cŦġ AwaKviwŦK LeŦKŦi | Ab“w ŦK, ĩbwZKZvi w K ŦŦK çkçŦZvj v hvq Ggb Mtel Yv cwi Pwj bv Kivi wmxvš-wŦZxq AwaKviŦK LeŦKŦi | GB ÖŦ ĩwŦK wKfite mgvavb Kiv hvq Zvi tKvb mnR, wbfŦ ev mwVK Reve ŦB | mvgwRK Mtel Yvi ġĵ“ | mŦŦĵi çŦZ Mtel ŦKi „Zi çŦvŦi gvŦv wbfŦ KŦi ZvŦ i çUfŠ, ĩp çŦ“q Ges AwfÁZvi Dci | thgb, GKRb bmxZ weþkŦK memgq mwVKfite fweĪ ÖvYxKiŦYi gvaġġ Mtel Yvi djvdŦĵi Dci „Zi wŦġ vŦKb | Ab“w ŦK, D“vi çwšiv memgq gvbŦli ĩvxbZv, AvZŦwŦqšŸ I tMvcbxqZvi çŦZ mæŦ“ mKĵ çKvi SŦK ŦŦK mZK“vKvi Dci tRvi wŦġ vŦKb |

GKwU Mtel Yv çKŦi cwi KŦi bvq Mtel ŦKi eva“evaKZwU ntĵv çŦweZ Mtel Yvi eva“evaKZwU ntĵv çŦweZ Mtel Yvi mæŦ“ mŦĵ ev Ae“vb Ges Mtel Yvq AskMöYKvixŦ i mæŦ“ ŋwZ ev ġĵ“ çŦvŦi gŦa“ GKwU Zĵ bvġĵ K cwi gvc KŦi tŦvq | mæŦ“ mŦĵ Ŧĵv ntZ cvŦi ZwiĒK ev çŦŦvwmK AvŦbi AMŦwZ, Mtel Yvq AskMöYKvixŦ i weþkŦl çŦwŦ (ŦmlU AwŦŦI ntZ cvŦi), weAvŦb Ae“vŦbi Rb“ ZwiB ev mšŦö Ges Mtel YvKZ weþkŦi Dci AwaKZi Dçĵ wä ARŦ | ŋwZi welq_wĵ ntZ cvŦi KvŦiv AvZġhŦ vq AvNvZ Kiv, DwiMçKŦi ŦZvj v ev j wŦZ Kiv, mvgwRK mæŦŦKŦ gŦa“ AwekŦm Zwi Kiv Ges ĩŦġZkvmv ev AvZŦwŦqšŸ LeŦKiv | wKš“ GB Zĵ bvġĵ K cwi gvcU ntĵv mŦvi Yfite fveĪö (subjective) GKwU wmxvš-Ŧ weAvbxi v tckvMZ ġĵ ŦevŦai Dci wŦŦĒ KŦi Mtel Yv c×wZ mæŦŦKŦe ĩö wmxvš-Ŧbb |

AZGe, GKwU Mtel Yv çKŦi cwi KŦi bvq Mtel ŦKi eva“evaKZwU ntĵv çŦweZ Mtel Yvi mæŦ“ mŦĵ ev Ae“vb Ges Mtel Yvq AskMöYKvixŦ i mæŦ“ ŋwZ ev ġĵ“ çŦvŦi gŦa“ GKwU Zĵ bvġĵ K cwi gvc KŦi tŦvq | mæŦ“ mŦĵ Ŧĵv ntZ cvŦi ZwiĒK ev çŦŦvwmK AvŦbi AMŦwZ, Mtel Yvq AskMöYKvixŦ i weþkŦl çŦwŦ (ŦmlU AwŦŦI ntZ cvŦi), weAvŦb Ae“vŦbi Rb“ ZwiB ev mšŦö Ges Mtel YvKZ weþkŦi Dci AwaKZi Dçĵ wä ARŦ | ŋwZi welq_wĵ ntZ cvŦi KvŦiv AvZġhŦ vq AvNvZ Kiv, DwiMçKŦi ŦZvj v ev j wŦZ Kiv, mvgwRK mæŦŦKŦ gŦa“ AwekŦm Zwi Kiv Ges ĩŦġZkvmv ev AvZŦwŦqšŸ LeŦKiv | wKš“ GB Zĵ bvġĵ K cwi gvcU ntĵv mŦvi Yfite fveĪö (subjective) GKwU wmxvš-Ŧ weAvbxi v tckvMZ ġĵ ŦevŦai Dci wŦŦĒ KŦi Mtel Yv c×wZ mæŦŦKŦe ĩö wmxvš-Ŧbb |

wKfite ĩbwZK_vKv hvq (How to Remain Ethical)?

gvbŦli Dci ŋwZKi welq Ŧĵv wKfite çŦve tŦĵ Ges ŋwZKi w K Ŧĵvi çŦve wKfite GovŦbv hvq, Ŧm Ŧĵv çŦkŦ Kivi hw“ AvgvŦ i mr, ĩeAvwbK I ĩbwZK DŦŦk“ vŦK, ZŦe çŦeŦDwĵ wŦZ ÖŦġĵ K mġm“wU mgvavŦbi j ŦŋŦ“ weŦfŦwŦel tŦ weŦfŦæc“ ŦŦç MöY Kiv thŦZ cvŦi | çŦKwZK I wŦŦKrmv weAvŦb gvŦŦli cwi eŦZ“çŦi çŦYxi Dci Mtel Yv cwi Pwj bv GKwU mŦvi Y e“vcvi | çŦi-çŦYxi Dci tKvb JIŦai ŋwZKi çŦveU mntRB cixŋv Kiv hvq | wKš“ mvgwRK weAvŦbi Mtel Yvq gvŦŦli cwi eŦZ“çŦi çŦYxi e“envi Lp K“ wŦPr Ŧ“ Lv hvq | Kvi Y, gvŦŦli cwi eŦZ“çŦi-çŦYxi e“envi i mġvexZwU ntĵv th, çŦi-çŦYxi tŋŦĪ tKvb mvgwRK mæŦŦKŦev weŦkŦö“i (thgb, ag“ Avq, wKŋv, tckv, BZ“w“) Dcv“wZ vŦK bv | ZŦe, B“wŦs cixŋYgĵ K Mtel Yvi tŋŦĪ wKš“vŦxi ġZ çŦYxi e“envi “i“ ntqtQ | tKbbv, wKš“vŦxi Bkvivi gvaġġ gvŦŦli mŦŦ_ thvMŦhŦM ĩvcb KitZ cvŦi | AþŦkŦB Mtel Yvq çŦi-çŦYxi

e`envi tKI mvari Yfvte A%wZK etj gtb Ktib| mvgwRK MtelYvq ci-cŸxi e`envi GKw AwZwi 3 mgm`v `Zwi Kti | Zv ntjv, gvbŸli mvt_ ci-cŸxi thvMthvtMi DbZ tKŠkj Awe`wi gvbŸli tkdŸZji cŸZ ŸgmK `Ÿc ntq `vovq| dtj, AtbtK gtb Ktib th, ci-cŸxi Dci MtelYv cwi Puj bv `bwZK bq Ges Zv wovl x tNvl Yv Kiv DvPr|

Kw`uDUvi AbjKitiYi (computer simulation) gva`tg KwŸg cwi w`wZ `Zwi Kti MtelYv cwi Puj bv Kiv hvq| Ggb cwi w`wZ LjR tei Kitz nte, thLvfb AvtM t_ tKB FYvZK cŸvtei Aw`Zj we` gvb _vtK Ges hvZ Kti MtelKtK bZb Kti FYvZK cŸvtei RbŸw tZ bv nq| hv` Dcwi wj weZ cwi w`wZi Aw`Zj LjR bv cvlqv hvq, tm tŸŸŸt FYvZK cŸve mŸKvix KvitYi mŸwZ e`envi ev `f mgtqi Rb` e`envi Kitz nte, hvZ Kti FYvZK cŸve cotj l Zv g_ycwi gvŸY NtU| m`te` FYvZK cŸvtei K_v DEi `vZvtK RwbŸq Ges Zvt`i AbgŸZ tbqvi gva`tg MtelKti `bwZKZv iŸŸZ nq| MtelKti ctŸŸ Ggb hv`3 `vd KivZ nte th, hvZ Kti MtelYvU A%wZK gtb bv nq| A_Ÿ, mŸ Ÿofvte cŸvY Kitz nte th, th cwi gvY ŸwZ mvaZ nte Zvi tPtq mdj etq Avbte tekx, ev Zviv GZ tekx ŸwZMŸ-nŸq itqtQ th, bZb Kti Avi ŸwZ nevi Avi tKvb m`tebv tbB| ctiv RbmsL`vi cwi etZ`bgpvi e`envi Kitz nte, hvZ Kti Lj Kg msL`K gvbŸli ŸwZ mvaZ nq| mgwŸMZ DcvE cKvtki gva`tg tMvcbxqZv iŸŸvi c`ŸŸc MŸY Kti `bwZKZv iŸŸvi vel qiu tK wovŸZ Kitz nte| gj` ebgv mdjji tctŸvctU %wZKZv PPŸ tŸŸŸt `wU cŸvb tK`Ÿq mgm`vi K_v metPtq tekx wetePZ ntq _vtK| GKwU ntjv AvwZ m`ŸwZ (informed consent), Ges Ab`wU ntjv tMvcbxqZv (privacy)|

AvwZ m`ŸwZ (Informed Consent)

mvgwRK weAvbŸt`i gta` GKwU mvari Y HKgZ` itqtQ th, gvbŸtK msukŸ- Kti MtelYv cwi Puj bv Kiti Zv AskMŸYKvixi AvwZ m`ŸwZi gva`tgB Kiv DvPr| hLb MtelYvi velq wnmvte gvbŸli eo aitYi SŸKi m`ŸwZxb nevi m`tebv _vtK, ev e`w`3i Awakvi tK Z`vM Kitz ejv nq, ZLb AvwZ m`ŸwZ MŸY Kiv ntjv GKwU Aek` cvjbxq kZŸ AskMŸYKvixtK Aek`B RvbtZ nte th, ctiv MtelYv cŸvqvq Zvi AskMŸY t`Avvgj K Ges MtelYv `i`i cte`AskMŸtYi dtj ZvtK Zvi m`te`, wect`i SŸK, Awakvi l mdlj m`utKŸe`wi Z e`vL`v Kitz nte| msAv Abjvqx, AsMŸYKvixt`i AskMŸtYi wmxvš tK th me velq cŸveZ Kitz cvti, tm me velq m`utK`AewZ nevi ci GKRb e`w`3 tKvb MtelYvq AskMŸY Kiteb wK bv, tm m`utK`wmxvš-MŸtYi c`wZwB ntjv AvwZ m`ŸwZ|

mvgwRK weAvbŸt`i gta` GKwU mvari Y HKgZ` itqtQ th, gvbŸtK msukŸ-Kti MtelYv cwi Puj bv Kiti Zv AskMŸYKvixi AvwZ m`ŸwZi gva`tgB Kiv DvPr|

AvwZ m`ŸwZi velqiu msv`wZK gj` teva Ges AvBbMZ wetePvteva t_ tK D`wZ| tKvb e`w`3 MtelYvq AskMŸY Kitz Pvb wK bv, Zv ZvtK wRÁvmv Kivi A_`ntjv tmB e`w`3i AvZghŸ vi cŸZ m`Ÿwb cŸkŸ Kiv| GtZ Kti MtelYvq AskMŸY Kivi dtj m`te` wect`i SŸK ev FYvZK cŸvtei `vq `wqZwU AvsukKfvte AskMŸYKvixi Dci l eZŸq| m`ŸwZ MŸtYi Avti Kiu hv`3 ntjv th, thtnZvcŸSeq` gvbŸ Zvi wbtRi fvŸjv gtb`i velq wmxvš-MŸtYi ŸŸgZv ivtL, tmtnZvtm wbtR Zvi wbtRi `Ÿ`Ÿi ŸŸvi velq cŸv` Kievi `ŸxbZv tfvM Kti| AvwZ m`ŸwZ MtelKtK AvBbMZ SŸtgjv t_ tK gj` ivtL| KviY, AskMŸYKvix t`Avvq wbtRtK MtelYv cŸvqvq msukŸ-Kti|

AvwZ m`ŸwZi velqiu msv`wZK gj` teva Ges AvBbMZ wetePvteva t_ tK D`wZ nq|

AvwZ m`ŸwZi bwZwU e`vcKfvte MŸYthvM`Zv tctj l Gi KvRi ev`evqtbi gta` cŸi AmŸwZ itqtQ| Gi cŸvb KviY ntjv th, cwi w`wZi wfbZvq AvwZ m`ŸwZ ej tZ wK tevSvq tm velq HKgtZ`i Afve| G tŸŸŸt, th cŸkŸtjv D`wZ nq tm_ tjv ntjv: AvwZ AskMŸYKvix wK? wKfvte Avgiv Rwb th, GKRb e`w`3 tK th Z`_ tjv t`qv ntqtQ tm_ tjv

wZwb eStZ tctiQb? KZUKz Z_ t`qv c0qvRb? hw` AskM0hYKvixt`i gta` Kviv cixqY
`tj Ges Kviv wbcwSz `tj itqtQ GwU Zvt`i RvbtZ bv t`qvi welqWU Lp „i“ZcY0ntq
`vovq, ZLb wK nte? G me c0kie mnR DEi tbB| Zte mvaviY e3te`i gva`tg AwcZ
m0szZi bwxZgvj vi Df`k` wK, Zvi e`vL`v, Gi c0vb Dcv`vb,tj v wK, Zvi Dfj L, Ges Gi
KvhRi ev`evqtb c0qvRbxq welq,tj v wK, Zv Avtj vPbv Kiv thtZ cvti | AwcZ m0szZ PviWU
Dcv`vtbi mvt_ msuk0: thvM`Zv (competence) t`^Ovc0Yv`b (voluntarism), cY0Z_` (full
information), Ges Dcj wä (comprehension)| GB Dcv`vb,tj v wbt0 Avtj vPbv Kiv ntj v|

thvM`Zv (Competence): AwcZ m0szZi bwxZgvj wUj Aštb0Z aviYwU ntj v th, GKRB
`wqZkxj l cwic° e`w3 th wmxvš-tbteb Zv mwVK ntZ nte| wKš`thtnZzeu gvbj itqtQ
hviv cwic° l `wqZkxj bb, tmtnZt tm aitYi thvM` gvbj tK LfR tei Kiv GKwU mgm`v
ntq `vovq| thgb, hw` GKRB e`w3 i gvbmK `eKj` _vtK, ev AvZwbqšfYi qgZv wbtq cke
_vtK, Zte tm e`w3 m0szZ c0vtb Aqg nteb| wki`-wktkvi, Mvp w0`v`Qb0ev AtpZb gvbj
Ges gvbmK tivMxt`i m0szZ c0vtb AthvM` etj wetePbv Kiv nq| MtelYv t`tK hLb G
aitYi AskM0hYKvixt`i mivmwi tKvb mjdj cvevi m0tebv _vtK (thgb, t`ivcxgj K
wPwKrmv), ZLb Zvt`i c`q t`tK Zvt`i Awf`fveK, wczvzv Ges Ab`vb` `wqZkxj e`w3t`i
gzvgZ M0hY Kiv hy3hy3| hLb mivmwi mjdj cvevi m0tebv _vtK bv Ges tKvb FYvZK
cfrtei S0K _vtK, ZLb AtpK G me e`w3t`i MtelYv GtKevti m0u,3 bv Kivi civgk0
w`tq _vtKb|

t`^Ovc0Yv`b (Voluntarism): AwcZ m0szZi bwxZgvj v MtelYvq AskM0hYi `vaxbZvtK
w0w0Z Kti Ges tKvb S0K _vtK Zv tgbt bqvi t`^Ovc0Yw` Z B`OvtKI c0zk0Z Kti|
wKš`th me ktZ0GKRb e`w3 Zvi `vaxbZv c0qvM Ki`teb, Zv c0Z0v Kiv mnR KvR bq|
tKvb MtelYv hLb KviWvi, gvbmK nvmcvZvj, miKvix wKqYv c0Z0vtbi gZ c0Z0vnbK
tc0qvtU cwipwv Z nq, ZLb tm me c0Z0vtbi KZ0t`q i c`q t`tK AskM0hYKvixi `vaxbZv
fxlyfvt0 cfrweZ ntZ cvti| thgb, GKRB tivMx hLb GKRB wPwKrmK-Mtel`tKi Aaxtb
wPwKrmvaxb _vtKb, ZLb tmB tivMx Zvi Dci tKvb w0w`0 wPwKrmv c0wZ c0qvMti Rb`
mntRB m0szZ w`tZ cvtib| KviY, tivMwU tmB wPwKrm`tKi Dci w0f`kxj | GLvtb hw` l
AwcZ m0szZ cvl qv wMtqtQ, wKš` m0szZwU KvhZt `vaxb bq| AZGe, i`agv` AskM0hYKvixi
m0szZB bq, ZvtK Ab`t`i mvt_ civgk0Kivi mthvM l `vaxbZv w`tZ nte| Ggb wK, m0szZ
c0vtbi mgq ZZxq e`w3 ev ZZxq c`q i Dcv`wZ _vKv evAbxq|

cY0Z_` (Full Information): m0szZ c0vb i`ayt`^Ovc0Yw` Z ntj B Pj te bv, m0szZ M0hYi
Rb` AskM0hYKvixtK MtelYvi wel`tq cY0Z_` w`tZ nte| wKš` c0KZc`q cY0AwcZ m0szZ
cvl qv m0e nq bv| KviY, AskM0hYKvixtK cY0Z_` w`tq m0szZ tctZ ntj e0msL`K
wetkl`Ai gva`tg c0`ZKZ we`wv Z Z_`tK Dc`vcb Ki`tZ nte| AtpK t`q t`i, weAvbxt`i
KvtQI m0uY0Z_` _vtK bv| hw` m0uY0Z_` weAvbxi nvfZ _vtZv, Zvntj nqtZv MtelYwU
cwiPvj bvi c0qvRb ntZv bv| Zvi A`GB bq th, cY0AwcZ m0szZi bwxZgvj wU c0qvM Kiv
hvq bv| Zte, hZ` t m0e c0qvRbxq Z_` c0vb Kti m0szZ M0hYi tKškj wU mntRB c0qvM
Kiv hvq| GB j`t`q, Mtel`tKi hv KiYxq Zv ntj v: MtelYvq th c0wZ e`envi Kiv nte Ges
MtelYvi Df`k` wK, Zvi GKwU chf0 e`vL`v w`tZ nte; m0e` A`w`- FYvZK cfrve, ev
wect`i S0K m0utK0eY0v w`tZ nte; m0e` mjdj m0utK0h_vh` eY0v w`tZ nte; c0wZ
m0utK0th tKvb c0kie DEi t`evi c0zk0v w`tZ nte; AskM0hYKvixi Rb` m0eav ntZ cvti
Ggb weKí c0wZi K_v RvbtZ nte; Ges MtelYvi th tKvb `fi AskM0hYKvix Zvi m0szZ
c0`vni Ki`tZ cvtib, tm wel`tq ZvtK AwvZ Ki`tZ nte|

Dcj wä (Comprehension): Aþk mgq Mtel Yv cKtí i Dfí k` I c×wZi we`wii Z weei Y mþZi Zv mnþR Dcj wä Kiv hvq bv| Kvi Y, c×wZ, t j v Ggbfvte cðqM Kiv nq th, mæ` Smk, t j v Lp m² frte we`gvb vþK, hv AskMhYKvix mæšZ cðvtbi mgq ešZ cvtib bv| AskMhYKvix hvþZ G me welq Dcj wä KiþZ cvtib, tm Rb` cðqvRbtevtä ht_ó cwi gvþY wkwþZ AskMhYKvixþK Mtel Yvq mæú³ KiþZ nte, AskMhYKvixþK Mtel YwU mæúþK® tevSþZ cvtib Ggb civgkR wþqM KiþZ nte, AskMhþYi Rb` Abþiva Kiv Ges mæšZ cðvtbi Rb` AskMhYKvixi w×vš-MhþYi gta` mgq þ¶cY Kþi welquU mæúþK®cwi cY` Dcj wäi mþhvM w`þZ nte|

tMvcbxqZv (Privacy)

tMvcbxqZv i ¶v ev jsNþbi welquU mevi Rb` GKwU „i“ZcY®welq| tMvcbxqZv i ¶vi Awakvi ejþZ tevSvq, GKRB e`w³i B`Qvi ev w×vš-MhþYi `faxbZv Ges KLB I tKvb cwi w`wZþZ w×vš-MhþYi Kiþeb Zvi Awakvi | Zvi wekþm, gþbvfvte, AvPi Y Ges gZvgZ Aþ`i mvt_ fvMvfvM Kiteb, bv wk jþKtq ivLþeb, tm mæúþK®w×vš-MhþYi `faxbZv Awakvi i mvt_ RwoZ| tMvcbxqZvi welquU Zþ`i `úkRvZiZv, chþ¶þYi cUfvq, Ges Zþ`i cPvi, GB wZbuU `wóf w/2 t_þK t`Lv ntq vþK|

Zþ`i `úkRvZiZv (Sensitivity of Information): th Z_` Mtel K msMh KiþQb Zv AskMhYKvix e`w³þK KZUKz úgwKi mæšþxb Kþi, ev Zv Zvi e`w³MZ tMvcbxqZvþK cKvk Kþi, Zvi Dci wþfP Kþi Zþ`i `úkRvZiZv| wKQyZ_` iþtqO, hv Ab` Zþ`i tþtq tekx e`w³MZ Ges tm, t j v e`w³þK tekx úgwKi mæšþxb KiþZ cvti | thgb, agrq AbjvM, thšb AvPi Y, Avq, RwiZ-eYþZ ms`vi, eþ×gÉv, mZZv, mvm, BZ`w` i gZ `ewkó`| bvg, c`ex, tckv, BZ`w` Ab`vb` e`w³MZ `ewktó`i tþtq tekx `úkRvZi | Z_` hZ tekx `úkRvZi nte, Mtel Yvq AskMhYKvixi e`w³MZ tMvcbxqZv i ¶vi e`vcvti ZZþekx wþvcÉvgj K e`e`v MhþY KiþZ nte|

th Z_` Mtel K msMh KiþQb Zv AskMhYKvix e`w³þK KZUKz úgwKi mæšþxb Kþi, ev Zv Zvi e`w³MZ tMvcbxqZvþK cKvk Kþi, Zvi Dci wþfP Kþi Zþ`i `úkRvZiZv|

chþ¶þYi `k`cU (Settings Being Observed): Mtel Yvi `k`cU GKwU Mtel Yv t_þK Ab` Mtel Yvq wþbentZ cvti — tmiU nþZ cvti Lp tMvcbxq, Avevi Zv nþZ cvti GþKerþi cKvk`| thgb, AskMhYKvix e`w³i ewo nþZ cvti metþtq tMvcb `vb| AZGe, AskMhYKvixþ`i ce®AbgwZ Qovv Zvþ`i ewotþZ cðek Kiv %wZKZv wþivax| hvB tniK, Mtel Yvi `vb KZUKz tMvcb ev cKvk`, Zv Aþk mgq wbaþY Kiv hvq bv ejþ Aþk Mtel Yv `bwZKZv welqK cðkæ mæšþxb nq| thgb, Avgiv Rwb th, gv`K tmebKvixiv mviYZt cKvþk` gv`K `è` tmeb Kþi bv| wKš` Zvþ`i AvPi Y chþ¶þY Kivi Rb` Mtel K hw` gv`K `è` mieivnKvixi QÚþetþ Zvþ`i þK GKwU `vþb tWþK Gþb Avkþm t`b th, Zvþ`i þK tKD chþ¶þY KiþQ bv, Zþe Zviv nqþZv `v`Qþ` gv`K `è` tmeb KiþZ `i` Kiteþ| G aiþYi Mtel Yv A%wZK ejþ wþeþPZ nte| Kvi Y, Mtel K thfvte Zvi Mtel Yv Kvþ®mæúv`b KþiþQb Zv cZvi Yvi mvgj |

Mtel Yvi `k`cU GKwU Mtel Yv t_þK Ab` Mtel Yvq wþbentZ cvti | tmiU nþZ cvti Lp tMvcbxq, Avevi Zv nþZ cvti GþKerþi cKvk`|

Zþ`i cPvi (Dissemination of Information): Mtel Yvi Ab`Zg Dfí k` nþjv Zþ`i cPvi Kiv| Z_` cPvi KiþZ wþtq Mtel KþK memgq j ¶v` ivLþZ nte th, AskMhYKvixi cwi Pq thb tKvþfvte cKvkKZ bv nq| tKvb tKvb t¶þþ` nqþZv AskMhYKvix wþþR Zvi cwi Pq cKvþk mæšZ w`þZ cvtib, ev tMvcbxqZv i ¶vi AwakviþK cZ`vrvv KiþZ cvtib| tm t¶þþ`, Mtel KþK Aek`B ÁwicZ mæšZ MhþY KiþZ nte| Z_` cPvþi t¶þþ`, cðÉ Z_` t_þK Z_` cðvbKvixi cwi Pq Avj`v KiþZ nte, hvþZ Kþi Z_` cðvbKvixi mvt_ Z_`þK wþvYZ bv Kiv hvq| GuU wþwðZ Kivi Ab`Zg Dcvq nþjv, cKgvj vi gta` DEi`vZvi bvg bv RvbþZ tþtq

Gm Gm GBP Gj

GKwU wPwyZKiY b=ti gva`tg Z_` msMh Kiv| wekLtiYi Rb` Z_`mgn cduqvKitiYi ci
wPwyZKiY b=tiUtk Avjv`v Kti wbtj mntRB AskMhYKvixi cwiPqtK `be`K Kti tZvjv
hvq|

mvisk

GB cvtV Avgiv MtelYvi t`qit` bWZKZvi fngKv AvtjvPbv KtiwQ| MtelYvi KvR`i`i cte^o
th welq,tjv`bwZKZv wel tq ckaZj tZ cvti tm,tjvtK cwi nvi Kti MtelYv cwi Pvj bv Kitz
nte| Ab`vq, MtelYvU A%bwZK etj wPwyZ nte| %bwZKZvi wePbvq `U AnaKviti 0s`
itqtQ| GKwU ntjv MtelYv I Avb AR`bi AnaKvi Ges Ab`wU ntjv, MtelYvq
AskMhYKvixi tMvcbxqZv i`qvi AnaKvi | G`U mgšq NuUtg MtelYv KgRvU cwi Pvj bv
Kitz nte| AvwZ m`qZ I tMvcbxqZvi wel quUtk mwekl `i`Zj w`tz nte| `bwZKZvi
wel quUtk wePbvq wbtZ ntj MtelKtk cY`Z_` m`utK`l qmKenvj ntq DEi`vZvi Kvto
MtelYvi wel qe`Dc`vcb Kitz nte| iayZvB bq, MtelKtk `xarfvt Zvi gZvgZ t`qvi
cwi tekI m`o Kitz nte|

cvfVvEi gj`vqb

`be⁹³K cċæ

mWVK DĒti i cvfk WJK (√) WPy w` b –

1| Mtel Yvq `bwZKZv ntj v:

- K. Mtel Yv Ktg⁹Atc⁰qvRbxq A_@LiP bv Kiv
- L. Mtel Yv Ktg⁹Ac⁰qvRbxq mrvnh` MhY bv Kiv
- M. tckvMZ Abkxj tbi gva`tg Z_` mvi wYe×KiY
- N. tckvMZ Abkxj tbi MhYthvM` bWZgvj v_ tjt vtK tgfb Pj v|

2| Mtel Yvq m⁹sz MhYi tKŠkj wnmvte Mtel KtK hv Ki tZ nte:

- K. Mtel KtK wbtRi cwi Pq w` tZ nte
- L. Mtel Yvi Dti k` m⁹utK⁹DĒi `vZvtK GKwJ chß e`vL`v w` tZ nte
- M. Mtel KtK Zvi Dci l qvj vi cwi Pq w` tZ nte
- N. Dcti i me|

3| WkOzZ_` AvtQ hv wekl fvte Mtel Yvi t⁹t¹ ūgWki m⁹o Ki tZ cvti | tm_ tjt v nt`O:

- K. agr⁹ Abj vM
- L. e⁹xgĒv
- M. Avq
- N. Dcti i me|

msv⁹B cċæ

1| Mtel Yvq `bwZKZv eRvq i vLvi Dcvq Wk?

2| Mtel Yvq e`w³MZ tMvcbxqZv eRvq i vLvi Kvi Y Wk?

iPbvqj K cċæ

1| mvgwRK Mtel Yvq `bwZKZv ej tZ Wk tevsvq? Gi_ i "Zi Avtj vPbv Ki "b|

2| ÁwicZ m⁹sz Wk? ÁwicZ m⁹sz i mvt_ RwoZ Dcv` vb_ tjt v Avtj vPbv Ki "b|

Mtel Yv mgm'vi wbePb I mfeXkiY

Selection and Formulation of a Research Problem

GKRb MtelK MtelYvi i'itZB th cOkie m=§Lxb nb, tmwU ntjv OmteYvi welqe' wK nte0? G cOkie DEiwJ mnR bq| KviY, gvbe AvPiYi me wKQK MtelYvi welqe' wnmvte wbePb Kiv hvq| wKs' tm mKj welqe' t_tK MtelK Zvi MtelYvi Rb' tKvb mgm'wUtk tetQ wteb, tm welq wmvS-MhY AtbK_tjv Dcv`vbi Dci wfp Kti| tmwU ntZ cvti, tKvb mgvR%AwbK Av`k@ifc, Mteltki gj`teva I cQ`, DEi`vZvi cZwqvqi gvIv, MtelYv cxwZ, mgqKvj, A_©Rbej, ev MtelYvi cKwZ| GZ wKQwetePbvi cil nqtZv MtelK tKej KZ_tjv MtelYv cth/2 wbePb Kitz mTlg nteb| tmB wbePZ MtelYv cth/2_tjv tK MtelYvthM' mgm'vq ifcvsi Kitz nte| A_w, mgm'wUtk mybw` ofvte mfeXkiZ nte Ges we`gvb ZEj I MtelYv chfjvPbvi ci mgm'wUi chfB eYbw Kti MtelYvi Dti'k' wbaY Kitz nte| G mKj welqe' GB BDwbtUi Avtj vP'mPrtZ cOarb' tctqtQ|

GB BDwbtU Avgiv th cw_tjv Aa'qb Kitev, tm_tjv ntjv:

- ◆ cw - 1 : MtelYvi Rb' welqe' wbePb
- ◆ cw - 2 : mybw` m gm'vi mfeXkiY
- ◆ cw - 3 : mgm'vi eYbw I MtelYvi Dti'k'

cvW - 1

Mtel Yvi Rb` wel qe`wbePb *Selecting a Topic for Research*

GB cvW tkłl hv Rvbr hvte —

- Mtel Yvi wel qe`wKfvte wbePZ nq
- Mtel Yvi wel qe`wbePb cŕve we`vi Kvi x Dcv` vb
- Mtel Yvi Rb` wel qe`wbePb ev`evqbthvM`Zvi „i`Zi

Mtel Yvi wel qe`wKfvte wbePZ nq (How a Research is Topic Selected)?

ŰMtel Yvi Rb` m`e` wel qe`wK ntZ cvtiŰ? GB cŰkŰ: Revte mvavi Yfvte ej v hvq th, gvbłli AvPiY hZ e`vcKZv vbq we`Z Ges gvbłli AvPiYtK hv wKQz cŕveZ Kti, Zvi meikOB Mtel Yvi wel qe`wntZ cvti | hv` Avgiv`i agvŰ weifbŕŕi` RvWZtMvŰx ev weifbŕagŕŕ tMvŰi gta` m`utKŰ Dci Mtel Yv Ki tZ PvB, Zvntj l t` Lv hvte th, AbjmŰvtbi tŕŕŰ A tK we`Z | thgb, tMvŰx,tjv GtK Actii cŰZ wKfvte AvPiY Kti? GtK Actii m`utKŰwK fvte ev Abŕfe Kti? HwZn`, wekjm, e`w`Zi Ges ms`wzi wŕwE tZ cŰZwŰ tMvŰx KZUKz wŕfbŰ Zviv wKfvte teŰo D tV? wki t`i cŰZ Zviv wK AvPiY Kti? Zv t`i Rxeb hvŰvi cŰvj x cwi eZŕbi cŰPŰvq Zviv wKfvte cŰZwŰqv e`Z Kti? BZ`w` |

th tKvb mvgwRK mgm`vtK Mtel Yvi wel qe`wmmvte wbePb Kiv th tZ cvti | thgb, teKvi Zi, RbmsL`v mgm`v, `wi`a; AvšRŰZK msNvZ, cwi tek` tY, wewObzvtava, bvix wbhŕZb, BZ`w` | gvbłli th tKvb AvPiYtKI Mtel Yvi wel qe`wmmvte wbePb Kiv th tZ cvti | thgb, mwnsm AvPiY, iŕŕYkxj gŕbvfve, ARŕbi AvKvŕŕv, ivRŰwZK AvPiY, Aciva cŰYZv, BZ`w` | th tKvb ZE; ev ZtE; AskI Mtel Yvi wel qe`wntZ cvti | thgb, mvgwRK cwi eZŕbi ZE; gŕbwetkŕŕYi ZE; weeZŕbi ZE; mvgwRKxKiY ZE; wŕŕY ZE; BZ`w` | G me wel qe`w KL tŕv tKvb mgm`v mgvav tbi Dcvq wbaŕŕ tYi Rb` cwi Pwŕj Z nq, KL tŕv G,tjv ZE; weKv tki Dcvq wmmvte e`eüZ nq, KL tŕv Mtel Yv tKškj D`metbi Rb` GKwŰ mgm`vtK wbePb Kiv nq, Avevi KL tŕv hMcrfvte GKwaK D t k` mva tbi Rb` Mtel Yvi wel qe`w wbePZ nq |

Mtel Yvi wel qe`w KL tŕv tKvb mgm`v mgvav tbi Dcvq wbaŕŕ tYi Rb` cwi Pwŕj Z nq, KL tŕv G,tjv ZE; weKv tki Dcvq wmmvte e`eüZ nq, KL tŕv Mtel Yv tKškj D`metbi Rb` GKwŰ mgm`vtK wbePb Kiv nq, Avevi KL tŕv hMcrfvte GKwaK D t k` mva tbi Rb` Mtel Yvi wel qe`w wbePZ nq |

G Qov, th tKvb wel q m`utKŰAvgt` i mvavi Y tKšZnj t` tKI Mtel Yvi wel qe`w D`e ntZ cvti | tmwŰ ntZ cvti tKvb chŕeŕŕY, msev`c t i cŰZte`b, tKvb miKvix KgŕPx, cwi ewi K w`vš, ev tKvb wel q m`utKŰAbgvb, BZ`w` | Mtel Yvi wel qe`wntZ cvti Ggb wKQzD`vni Y t` qv hvK |

GKwŰ chŕeŕŕY:

ŰGKwŰ ci xŕŕŕv wKQzQvŰ-QvŰx Ab` QvŰ-QvŰx t` i tPtq tekx b` tctqtQ | Ű

G i Kg GKwŰ mvavi Y chŕeŕŕY t` tK PU&Kti gŕbi gta` KZ,tjv cŰkŰRvM tZ cvti | thgb, tKb GKRb QvŰ/QvŰx A tbi i tPtq tekx b` cvq? tKvb ai tYi QvŰ-QvŰx i v tekx b` cvq? wKfvte cvq? BZ`w` |

cwi erfi i GKwU „i“ZcYm×vš-

Ŧgtqtk K`đj fivZ©Kivtbi welq Kwig mŕne Ges Zvi`x`ŦRtb wv×vš-ubtZ
cviŦQb bvr th, Zviv Zvt`i tgtqtk Bsti Rx gvaŦg, bvr wk evsj v gvaŦg covteb|Ŧ

G welq wv×vš-ubtZ wŦq th cŦkŦj v DŦ wcz ntZ cvfi, Zv ntjv: `ŦU gvaŦg covi gŦa`
fvlv Qrov Ab` tKvb Zdv AvŦQ wk? mšŦbi mvgwRKxKiŦY Gi tKvb cfve cote wk? tckv
wbeŦtb `ŦU gvaŦg tKvb cv`R`gj K cfve tdj Ŧe wk? BZ`w` |

GKwU msev` cŦZte` b:

ŦMZ eŦti i Zj bvg GeŦi Acivtai gvŦv evx tctqŦQ|Ŧ

cWŦKi gŦb cŦkŦRvMŦZ cvfi th, wk gvŦvq Aciva evx tctqŦQ? tKb evx tctqŦQ? tKvb
aiŦYi Aciva evx tctqŦQ? tKvb tkYxi gvbj tekx Aciva KiŦQ? BZ`w` |

GKwU mi Kvix KgŦPx:

Ŧmi Kvi Pj wZ A`eŦti eq`c fivZv cŦZŦ Kivi welq wetePbv KiŦQ|Ŧ

mi Kvix GB KgŦPxU ev`evqŦbi K_v fveŦj gŦbi gŦa` th cŦkŦj v GŦm fxo KŦi, tm`Ŧj v
ntjv: Ŧ`Ŧk wk cwigvY eq`c gvbj iŦqŦQ? eq`c gvbj Ŧ`i mweR Ae`wU tKgb? gv_v wcz
fivZv cwigvY wk nŦe? Gi đj ewl R evŦRŦU KZUKzeivŦ wbaŦi Z nŦe? eivŦ KZ evowZ
A`ŦKv_v Ŧ`ŦK AvmŦe? BZ`w` |

MŦelYvi Rb` hŦ welq e`wbaŦi Y KŦi Ŧ`qv_vŦK, tm`ŦŦŦ MŦelŦKi Rb` Ab` tKD wv×vš-
MŦY KŦi Ŧ`q, wŦRŦK wv×vš-ubtZ nq bvl wkš` AwaKvsk ŦŦŦŦ, MŦelKŦK wŦRŦKB
MŦelYvi welq e`wbeŦb KiŦZ nq| mvaivZt, MŦelŦKi gŦb tKvb mŦw`Ŧ aviYv ev
aviYv`Q Ŧ`ŦK wZwv wv×vš-MŦY KŦib th, wk welqŦi Dci wZwv MŦelYv KiŦeb| wkš`
MŦelK tm`welq wv×vš-MŦŦYi cŦeŦmB welqŦi wewfbŦcŦŦŦŦi Dci wk wk MŦelYv ntqŦQ,
Zv chŦj vPbv KŦi Ges mnKgŦ`i mŦv` AvŦj vPbv KŦi Ŧ`Lv thŦZ cvfi th, welq e`mŦŦK
MŦelŦKi th cŦwŦK aviYv iŦqŦQ Zv KZUKz cŦmŦK| MŦelŦKi aviYv Ŧ`ŦK Ab`Ŧ`i aviYv
mŦŦŦŦŦŦŦŦ cvfi, wecixZgŦx ntZ cvfi, GgbwK welq wJi Dci MŦelYv KiŦj ivR`wZK,
mvgwRK ev mŦv`wZK mŦm`v mŦŦ ntZ cvfi, hŦZ KŦi MŦelK MŦelYvi AvMŦ nwiŦq tdj ŦZ
cvfi b| AZGe, Ŧ`Lv hŦŦ`Q th, iŦŦZ hZUv mnR gŦb nq, MŦelYvi welq e`wbeŦb
cŦKZcŦŦ| ZZUv mnR KvR bq|

Zvntj GKRb MŦelK wkfvte wv×vš-Ŧbteb th, wZwv tKvb welqŦi Dci MŦelYv KiŦeb?
MŦelYvi welq e`wbeŦb i wv×vš-Ŧbteb Dci cfve tdj Ggb Dcv`v`Ŧj v wŦgŦAvŦj vPbv Kiv
ntjv|

*MŦelYvi welq e`wbeŦb
wv×vš-MŦŦYi ŦŦŦŦ tKvb
evav aiv wbgg ŦbB| Zte
ŦKvb welq e`wbeŦb i
ŦŦŦŦ MŦelK wŦRi KvŦQ
wkQz cŦkŦvLŦZ cvfi b|*

MŦelYvi welq e`wbeŦb cfve w`vi Kvix Dcv`vbmŦa (Factors Affecting the Selection of a Research Topic)

MŦelYvi welq e`wbeŦb wv×vš-MŦŦYi ŦŦŦŦ tKvb evav aiv wbgg ŦbB| Zte tKvb welq e`wbeŦb i
ŦŦŦŦ MŦelK wŦRi KvŦQ wkQz cŦkŦvLŦZ cvfi b| thgb,

- wbeŦPZ mŦm`wU wk MŦelYvi Rb` „i“ZcY?

- GB Mtel Yv wK tKvb cv_R` `Zwi Ki te?
- tKb Ki te?
- wKfvte Ki te?
- Mtel YwU wK tKŠZntj v` xck nte?
- GwU wK Ggb tKvb avi Yvi mvf_ msuké-nte, hvi e`vcK I we`Z côm½KZv i tqtQ?
- cPwj Z a`vb avi Yvi gta`Kvi Am½wZ , tj v wK GB Mtel Yvi gva`tg cKwKZ nte?
- GB Mtel Yvi gva`tg cÖB dj vdj cPwj Z mvgwRK i wZ I Abkxj b cwi eZfb mnvqK nte wK?
- GB Mtel Yv wK „i“ZcY©mvgwRK cñt½i t¶t¶ tKvb bZb AŠ`ß ev Dcj wai RbY t` te? BZ`w` |

Dcwi wj wE-Z cKq,tj v ch¶j vPbvi ci GKRb Mtel K Zvi wbtRi AvMñ, ev metPtg e`vL`vthvM` AbkÍ wK nte, Zvi wetePbv, ev mgm`wU wbtq Mtel Yv Ki tj wel qe`i Dci we`gub ÁvbtK A_`enfivte m½wZcY©Ki te wK bv, ev tm wel qwU Ávbtbi RMtZ tKvb Awfbe Ae`vb ivLte wK bv, Gmtei wfvE`Z Mtel Yvi wel qe`tK wbePb Ki teb | Awakvsk t¶t¶, wel qe`i wbePbuU ntq _vtK m`eZt AbmÜvbKvixi ev`evqtb i ¶gZvi Dci | hv tnvK, Mtel Yvi wel qe` wbePbtbi t¶t¶ tek wKQz Dcv`vb i tqtQ, hv PevŠ-wm×vŠ-MñtYi t¶t¶ c¶ve we`vi Kti _vtK | „i“ZcY©Ggb wKQz Dcv`vtbi Dtj E-Kiv thtZ c¶ti | tm ,tj v ntj v:

mgvR%ÁwbK Av`k`ifc (Sociological Paradigm): mgvR%ÁwbK wPŠvi t¶t¶ AtbK i Kg Av`k`ev gZev` i tqtQ, th ,tj vi cÖZwU gj`teva, c×wZ, cwi wa, cKwZ Ges Avtcw¶K cÖZw¶qvi gta` m`útkP mýúo wfbZv i tqtQ | G me Av`k`ev gZev` Mtel Yv mgm`v wbañ tYi t¶t¶ fvgKv cij b Kti |

Mtel tKi wR`^gj`teva, cQ` I i`wPteva (Researcher's Personal Values, Tastes and Preferences): Mtel Yvi wel qe` wbePtb Mtel tKi wR`^cQ` I i`wPteva wei vU fvgKv ivtL | thgb, AtbK Mtel K i tqtQb hviv Mtel Yvi m`Zv I wei`xZvtK tekx „i“Z; w`tq _vtKb | Zviv gtb Kti b th, cÖKwZK cwi w`wZtZ gw ch¶q cwi Pwj Z Mtel Yvi gva`tg Atc¶vKZ Kg m`Z DcvE` msMñi tPtg cix¶vMñti wbcwšZ cwi w`wZtZ cwi Pwj Z Mtel Yvi gva`tg e`wbö DcvE` msMñ AwakZi weÁvbm`S | Mtel tKi gj`teva `ay th wel qe` wbePbtKB c¶weZ Kti ZvB bq, wK c×wZtZ Mtel YwU cwi Pwj Z nte Ges Mtel K wbtRi mvf_ Mtel Yvi wel qe`i m`úKwK wKfvte t` Lteb Zvl wbañi Z nq |

*Mtel Yvi wel qe` wbePtb
Mtel tKi wR`^cQ` I
i`wPteva wei vU fvgKv ivtL |*

cÖZw¶qvi gvT`v (Degree of Reactivity): DcvE` msMñi c×wZi gta` mnRvZ cÖZw¶qvi gvT`v Mtel Yvi wel qe` wbePtb GKwU „i“ZcY©Dcv`vb | cÖZw¶qvi gvT`v ej tZ GKwU Mtel Yvq e`eüZ DcvE` msMñi c×wZ DcvE`tK wKfvte Ges KZUKz c¶weZ Kti tmB wel quUtK tevSvq | hv`i Dci Mtel Yv cwi Pjv bv Kiv nq, Zviv ch¶¶YKvixi Dcw`wZtZ GK ai tYi AvPiY Ktib Ges Abcw`wZtZ AvtiK ai tYi AvPiY Ktib | AZGe, GKwU wetkl tMvöx wKfvte cÖZw¶qv e`³ Ki te, tmwU wetePbv Kti Mtel K wm×vŠ-tbteb th, Zvi Mtel Yvi cñ½wU wK nte Ges Mtel Yvq e`eüZ c×wZwU wK nte |

Mtel Yv c×wZ (Research Methodology): Mtel Yvq AbjgZ AbkÍ cix¶vi Rb` wK ai tYi c×wZ AŠ`ß nte, ev Avt`Š tKvb AbkÍ cix¶vZ nte wK bv, ev KvñKviY m`úK©

*Mtel Yvq Abygz Abki
cixivi Rb` wK aiYi cgvY
cxwZ ASfP nte, Avt`S
tkvb Abki cixivi nte wK
bv, ev Kiv`Kvi Y m`uK
e`vL`v Kiv nte wK bv,
BZ`w` w`l`q`i m`v`_
Mtel Yvi cxwZ Ges w`l`q`e`-
`w`b`e`P`b`i GKwU Mf`i m`u`K
i`q`t`Q`|*

e`vL`v Kiv nte wK bv, BZ`w` w`l`q`i m`v`_ Mtel Yvi cxwZ Ges w`l`q`e`-`w`b`e`P`b`i GKwU Mf`i m`u`K`i`q`t`Q`| Kvi Y, tKvb Mtel K nq`Zv mn-m`u`k`P` mnM w`b`Y`Q` Kti GKwU m`y`w`v`o` cwi msL`vbMZ Zvrch`gvT`v`q` tmB m`u`K`k`i`K` cgvY Ki`Z` P`rb, Avevi Ab`Rb m`v`g`v`U`v` ch`e`q`i`Yi w`f`i`Z` i`a`g`v`I AvPi`Yi e`Y`b`vi g`t`a`B m`x`g`v`e`x` _`v`K`Z` P`v`B`t`e`b`| Mtel Yvi w`l`q`e`-`w`K nte, Zv w`b`f`P` Ki`te` GB me`w`m`x`v`t`S`i` Dci |

w`e`k`i`Yi` GKK (Unit of Analysis): w`e`k`i`Yi` GKK h`w` t`Q`VU nq (thgb, GKRb e`w`³), tm t`q`i`T` Mtel Yvi w`l`q`e`-`GK iKg n`Z` cvti, Avevi h`w` w`e`k`i`Yi` GKK eo nq (thgb, GKwU c`i`Z`o`v`b` ev m`c`o`v`q`), Z`te` Zvi w`l`q`e`-`w`b`e`P`b` w`f`b`a`t`Z` cvti |

mgqKvj (Time): Mtel Yv h`w` GKwU w`b`w`o` mg`q`i` Rb` nq (cross sectional), Z`te` w`l`q`e`-`i` w`b`e`P`b` GK iKg nte, Ges h`w` `x`N`mg`q`i` Rb` nq (longitudinal), Z`te` w`l`q`e`-`i` w`b`e`P`b` w`f`b`w`i` Kg n`Z` cvti |

Mtel Yvi c`k`i`Z` (Nature of the Research): Mtel YwU wK Z`E`x`q` ai`Yi, bv wK c`o`t`q`w`MK ai`Yi nte Zvi Dci w`b`f`P` Ki`te` Mtel Yvi w`l`q`e`-`w`K nte |

*Mtel K wK w`l`q` Mtel Yv
Ki`te`b` Zv w`b`a`f`i`Yi` Rb`
m`a`y`b` I` A`_`A`b`K
q`l`g`Z`i`k`v`j` x` D`i`x`c`K` w`n`m`v`t`e`
K`v`R` K`ti` |*

m`a`y`b` I` A`_` (Prestige and Money): Mtel K wK w`l`q` Mtel Yv Ki`te`b` Zv w`b`a`f`i`Yi` Rb` m`a`y`b` I` A`_` A`b`K q`l`g`Z`i`k`v`j` x` D`i`x`c`K` w`n`m`v`t`e` K`v`R` K`ti` | w`e`f`b`e`m`g`v`R` w`e`f`b`e`m`g`t`q` w`e`f`b`e` w`l`q`i` Dci „i`Zi` w`t`q` _`v`t`K`|` tmB „i`Z`c`Y`w`l`q`i` Dci Mtel Yv A`b`K` t`e`k`x` m`a`y`b` I` A`_` e`w`b` N`w`t`q` _`v`t`K`|` thgb, m`w` R`f`ii` c`i`Z`t`l`a`K` A`w`e`v`t`ii` cwi e`t`Z`g`v`b`t`i` i` k`i`x`t`ii` A`1/2`-`c`i`Z`t`i` m`st`h`v`R`b` m`s`p`u`S`-Mtel Yv A`b`K` t`e`k`x` m`a`y`b` I` A`_` e`w`b` N`w`t`q` h`v`t`K`|` tmB A`_` e`w`b` e`w`³ MZ Avq` er Mtel Yvi Rb` Z`n`e`j` m`S`M`h` D`f`q` t`q`i`T` n`Z` cvti |

Mtel Yvi Rb` w`l`q`e`-`w`b`e`P`b` ev`-`e`v`q`b`t`h`v`M` Zvi „i`Zi` (Importance of Feasibility in Selecting a Topic for Research)

Mtel Yvi Rb` GKwU w`l`q`e`-`w`b`e`P`b`i` t`q`i`T` Mtel YwU ev`-`e`v`q`b` Kiv h`v`t`e` wK bv, tmB w`l`q`u` L`p`B` „i`Z`c`Y`K` Kvi Y, Dcwi`v`j` w`-`Z` me` Dc`v`v`t`b`i` w`e`P`v`t`i` nq`Z`v` GKwU` c`h`i`z`t`K` Mtel Yvi w`l`q`e`-`w`n`m`v`t`e` w`b`e`P`b` Kiv n`j`v` | w`K`S` t`Lv` t`M`j` th, w`l`q`u` Mtel Yvi Rb` ev`-`e`v`q`b`t`h`v`M` b`q`| w`l`q`e`-`i` c`k`i`Z`i` w`f`b`e`z`vi` Kvi`Y` w`e`f`b`e`w`l`q`i` t`q`i`T` w`e`f`b`e`m`g`m`v` Mtel Yv ev`-`e`v`q`b` c`i`Z`e`U`K`Z`v` m`y`o` K`ti` | Z`te, Mtel Yvi Rb` w`l`q`e`-`w`b`e`P`b` KZ`t`j`v` m`v`a`v`i`Y` w`l`q`i` q`i`t`q`Q`, tm`t`j`v`i` Av`t`j`v`P`b`v` w`e`k`l` f`v`t`e` „i`Z`c`Y`K` thgb, m`g`m`v`i` cwi`w`a, mgq, A`_` A`b`t` i` Kiv t`t`K` m`n`t`h`w`M`Z`v, h`_`v`h`_` b`g`b`v, h`S`c`w`Z` I` mi`Av`g, S`v`t`g`j`v` G`o`v`t`b`v, w`l`q`e`-`i` m`st`k`r`a`b` ev` cwi`e`Z`b` Kiv, BZ`w` | w`l`q`t`j`v` w`b`t`g`m`K`Q`U`v` w`e`-`w`i` Z`f`v`t`e` Av`t`j`v`P`b`v` Kiv n`j`v` |

*A`b`K` t`e`k`x` P`j` K`m`a`u`b`a`
w`l`q`e`-`i` w`b`e`P`b` Mtel Yv`K`
Aev`-`e`v`q`b`t`h`v`M` Kti` t`Z`t`j` |*

m`g`m`v`i` cwi`w`a` (Scope of the Problem): A`w`a`K`v`sk` wK q`l`v`b`w`e`k` Mtel K A`b`K` t`e`k`x` P`j` K` w`b`t`q` A`b`K` eo w`l`q`e`-`t`K` Mtel Yvi Rb` w`b`e`P`b` K`ti`b`| A`b`K` t`e`k`x` P`j` K`m`a`u`b`a`w`l`q`e`-`i` w`b`e`P`b` Mtel Yv`K` Aev`-`e`v`q`b`t`h`v`M` K`ti` t`Z`t`j` | Av`g`i`v` c`w` 2-G` t`L`t`e`v` th, GKwU w`l`q`e`-`t`K` e`v`L`v`i` Rb` e`u` i`Kg` Mtel Yv` c`i`k`e`D`l` w`c`Z` n`Z` cvti, w`K`S` Mtel K` Gi` GKwU ev` `q`u` c`i`k`e` w`b`t`q`B` t`K`e`j` Zvi Mtel Yv` K`g`c`w`i` P`j`v` b`v` Ki`Z` cvti`b`| Av`g`i`v` B`t`z`v`g`t`a`B` t`R`t`b`w`Q` th, w`e`A`v`b` I` m`y`g`w`R`K` w`e`A`v`t`b`i` t`K`v`b` c`i`A`t`K` e`v`L`v` Ki`Z` n`j`v, h`Z` Kg` P`j`t`K`i` g`r`a`t`g` e`v`L`v`w`U` Kiv h`v`q, tmB e`v`L`v`w`U` Z`Z`t`e`k`x` m`Z` Zv A`R`B` Ki`te`| A`Z`G`e, th`t`n`Z`i` GKwU w`l`q`i` me` c`h`i`z`t`K` GKwU Mtel Yv`q` A`S`f`P` Kiv h`v`q` b`v, tm`t`n`Z`i` Mtel Yv`q` wK` wK` P`j` K` A`S`f`P` Kiv nte Zvi m`x`g`v`t`i`Lv` U`v`b`t`Z` nte | GKwU Mtel Yv`q` KZ`t`j`v` c`h`i`z`t`K` w`b`e`P`b` Kiv h`v`q, tm w`l`q`t`K`v`b` w`b`q`q` t`e`t`a` t`q`v` b`v` t`M`j` I` GUK`z`e`j`v` h`v`q` th, h`w` w`l`q`e`-`w`U` R`w`j` nq, Z`te` GKwU ev` `q`u`i` t`e`k`x`

ch½ GKwU Mtel Yvq Ašfš Kiv ev-emšZ nte bv| Mtel KtK Ggb wKQzch½tK tetQ wbtZ nte, th,tj v mešPtq „i“ZcY©Ges th,tj v h_vh_fvte ev-evqb Kiv hvte|

mgq (Time): GKwU Mtel Yv ev-evqb Kivi Rb` mgq GKwU „i“ZcY©Dcv`vb| Awakusk tŋtŋ j ŋŋ Kiv hvq th, Mtel Yv mšubšKivi Rb` th mgq wbaŋ Y Kiv nq, Mtel Yv tkl KižZ Zvi tPtq AtbK tekx mgq tj tM hvq| Mtel Yvi Rb` Ggb tKvb wel qe`wbeššb Kiv wK nte bv, hv wbaŋi Z mgtq tkl Kiv hvte bv| AZGe, wel qe`wbeššbi cte©Mtel KtK Lp fivtj vfvte fivtZ nte th, Mtel Yv Kgŋ mgqGZ tkl Kiv hvte wK bv| Zv KižZ wMtq h_vh_bgbv wbeššb DcvE mšMŋi nwiZqvi wbgŋ, DcvE mšMŋ, DcvE cŋŋqvKi Y, wtkŋ I e`vL`v Ges Mtel Yv cŋZte`b wj LtZ KZ mgq j vMte, G mKj wel tq Mtel KtK wteššb Kiv nte|

Mtel Yvi Rb` Ggb tKvb
wel qe`wbeššb Kiv hvte bv,
hv wbaŋi Z mgtq tkl Kiv
hvte bv|

A_©(Money): mgtqi gZ A_P GKwU „i“ZcY©Dcv`vb| wbaŋi Z mgtq Mtel Yv mšubš KižZ bv cvitj e`q teto hvte Ges e`q ewx tctj Mtel Yv ev-evqb Kiv hvte bv| Dciš, Ggb tKvb wel qe`wbeššb Kiv wK nte bv, hvžZ Kti Mtel Yv mšubšKižZ wMtq eiv`KZ At_P NvUwZ t`Lv t`q, ev`vZv tMvŋ ev cŋtcvl K cŋqvRbxq cwi gY A_©eiv`i AvMŋ nwi tq tdjt b| cvkvcwK, Mtel Yv cŋŋqv mvt_ mšwKZ cŋZwU mšw` Dcv`vb wmvte i gta` Ašfš ntqtQ wK bv, Zv j ŋŋ ivLžZ nte| Mtel Yv ev-evqšbi tKvb chvŋ h` AcZ`wkZfvte wKQz A_©e`q nevi mšw`v`v`K, tmB mšw`v`v`Kl cwi Kí bvi gta` Ašfš KižZ nte| thgb, wbeššbZ bgbv,tj v h` w`Zfvte Owotq_v`K, Zte`v`v`KfvteB GKwU bgbv t_žK Avŋi Kiu bgbvq thžZ hvZvqZ LiP tekx cŋqvRb nte| h` tKvb bgbv mšMŋ bgbv Zwi Kiv`Zwi KižZ nq, tmU wmvte i gta` Ašfš KižZ nte|

wbaŋi Z mgtq Mtel Yv mšubš
KižZ bv cvitj e`q teto
hvte Ges e`q ewx tctj
Mtel Yv ev-evqb Kiv hvte
bv|

Ab`v`b`i Kiv t_žK mntšwMzv (Cooperation from Others): G chš-Avtj vPbvq gtb ntZ cvti th, GKwU mnR mij Mtel Yvi wel qe`wbeššb, ht_ó mgq Ges A_©cŋB NUtj B teva nq GKwU Mtel Yvi ev-evqb mnR ntq hvq| wKš`wel qwžtK GZ mij fvte t`Ljt nte bv| Kiv Y, AtbK mgq t`Lv hvq th, Mtel Yvi mvt_ Ab`v`b`i th me e`w`3 mšw`3_v`Kb Zvt`i Kiv t_žK mntšwMzv cvl qv hv`Q bv| thgb, Mtel Yvi wel qe`i gta` Ggb wKQzch½_v`KžZ cvti, th,tj v mšw`K©DšEi`vZviv Z` mieivn KižZ ivRx bv| ntZ cvtib| cixŋYgk K Mtel Yvq hv`i Dci Mtel Yv cwi Pj bv Kiv nte, Zvt`i mšw`Zi cŋqvRb| wKš` Mtel Yv Kg`i`i` KižZ w`tq t`Lv tMj th, Zvt`i mšw`Zi cvl qv hv`Q bv| mvŋv`Kvŋi Rb` AtbK tekx mgq cŋqvRb ntj, DšEi`vZviv mvŋv`Kvi MŋYKvixtK mntšwMzv bv| KižZ cvtib| KvšRB, Mtel Yvi wel qe`wbeššbi mgq G wel q,tj v wtkl fvte j ŋŋ ivLžZ nte, bštj Mtel Yv ev-evqb Amše ntq cote|

h_vh_ bgbv cvl qv (Availability of Reseach Subjects): i`ayDšEi`vZvt`i mntšwMzvB ht_ó bq| GKwU wel qe`w` wbtq Mtel Yvi tŋtŋ h` wtkl`ewkó`mšubšcŋqvRbxq mšL`K bgbv bv cvl qv hvq, tm tŋtŋ Mtel Yv ev-evqb Kiv mše nte bv| bgbvq cŋqvRbxq AtbK e`w`3 itqtQb, hviv Awakusk mgq ewoi evšti Ae`vb Ktib, ev ewotž_v`Ktj I Mtel Yv AskMŋY KižZ Pvb bv| Ggb wK, mšL`vj Ny AtbK mšcŋv`v`q m`m` itqtQb, hviv Mtel Yvi wel qe`ntž Pvb bv| G aiŋi wtkl`ewkó`mšubšbgbv mvt_ mšw`k`wel qe`w` wbtq Mtel Yv cwi Kí bv KižZ AtbK mgq Mtel Yv Kg`mšubšKiv Kwv ntq cto|

GKwU wel qe`w` wbtq Mtel Yvi
tŋtŋ h` wtkl
ewkó`mšubšcŋqvRbxq
mšL`K bgbv bv cvl qv hvq,
tm tŋtŋ Mtel Yv ev-evqb
Kiv mše nte bv|

Svtg`v Govšb (Avoidance of Trouble): AtbK Abw`Á Mtel K wbtRi AvMŋ Ges JrmšK`i dtj Ggb GKwU wel qe`wbeššb Ktib, hv Mtel Yvi gvš cš_ ev tkl cŋš-wMtq ivR`w`ZK ev mvgwRK mgn`v`mšw` KižZ cvti| Gi dtj, Mtel K Zvi KgRvU`w`MZ Kti cwi Kw`Z Mtel YvtK eRŋ KižZ eva` ntZ cvtib| tm Rb` Mtel Yv cwi Kí bvi mgq wbeššbZ

welqe`i me cñ½,tj vřK chřj vPbv Kti mřte` mKj mgmřtk wPřyz KiřZ nře Ges tm,tj v wKřite tgvKřitej v Kiv hřte, Zvi řKřkj I weKř řKřkj I wbarřY KiřZ nře|

Mřel Yř cwi Kř bři mgq
wbeřřZ welqe`i me
cñ½,tj vřK chřj vPbv Kti
mřte` mKj mgmřtk wPřyz
KiřZ nře Ges tm,tj v
wKřite tgvKřitej v Kiv hřte
Zvi řKřkj I weKř
řKřkj I wbarřY KiřZ nře|

mřřkrab ev eRřbi wřxřř-(Decision to Abandon or Revision): Mřel Yř cřuřvi GK chřq hw` ř`Lv hvq th, Mřel Yř thřřte cwi Kř bv Kiv nřqřQřj v, wK tmřřte ev`evqb Kiv hřř`Q bv, tm řřřřř Mřel K wK Kiřeb? AřbřK gřb KiřZ cvřib th, Mřel Yř Kgřu eRř Kiv DřPr| wKQř wKQř řřřřř, cwi wřřZ wqřřřři evBři Přj řMřj řmřu KivB nřřřřř mgřřřř nře| Zře, Zvi cře`mřte` mKj mřtebřřK gj`vqb Kři ř`LřZ nře th, řKřbřřte cwi Kř břřK mřřkrab Kři Mřel Yř Kgřřřř mřřbřřKiv hvq wK bv| thgb, wKřkvi-wKřkřřř`i cRbb`ř` welřq Mřel Yři Rb` gva`řgK we`řj řqi beg I`kg řkřřři Qřř-Qřřřř`i bgřřřř Ařřřř Kiv cřqřRb| wKř`wKQř řemi Křix`řj Ggb břřřřřřř v`vKřZ cvři th, Qřř-Qřřřř`i Dci`řj i evBři i Křřřř Mřel Yř Kivi Abřřřř řbB| tm řřřřř, Mřel Yř Kgřřřř eRř Kivi cře`řhLřřb Ggb cřZeřKřZř řbB, Ggb mi Křix ev Ab` řemi Křix`řj řřřřř řmB`řj,tj vřK cřZ`wřZ Kiv hvq wK bv, GB mřtebřřřřř Lwřřřř ř`LřZ nře|

mři řřk

řh řKřb mřgřřK mgmřv mřgřřK Mřel Yři welqe`i nřřZ cvři| Mřel Yři welqe`i wbeřřřři řřřřř, GKRB Mřel řKři avi Yřq AřbK wKQB cřřve we`ři Kři`řřK| th me welq mgmřv wbarřřřři řřřřř cřřveK wřmřřte KřR Kři, tm,tj v nř`Q Mřel řKři`řřřřř, mgq, A`ř`řb, Křj, BZ`řř| Ab`řřte ejřřř řMřj, Mřel K hLb řKřb mgmřv wbeřřř KiřZ hřb, ZLb Dcwi řřřř welq,tj v Mřel Yři ai Y wbarřřřř i`Zcřřřřřřř cvřb Kři`řřK| eZřřř cvřřř mgmřv wbarřřřři mřřř mřřřřřř welq, thgb, welqe`i wKřřte wbeřřřř nře, welqe`i wbeřřřři řřřřř cřřve we`ři Křix Dcř`řb,tj v wK wK, Zř Avřřřřř Kiv nřřřřř|

cvfVvEi gj`vqb

`be⁹³K cċæ

mWVK DĒti i cvfk WJK (√) wPý w`b –

1| MtelYvi wel qe`wnmvte:

- K. RbmsL`v mgm`vK wbePb Kiv thZ cvfi
- L. `wi`K wbePb Kiv thZ cvfi
- M. th tKvb mvgwRK mgm`vK wbePb Kiv thZ cvfi
- N. brix wbfZbK wbePb Kiv thZ cvfi |

2| MtelYv mgm`v wbePbi tġtġ wekI fġgKv cvj b Kti:

- K. MtelġKi B`Qv
- L. MtelġKi Avv_Ĥ m½wZ
- M. MtelġKi KvQ i wġZ MŠši msL`v
- N. MtelġKi ev`evqġbi ġgZv |

3| Mtel K wK wel ġqi Dci MtelYv Ki ġeb, Zv wbaġġYi Rb` _____ AġbK wel q
DġxcK wnmvte KvR Kti |

- K. mġyb I Ávb
- L. mġyb I A_©
- M. mġyb I wġġv
- N. mġyb I wWwġ |

mswġB cċæ

1| MtelYv mgm`v wbePb mgtqi „i`Zi KZUK?

2| h_vh_ bgbv wbaġġYi ceRZġK?

iPbvġj K cċæ

1| MtelYvi wel qe`wbePb cġve we`wi Kvix Dcv`vb „ġj v mġúġKġAvġj vPbv Ki`b |

2| MtelYv mgm`v wbaġġY Mtel KġK tKvb tKvb wel ġqi w`ġK „i`Zi w`ġZ nq, Zv Avġj vPbv
Ki`b |

mybow` 8 mgm`vi m`exKiY
Formulation of a Specific Problem

GB cW tk`l hv Rvbr hvte —

- M`el Yv`hvM` mgm`v wK
- M`el Yv c`h½ t`tk M`el Yv`hvM` mgm`vq ifcvš`i i c`uqv

M`el Yv`hvM` mgm`v wK (What is a Researchable Problem)?

GKw M`el Yv`i welq`e` wbeP`bi ci ciB M`el K fvetZ cv`ib th, wZwb wK DcvE msM`h Ki`eb? wK c`wZtZ Zv msM`h Ki`eb Ges wKf`vte tm,`tj v`K w`tk`y Ki`eb? Ges G me wel`tq c``t`q`c M`h`Yi Rb` wZwb wK c`O`Z? wKš` KvhZt, Zv wK bq| G me wel`tq c``t`q`c M`h`Yi c`e`M`el Yv`i Rb` wbeP`Z mgm`vU`K w`Avbm`SZ c`wZtZ M`el Yv`i th`M` K`i Zj`te n`te| A`_r, mgm`vU`K mybow` 8 f`vte m`ex Ki`Z n`te, hv`Z K`i Zv ch`e`q`Y`th`M` n`tq D`v| wKš``f`M`RbKf`vte n`j | A`tbK t`q`l` t`Lv hvq` th, w`tk`h`Yi hv`š`t`K j`Nb K`i A`tbK mgm`v wbeP`bi ci ciB DcvE msM`h c`E` nb| G`Z avi Yv Kiv th`Z cv`i th, nq M`el K DcvE msM`h ni ci Zvi M`el Yv mgm`vi m`exKiY Ki`eb, bZev wZwb t`Kv w`Avbm`SZ M`el YvB Ki`eb bv| c`u`guU w`Avbm`SZ Mel Yv`i hv`š`tZ GKw A`w`wZK K`vR Ges w`O`Z`xquU w`Avbm`SZ M`el Yv bq|

M`el Yv`i mgm`v wbeP`b t`tk M`el Yv`hvM` mgm`vq ifcvš`i i c`u`qvU bZb M`el K`i`i tek Am`y`eavi m`S`Lxb K`i t`Zv`j | Ggb wK, Aw`f`A` M`el Kivl GB c`u`qvU`K L`e GKUv m`y`Ki e`j g`tb K`i`b bv| GKw M`el Yv`i m`vavi Y welq`e``t`K M`el Yv`hvM` K`i t`Zv`j vi c`u`qvq c`u`gZt, welq`e``i A`š`f`P` c`E``q,`tj v`K Ggbf`vte m`y`u`o K`i Zj`tZ n`te, hv`Z K`i th`t`KD e`š`tZ cv`ib th, M`el Yv`i c`k`w wK n`te? w`O`Z`xqZt, c`E``q,`tj v`K Ggb n`Z n`te th, tm,`tj v`K Aw`f`AZ`j ä c`h`v`Yi gva`tg c`u`Zwb`v`Z`j Kiv`bv hv`te| Z`Z`xqZt, c`E``q` ch`e`q`Y` ev c`t`iv`q` K`g`R`v`U`i gva`tg c`E``q,`tj v` m`u`t`K` Z`_` Avni Y Kiv hv`te| P`Z`L`Z`T, GB K`g`R`v`U`i`tj v`K ev`ev`q`b`th`M` n`Z n`te| A`_r, M`el Yv c`h`½ t`tk M`el Yv`hvM` mgm`vq ifcvš`i i c`u`qvU n`j v, G`K`B`m`v`_` c`E``t`qi m`g`e`x`g`v`b m`y`Z`x`K`i`Y Ges welq`e``i c`w`i`v`i m`g`e`x`g`v`b msK`x`Y`R`i`Y|

M`el Yv c`h`½ t`tk M`el Yv`hvM` mgm`vq ifcvš`i i c`u`qv (Process of Transforming a Research Topic to a Researchable Problem)

c`u`g`K`f`v`te wbeP`Z GKw M`el Yv c`h`½ c`u`qv`MK M`el Yv`i Rb` A`_u`o I w`K w`b`t` R`b`v`n`x GKw e`U ev`f. i gZ| M`el Yv mgm`vU`K m`y`u`o, m`y`Z`x` I w`K w`b`t` R`b`v`n`x K`i Zj`tZ n`j tmB e`U ev. w`U`K D`t`S`m`P`Z K`i c`h`½`u`i m`v`_` m`u`m`K`Z c`k`e`tj v`K w`P`y`Z Ki`Z n`te| Avgiv Z`L`b` t`Kej c`h`½`_`tj vi w`f`w`E`Z Avgv``i g`t`b`w`b`t`e`k`t`K M`el Yv`i mybow` 8 D`t`l`k` w`b`a`f`Y`i Kiv`R j`v`M`v`Z cv`i`te`v| GKw A`_u`o I w`K w`b`t` R`b`v`n`x mgm`vi e`U ev. w`U`K D`t`S`m`P`Z Kiv Rb` th c`k`e`tj v` D`l`v`c`b Kiv th`Z cv`i, tm,`tj v` n`j v.

- M`el Yv`i welq`e``i A`š`f`P` c`h`v`b c`E``q,`tj v` wK?
- c`E``q,`tj vi m`u`t`K`P` g`ta` wK NU`t`Q?

c`u`g`K`f`v`te wbeP`Z GKw
M`el Yv c`h`½ c`u`qv`MK
M`el Yv`i Rb` A`_u`o I w`K
w`b`t` R`b`v`n`x GKw e`U ev`f. i
gZ| M`el Yv mgm`vU`K
m`y`u`o, m`y`Z`x` I
w`K w`b`t` R`b`v`n`x K`i Zj`tZ
n`j tmB e`U ev. w`U`K
D`t`S`m`P`Z K`i c`h`½`u`i m`v`_`
m`u`m`K`Z c`k`e`tj v`K w`P`y`Z
Ki`Z n`te|

- Mtel Yvi mel qe`i c`avb c`h½, t j v wK?
- c`h½, t j vi GKwU mel q wK Ab` mel q tK c`fweZ Ki tQ, er Ab` mel tq cwi eZB AvbtQ?
- hw` cwi eZB NtU, Zte tKb Zv NUtQ?
- t mB cwi eZB, t j v wK f v te NUtQ? BZ`w` |

GB me c`k k e D E i Mtel t Ki AvM`ni c`h½, t j v tK Avj v` v Ki t Z mrvh` Ki t e | c w 1-G t` qv `ch`e`Y Y O-Gi D`vni YwU w f w E t Z Avgiv m g m`wU i `u o Z v I m y z x` K i t Y i mel q w t K tevSvi t P o v Ki t Z c w i | ch`e`Y Y w U w Q t j v O G K w U c i x`Y v q w K Q z Q v I -Q v I x A b` Q v I -Q v I x t` i t P t q tekx b`a t t c t q t Q O | hw` Avgiv c`k e Z w j th, t K b w K Q z Q v I -Q v I x A b` t` i Z j b v q tekx b`a t t c j O? Gi D E t i w b g n j w L Z m`a e` e`v L`v, t j v t K D c`v c b K i v t h t Z c v t i :

- w K Q z Q v I -Q v I x A b` t` i Z j b v q tekx t g a v e x |
- w K Q z Q v I -Q v I x A b` t` i Z j b v q tekx c o v t k v b v K t i t Q |
- w K Q z Q v I -Q v I x A b` t` i Z j b v q tekx c y o K i L v e v i t L t q t Q |
- w K Q z Q v I -Q v I x A b` t` i Z j b v q c o v t k v b v t K t e k x D c t f w M K t i t Q |

e`w` M Z A w f A Z v i w f w E t Z M t e l K A v t i v A w Z w i` w K Q z e`v L`v `w o K i v t Z c v t i b | t h g b,

- w K Q z Q v I -Q v I x M n -w k`Y t K i K v t Q c t o t Q |
- w K Q z Q v I -Q v I x i w c Z v -g v Z v A b` t` i Z j b v q tekx m`a u` k v j x |
- w K Q z Q v I -Q v I x i w c Z v -g v Z v A b` t` i Z j b v q A w a K w k`Y t Z |
- w K Q z w k`Y t K A b` t` i Z j b v q w K Q z Q v I -Q v I x i c o Z t e k x c`Y | c w Z Z j t` w L t q t Q b |

GKRb Mtel K w b e`P Z Mtel Yv m g m`v i m v t` m s w k e` c`h½, t j v t K h L b A v j v` v K i t Z m`Y g n b, Z L b t e v S v h v q t h, w Z w b M t e l Y v m g m`w U t K M t e l Y v t h w M` K t i t Z j v i j t`Y D t`a`S w P Z K i t Z t c t i t Q b | t K b w K Q z Q v I -Q v I x A b` t` i Z j b v q tekx b`a t c v q? O - G c`k k e A v U w m`a e` e`v L`v w Z w b `w o K i v t Z t c t i t Q b | M t e l K G i g a` t`_t K g v I G K w U e`v L`v t K w b e`P b K t i M t e l Y v m g m`w U t K m y b w` O K t i Z j t Z c v t i b | A b`v b` D c v`v b, t j v h Z, i`Z c`Y B t n v K b v t K b, M t e l t K i A i m s L`K D c v`v t b i D c i w b t R t K t K` t f Z K i v c`O q v B |

GKRb Mtel K w b e`P Z Mtel Yv m g m`v i m v t` m s w k e` c`h½, t j v t K h L b A v j v` v K i t Z m`Y g n b, Z L b t e v S v h v q t h, w Z w b M t e l Y v m g m`w U t K M t e l Y v t h w M` K t i t Z j v i j t`Y D t`a`S w P Z K i t Z t c t i t Q b |

GB m`a e` e`v L`v, t j v t K c`k k e A v K v t i i f c v`S h i Z K i t j, c o Z w U c`k e G t K K w U M t e l Y v c`k e n t q `w d v q | G i g a` t`_t K M t e l K t h t K v b G K w U e v `O w U c`k e k w b t q M t e l Y v c`k i i P b v K i t Z c v t i b | t h g b,

- t g a v w K c i x`Y v q Q v I -Q v I x t` i b`a t c o m B t Z t K v b c`f v e t d t j ?
- c o Z w` t b i A a`q t b A w a K m g q e`q K i t j w K Q v I -Q v I x i v c i x`Y v q t e k x b`a t c v q ?
- c y o K i L v e v i t e k x t L t j w K Q v I -Q v I x t` i c i x`Y v q t e k x b`a t t c t Z m r v h` K t i ?
- c o v t k v b v t e k x D c t f w M K i t j w K Q v I -Q v I x i v c i x`Y v q t e k x b`a t c v q ?
- M n -w k`Y t K i K v t Q c o t j w K Q v I -Q v I x t` i c i x`Y v q t e k x b`a t t c t Z m r v h` K t i ?
- m`a u` t` i c`P t h`P m v t`_ w K Q v I -Q v I x t` i A w a K b`a t c v e v i m`a u` K` e i t q t Q ?
- w c Z v g v Z v i w k`Y v i m v t`_ w K Q v I -Q v I x t` i c i x`Y v q t e k x b`a t c v l q v i m`a u` K` e i t q t Q ?
- w k`Y t K t` i c`Y | c w Z Z g j K h Z w k t K v b Q v I -Q v I x t` K t e k x b`a t t c t Z m r v h` K t i ?

Avti Kiu D`vniY t`qv hvK | aiv hvK, GKRB MtelK Zvi MtelYvi cñ½ unmvte minsmZvK teŦQ vbtqŦQb | wKŠ` Avgiv Rvnb th, minsm AvPiŦYi velquU tek e`vcK I ve`Z | G velŦq cŦŦqwmK MtelYvq AeZxY`ntZ ntj, cñ½uUŦK DŦŦšmPZ KŦi cŦŦŦg Gi cwi waŦK mybwi`Ŧ KŦi AvbŦZ nte | minsmZvi wefbae cKiy iŦqŦQ | thgb, ivŦŦq minsmZv, ivR%ŦwZK minsmZv, agxŦŦ minsmZv, mvs`wZK minsmZv, RwiZmEywfwEK minsmZv, wj ½wfwEK minsmZv, cwi ewi K minsmZv, mvaviY minsmZv, BZ`wi | aiv hvK, MtelK wj ½wfwEK minsmZv vbtq MtelYv KiŦeb etj wK KiŦjb | GŦZ gŦb ntZ cvŦi th, MtelK Zvi velqe`i cwi waŦK mybwi`Ŧ KŦi tdŦj ŦQb | wKQv mybwi`Ŧ Kiv tMŦj I cwi wai mybwi`Ŧ Kiy cŦivcyi nqu | KviY, minsmZvK AvŦiK gvŦvq wef³ Kiv hvq | thgb, MtelK wK` wK minsmZv, bv wK tgšwLK minsmZv vbtq MtelYv KiŦZ Pvb? ŦKb bv, GŦKKiu cKviŦŦi`i wfwEŦZ GŦKK iKg MtelYv cKŦeZwi nte, GŦKK iKg MtelYv bKkv`Zwi nte, GŦKK iKg bgbvqb c`wZ e`euZ nte, GŦKK iKg DcvE msMŦni c`wZ wbaŦi Z nte Ges GŦKK iKg DcvE weŦkŦŦYi ŦKškj wbaŦi Z nte |

aiv hvK, MtelK unvš`vbtqŦQb th, wZvb wj ½wfwEK minsmZvi` wK gvŦv vbtq MtelYv KiŦZ Pvb | G ŦŦŦŦ velqe`i cwi waŦK AvŦiv mybwi`Ŧ KŦi myZ² Kiv hvq | Zte aŦi tbqv hvK th, AvgvŦ`i Kwir Z MtelK Zvi velqe`ŦK tgvUvquUvŦe mybwi`Ŧ KiŦZ tŦŦiŦQb | GŦZ KŦi MtelYv cñ½ t`ŦK MtelYvŦhvM` mgm`vq ifcvšŦi i ŦKej gvŦ GKiu KgRvU m`u`w`Z ntqŦQ | wŦZxquU GLbl evKx iŦqŦQ | tmwU ntjv, MtelYv cñ½uUŦK DŦŦšmPZ KŦi cŦŦq`Ŧj vŦK myZ² Kivi gva`Ŧg MtelYv cKŦeŦj vŦK wbaŦi Y Kiv | AZGe, MtelYv cñ½uUŦK chŦeŦYŦhvM` MtelYvi j ŦŦŦ` ŦŦi avi KŦi ŦZvj vi Rb` th cKŦeŦj v DŦ vcb Kiv hvq, tm`Ŧj v ntj v:

- minsmZvi cKwZ wK?
- minsmZvi cKviŦŦ` Ŧj v wK?
- minsmZv ŦKb NŦU?
- minsmZv wK GKiu mvaviY %wfwEK NUbv?
- mgvŦR minsmZv wK gvŦvq we`gvb?
- ŦKvb weŦkI Ae`v wK minsmZvK DrmwvZ KŦi?
- minsmZv wKfvŦe NUŦQ?

D`vniY Abhvqx Avgiv Rvnb th, AvgvŦ`i Kwir Z MtelK Zvi MtelYvi Rb` wj ½wfwEK` wK minsmZvK teŦQ vbtqŦQb | ŦŦKb wj ½wfwEK` wK minsmZv NŦUŦ? Gi e`vL`vq ej v thŦZ cvŦi th,

- wKQzgvb | RbMZfvŦe minsm |
- Kg wKvŦZ gvbŦI i gŦa` wj ½wfwEK` wK minsmZvi NUbv tekx NŦU |
- wbgŦAvŦqi gvbŦI i gŦa` wj ½wfwEK` wK minsmZvi NUbv tekx NŦU |
- wbgŦcckvi gvbŦI i gŦa` wj ½wfwEK` wK minsmZvi NUbv tekx NŦU |
- mvgwRK I mvs`wZK gj`ŦevŦai mvŦ_ wj ½wfwEK` wK minsmZv RwoZ |
- `ŦZšŦeva eix`i KviŦY wj ½wfwEK` wK minsmZv Ŧekx NŦU |
- cwi evŦi mvgwRKxKiŦYi mgm`v`vKŦj wj ½wfwEK` wK minsmZvi NUbv tekx NŦU |
- emevŦmi cwi ŦŦki mvŦ_ minsmZv RwoZ |

wj ½wfwĒK `wnK mwnsmZvi GB mæde` e`vL`vtK MtelYv cĀkĀ AvKvti jfcvšwi Z Kiv thtZ cvti, hvi th tKvb GKwU ev`ŃU cĀkĀK wbtq MtelK Zvi MtelYv cĀkĀ `Zwi Ki tZ cvti b|

- wKQzgvbl wK Ab` gvbŃli Zj bvq RbMZFvte tekx mwnsm?
- wKŃlv wK wj ½wfwĒK `wnK mwnsmZvtK cĀfweZ Kti?
- Avq wK wj ½wfwĒK `wnK mwnsmZvtK cĀfweZ Kti?
- tckv wK wj ½wfwĒK `wnK mwnsmZvtK cĀfweZ Kti?
- mvgwRK I mvs`wZK gj`teva wK wj ½wfwĒK `wnK mwnsmZvtK cĀfweZ Kti?
- gvbŃli gta` `vZšŃevtai gvĪv ep` tctj wK wj ½wfwĒK %wnK mwnsmZv ep` cvq?
- mvgwRKxKi tYi mgm`v`vKtj wK wj ½wfwĒK `wnK mwnsmZv ep` cvq?
- mvgwRKxKi tYi mgm`v`vKtj wK wj ½wfwĒK `wnK mwnsmZv ep` cvq?
- emevtmi cwi tek wK wj ½wfwĒK %wnK mwnsmZvtK cĀfweZ Kti?

wKš` tKd cĀkĀKi tZ cvtib th, GZŃY tZv MtelK wbtRi AwfÁZv, ep` I weŃPbvi Dci wbfP Kti mgm`wU tK MtelYv thvM` Kti tZvj vi tPov Kti tQb| wKš` GB Ávb wK cĀ`q, tj vtK h_vh`fvte mZx² Kti tZvj v I welqe`i cwi wĀtK mjbw`Ń Kti tZvj vi Rb` ht_ó? th mvaviY chŃeŃYi wfwĒZ MtelYv cĀkĀtjv `Zwi Kiv ntqtQ, tmB chŃeŃYwU wK GKwU mvaviY wbgg, bv wK tKej B GKwU `Ńe NUbv? GB cĀkĀtj vtK wKQwv wbxŃlv Kti t`Lv cĀqvRb| wKfvte Zv mæde? GB wbxŃlvi Rb` `ŃU c×wZ Aej æb Kiv thtZ cvti| cĀgwU ntjv, wewfbcwiteŃk wMtq MtelYvi cĀ½, tj vtK wbeofvte chŃeŃY Kti t`Lv thtZ cvti th, MtelYvi Rb` wbeŃPZ cĀ½wU mæútk`th e`vL`v, tjv `wv Kiv tBv ntqtQ, tm, tjv mwZ` mwZ`B MtelYv thvM` wK bv| wZxqWU ntjv, cĀmwZK ZĒj I Ab` MtelKt`i Ńviv cwi Pwj Z MtelYv Kg`chŃj vPbv Kiv Ges G wel tq AwfÁ e`w`Ń i mvt_ Avtj vPbv Kiv|

Ab`vb` QvĪ-QvĪxt` i Zj bvq wKQz QvĪ-QvĪxi tekx bæŃ cvl qvi chŃeŃYwU tŃŃĪ, wewfbc wKŃlv cĀZŃv tB wMtq QvĪ-QvĪxt` i cixŃlvi dj vdj chŃj vPbv Kti t`Lv thtZ cvti th, mwZ` mwZ`B wKQz QvĪ-QvĪx Ab`Ń i Zj bvq tekx bæŃ tctqtQ wK bv| Zvi ci Zt` i Av`mvgwRK cUfwgmn Ab`vb` cĀ½, tjv chŃeŃY Kiv thtZ cvti | wj ½wfwĒK `wnK mwnsmZvi tŃŃĪ, th me e`vL`v ev MtelYv cĀkĀDĪ vcb Kiv ntqtQ, tm, tjv mwZ` mwZ`B NtU wK bv Zv t`Lvi Rb` tKvb GKwU wĀkl GjvKvq wMtq tmB ai tYi e`w³ ev cwi evi, tj vtK chŃeŃY Kiv thtZ cvti | cĀg welqe`i tŃŃĪ GB c×wZi cĀqvM wKQwv mnR ntj I wZxq welqe`i tŃŃĪ Zv tek KwVb| KviY, welqWU GZ mste`bkxj th, tKvb e`w³ mntR `xKvi Ki tZ PvBteb bv th, wZwv wj ½wfwĒK %wnK mwnsmZvi mvt_ RwoZ| G ai tYi cwi w`wZ tZ AvBb k;Lj v i ŃlvKvix ms`v, nvmcvZvj, mvvj k tK>?, BZ`w` tZ wj wce× Zt`i chŃj vPbv Kiv thtZ cvti | wKš` tmwU kġmva, RuUj Ges tek mgqmvtcŃ cĀµqv| Dciš, GwU AtcŃlvKZfvte GKwU AKvhŃi c×wZ| KviY, AtbK mgq t`Lv hte th, GKwU wĀkl GjvKvq `xN`mgq aŃi MtelYvi mvt_ msikĀ-cĀ`wKZ tKvb NUbv NtU wb, ev NUtj I Zv nqtZv mgm`vi cĀKZ ifctK cĀZdwj Z Kti bv| dtj, G ai tYi chŃeŃYgj K chŃj vPbv t`tK MtelYv mgm`vi fj msÁv, cĀvebv I w`K wbt`Rbv `Zwi ntZ cvti |

G ai tYi cwi w`wZ tZ wZxq c×wZwU AbjniY KivB tekx hy³ m½Z I KvŃŃi | tmwU ntjv, MtelYvi Rb` wbeŃPZ welqe`i Dci cĀmwZK ZĒj I Ab` MtelKt`i Ńviv cwi Pwj Z MtelYv Ktġp mhZæ chŃj vPbv| MtelYvi Rb` wbeŃPZ welqe`i ZwĒK I AwfÁZvj ä Ávtbi

ch@j vPbv wel qe`wU#K Mtel Yv#hvM` K#i tZvj vi t#j#i GKwU m#;Lj c#wZ wnmv#e Kv#Ri
K#i tZvtj Ges Mtel Yv mgm`wU#K m#se#fv#e #i#i avi | Zx² K#i tZvtj | wKŠ' h#` Ggb
nq th, Mtel Yvi Rb` wbe#PZ wel qe`i Dci tKvb Z#j tbB, ev tKvb Mtel Yv Kg#c#e[©]
cwi Pwj Z nqwb | #m t#j#i, c#_wgK ch#e#jY, wel qe`i Dci Awf#Á e`w³i mv#_ Avtj vPbv
Ges wR`^Awf#ÁZvi Avtj vtK Mtel Yvi wel qe`tK tc#bt#p#bKfv#e avi vtj v K#i tZvj vB
ntj v me#P#q Kv#Ri tKŠkj |

mvisk

GKRb Mtel t#K Mtel Yv c#h#z wbe#P#bi c#i th KvRwU w##vi mv#_ Ki#Z nq, tmwU ntj v
c#h#z#U#K mgm`vq i#cv#š# Kiv | K#qKwU D`vniY w`#q Avgiv t`Lv#bvi t#P#v K#i wQ wKfv#e
GKwU c#h#z m#_#ú#fv#e Mtel Yv mgm`vq i#cv#š#i Z nq | e`Z, cwi eZ#B c#_#q#q Mtel K#K th
wel q_#tj vi Dci bRi ivL#Z nq, Zv ntj v c#k#em#p#i c#_#q#v | A_#P, c#h#z#U#K Mtel Yv c#k#e
i#cv#š# Kiv | h#` m#_#ú#fv#e c#k#em#p#i Kiv hvq, ZLbB Mtel K c#k#e Avtj vtK Z` m#M#ni
b#wZgvj v wba#jY Ki#eb | Avi GB c#_#q#q, GKwU h_vh_ Mtel Yv cwi Pwj Z ntj Mtel K
mgm`vi c#KZ `#fc D`NvUb Ki#Z cvi#eb |

cvfVvEi gj`vqb

`be⁹³K cke

mWVK DEti i cvfk WJK (v) WPy w` b -

1| MtelYv ckeZwi Kivi tqtT _____ i "ZcyFngKv cvj b Kti:

- K. MtelYvi mgq
- L. MtelYvi cKvif`
- M. MtelTKi AwfAZv
- N. MtelYvi `vb|

2| MtelYv mgm`vK MtelYvthvM` Kti tZvj vi ceRZht`O:

- K. MtelYvi mvf_ A_ Drtmi mWsj b NUvfbv
- L. MtelYv mgm`vi mvf_ mswk-cn½_ tjtK Avj v` v Ki tZ cviv
- M. MtelYvi `vb, Kvj, cvT WVK Ki tZ cviv
- N. MtelYvi `vb wbaFY Kiv|

3| mvavi Y chfeqtYi wfiEtZ cO ZKZ ckbixqv Ab`Zg GKw cXwZ nt`O:

- K. wwfbcwv tetsk MtelYvi cn½_ tjtK chfeqY Kiv
- L. wwfbcwv tetsk MtelYvi bgbvK wbaFY Kiv
- M. MtelYvq AšfB avc_ tjtK cixqv-wbixqv Kiv
- N. Dcti i me|

msvqtB cke

1| MtelYv mgm`v Wk?

2| MtelYvthvM` mgm`v Wk?

iPbvj K cke

1| MtelYv mgm`v Wk? MtelYv mgm`vi ifcvšti i cOμqwU Avtj vPbv Ki "b|

2| MtelYvthvM` mgm`vi cOqvRbxqZv D`vni Ymn Avtj vPbv Ki "b|

mgm'vi eYbV I MtelYvi Dti'k

Statement of the Problem and Objectives of Research

GB cvW tkti hv Rvbn hvte —

- mgm'vi msAv I thSw³KZv
- mgm'vi eYbV wKfvte wj LtZ nte
- mgm'vi Dci we`gvb ZE; MtelYv I Avtbi chaj vPbv
- MtelYvi Dti'k

mgm'vi msAv I thSw³KZv (Definition and Rationalization of the Problem)

MtelYvi Rb" wbePZ mgm'vi msAv c0vb I thSw³KZv c0vtYi tqtI, c0tg mgm'wU wKfvte wbePb Kiv ntqtQ, Zvi eYbV KiZ nte| hw I G c0t1/2 Avgiv cvW 1 Ges cvW 2-G we`wi Zfvte Avtj vPbv KtiwQ, mgm'vi eYbVq tmuDi mswPjB Dti'k Kiv c0qvRb| thtnZi GKwU mgm'v Ovov MtelYv ntjv AUkvti AtUi gZ nvZto tdivi kwgj, tmtnZweAvbmPZ AbymUvtbi c0iv c0qvqi gta` c0g Ges metPtq „iZcY©KvRwU ntjv GKwU MtelYv mgm'vtK wPwYZ Kiv| wKs' Avgiv Rwb th, GKwU MtelYvtK wPwYZKiYi KvRwU hZ mnR etj gtb Kiv nq, c0KZc0tq Zv ZZUv mnR bq| KLtbv KLtbv GKwU mgm'vtK tetQ tbqvi KvRwU mgm'wU mgvavtbi tPtq KwWb ntq `wovq| Kvi Y, mgvR eU mgm'v iqtQ, wKs' me mgm'vB MtelYvthvM" bq|

GKwU mgm'vtK ZLbB MtelYvthvM" etj wetePbv Kiv hvte, hLb tmuU wZbwU kZ©c0Y KiZ| c0gZt, we`gvb Avb Ges c0weZ MtelYvi gva`tg AwRZ Avtbi gta` hw` tKvb cv`R" j`q" Kiv hvq| wZxqZt, GB cv`R" tKb we`gvb, tm wetaq GKwU c0k0Dl wcz Kiv hvq| ZZxqZt, tmB c0k0Di Kgctq` qm m0te" I e`vL`vthvM" DEi t`qv hvq| ZZxq kZwU m0utK© ejv hvq th, m0te" I e`vL`vthvM" DEi qm gta` tKvbwU M0Y Kiv nte, tm m0utK©Mtel tKi w0av ev m0`n `vKtZ nte| hw` c0k0Di tKej gvI GKwU m0te" I e`vL`vthvM" DEi `vtK, Zte mswk0-mgm'wU wbtq MtelYvi c0qvRb tbB Ges tmuU tK MtelYvthvM" mgm'v wnmvte wetePbv Kiv hvte bv|

Mtel tKi wR`^epxepEK` w0fwi2, c0k0qY, AwfAZv, Ges ZwiEK I c0tqwmK wetePbvtertai Oviv tKvb mgm'vi mvari Y c0t1/2i wbePbU cwiPwj Z nq| GB c0t1/2 i tqtI, Mtel tKi gj`teva GKwU Acwi nvh©fwgKv cyj b Kti | mgvR th me ev`e mgm'vi gLvgL nq, tm mKj mgm'v MtelYvi c0t1/2 wnmvte wbePZ ntZ cvti | tckvMZ I epxepEK tKSznj t`tKI AtbK mgq MtelYvi t0Yv `Zwi nq| hLb MtelYvq c0B wKQzbZb djvdj Mtel tKi ZwiEK c0`vkvi mvt` tgtj bv, ZLb wbtRi wfZti I GK aiYi hSjv ntZ `vtK, hvi djvdj wnmvte wZwb bZb MtelYvi gva`tg tmB Am1/2wZ` tjv mgvavtbi tP0v Ktib|

Mtel tKi wR`^epxepEK` w0fwi2, c0k0qY, AwfAZv, Ges ZwiEK I c0tqwmK wetePbvtertai Oviv tKvb mgm'vi mvari Y c0t1/2i wbePbU cwiPwj Z nq| GB c0t1/2 i tqtI, Mtel tKi gj`teva GKwU Acwi nvh©fwgKv cyj b Kti | mgvR th me ev`e mgm'vi gLvgL nq, tm mKj mgm'v MtelYvi c0t1/2 wnmvte wbePZ ntZ cvti | tckvMZ I epxepEK tKSznj t`tKI AtbK mgq MtelYvi t0Yv `Zwi nq| hLb MtelYvq c0B wKQzbZb djvdj Mtel tKi ZwiEK c0`vkvi mvt` tgtj bv, ZLb wbtRi wfZti I GK aiYi hSjv ntZ `vtK, hvi djvdj wnmvte wZwb bZb MtelYvi gva`tg tmB Am1/2wZ` tjv mgvavtbi tP0v Ktib|

th t0Yv t`tKB MtelK D0jx` tnvb bv tKb, hLb MtelYvi GKwU mvari Y c0t1/2 wba0i Z ntq hvq, ZLb tmB mvari Y c0t1/2 t`tK mY u0 I mYx2fvte GKwU mYbwi`0 mgm'vtK wPwYZ Kiv „iZcY©ntq `wovq| GwU KiZ wMtq, MtelK wbePZ MtelYv c0t1/2wU wbtq G wetaq c0tqwmK AwfAZv I Avb m0x e`w3i mvt` Avtj vPbv KiZ cvtib| G mKj e`w3 MtelKtK

MtelYv cñt½i mjbw`θ weltaqi Dci `wó wbeX KiZ mrvh` KiZ cvtib| mvaviY cñt½u m=útK© cte© cwi Pwjj Z MtelYv, ev iwPZ Mš chñj vPbvK mjbw`θ MtelYv mgm`v wPwYZKiYi tñtñ GKwU KvñRi c×wZ wmwte e`envi Kiv hvq| G aiYi chñj vPbv MtelYvi mvaviY cñt½u gta` ZvEjK I e`envi K Dfq w`K t`K wK wK Am=úYZv itqtQ Zv m`fite wPwYZ KiZ mrvh` Kti| ceZr©MtelKt`i Øviv Am=úY©GB me weltaqK MtelYv mgm`vq ifcvšt Kiv nq| GB mjbw`θ mgm`v,tjvi mgvavb MtelYvi gta`Kvi dvK,tjvi gta` GKwU tmZeÜb `Zwi Kivi gvatg tmB cñt½i Dci ÁvbtK m=× Kti| hw` GKwU MtelYvthvM` mgm`vK mjbw`θfite wPwYZ Kiv hvq, Zte mgm`vi mjbw`θKiY `rfweKfite MtelYvi eYØv, Dñk`, AbKí wbgfY, cñvb Pj K,tjvi msÁv I tm,tjvi cwi gvtci w`tK GwMtq wbtq hvq|

hw` GKwU MtelYvthvM`
mgm`vK mjbw`θfite wPwYZ
Kiv hvq, Zte mgm`vi
mjbw`θKiY `rfweKfite
MtelYvi eYØv, Dñk`,
AbKí wbgfY, cñvb
Pj K,tjvi msÁv I tm,tjvi
cwi gvtci w`tK GwMtq wbtq
hvq|

MtelYvi Rb` GKwU mjbw`θ mgm`v wPwYZKiY I m`fexKiYi ci we`gvb Ávbtbi wfiEzZ GwUtK msÁwqZ KiZ nte| GKwU mgm`vK msÁwqZ Kivi tñtñ, KZ,tjv mjbw`θ cØkñ DÈi MtelKtKi Rvbv _vKtZ nte| thgb, mgm`wU wK gv`vq NtU? KZ Nb Nb GwU NtU? tKvb AÁtj i wK cwi gvY RbtMvöx GB mgm`v Øviv tekx c`fweZ ntaqQ? cte©cwi Pwjj Z MtelYvq wK wK weltaq AšfY Kiv nq w? tm mKj MtelYvq wK wK ZvEjK I c×wZMZ AcZj Zv wQj? BZ`w` | mgm`wUi Dci wewfbæZÉj I MtelYvi chñj vPbv Ges mgm`wUi Dci AvfÁZv I Ávbm=úbæw`³t` i mvt_ Avtj vPbvi gva`tg GB cØkñ,tjvi DÈi LjR cvl qv hvte|

MtelYvi Rb` GKwU mjbw`θ
mgm`v wPwYZKiY I
m`fexKiYi ci we`gvb
Ávbtbi wfiEzZ GwUtK
msÁwqZ KiZ nte|

mgm`vi eYØv MtelYv m=úv`tb KZ,tjv _i`ZcY©Kvñm=úv`b Kti| cØgZt, GwU GKwU MtelYv c`vebvi wfiE wmwte KvR Kti| wØxqZt, MtelYv cñt½u `QZv, mý úóZv I mZxñKiYi gva`tg MtelYvthvM` mgm`vi m`fexKiY mrvh` Kti| ZZxqZt, mgm`wUtK mñse×fite eYØv, Gi _i`Zj Ges t`tki ev mgvtRi AMMY`Zv wbañ tY MtelYv mgm`vi eYØv MtelKtK mrvh` Kti| PZzZt, KZÉñ ev c`vtcvl tKi KvQ Dc`vctbi Rb` GwU mnRZI Kti tZvtj | cÁgZt, weltaq`wU m=útK©tKb MtelYv KiZ nte Zvi thšwK³KZv cØvb Kti | hØZt, MtelYvi dj vdj _tjv wKfite Dc`thvMx nte Zvi eYØv Kti |

MtelYvi Rb` wbeñPZ mgm`wUtK msÁwqZ Kivi ci mgm`wUi Dci MtelYv Kivi ht_ó thšw³KZv itqtQ wK bv, tñuU `úófite eYØv KiZ nte| MtelYvi Rb` wbeñPZ mgm`wUi thšw³KZv cñt½i Rb` MtelKtK th weltaq,tjvi cØZ tekx hZevb ntZ nte, tm,tjv ntjv:

- mgm`wU mgm`vqK Ges mgvtqcvthvMx wK bv?
- mgm`wU ht_ó cwi gvY gvbtI i mvt_ msñkó-wK bv?
- mgm`wU wetaKl tKvb RbtMvöxi tñtñ cØhvR` wK bv?
- mgm`wU tKvb Pj wZ KgñPxi mvt_ RwoZ wK bv?
- cwi Kí bwe` i v mgm`wU wbtq Avt`Š fvetQb wK bv?
- mgm`wU mvaviY mgvñRK I A_ñwZK cñt½,tjvi mvt_ RwoZ wK bv? BZ`w` |

G Øvovl , c`weZ MtelYvU cte©cwi Pwjj Z MtelYv t`K KZUKz Avj v`v Ges `enkó`gwÜZ, Zv MtelKtK mý úófite Dñj E-KiZ nte| MtelKtK _i`tZj mvt_ Avi I Dñj E-KiZ nte th, we`gvb Ávbtbi tñtñ c`weZ mgm`wUi Dci cwi Pwjj Z MtelYv wKfite Ges KZUKz Ae`vb ivLte? tñuU wK tgñj K Ae`vb nte, bv wK tñuU we`gvb Ávbtbi wewfbæc`veb ev AbgvbtK cixñv Ki te?

mgm'vi eY'v wKfvte wj LtZ nte (How Should the Statement of the Problem be Written)?

mgm'vi eY'v w' tZ wMtg j 'i' ivLtz nte th, cvVK thb we' wwi Z eY'vi vlv wbgw'4Z bv ntq ctob| GKwU MtelYv mgm'vi eY'v tK nTZ nte m² Ges msw'f|B| tKvb 'i'ZcY' I c'qRbxq welq thb ev' bv cto, tmw' tKl j 'i' ivLtz nte| A_ f, mgm'vU m'utK'c'omw'zK mKj Z_ tK msw'f|Bfvte Dc'vcb KiTZ nte| mgm'vi eY'v tj Lvi c'c'avb welq_ tji GKwU ifcti Lv 'Zwi Kti tbqv fvtj v, hvTZ Kti eY'vU mmsMwZ Ges th'w'3K nq| mgm'vi eY'v ntj v gj Zt mgm'vUj wetk'Y| GB wetk'Yi wZbwU c'avb avc itqtQ|

c'og avtc, mgm'vU tK cwi'vi fvte e'vL'vi gva'tg cwi'ix KiTZ nte| tKb bv, c'omw'zK welquU A'tB mgq A' uofvte e'³ _vKtZ cvti | m'aviY gvb|, MtelK, cwi Ki bwe' I ev' evqbKvix e'³ welquU tK wfb'fvte Dcj wa' KiTZ cvtib| GB wfb'Zv_ tji m' uofvte w'Pw'YZ KiTZ nte Ges cwi Kw' Z MtelYvi gta' wK ' wofw'z M'Y Kiv nte, Zv m' uofvte Dti _KiTZ nte| Avgiv Rwb th, mgm'vi Aw'Z; ZLbB c'g'w'YZ nte, hLb ev' te hv itqtQ Ges welquU hv nl qv D'Pr, G ' wU Ae'vi gta' GKwU 'elg' c'ZfvZ nte| AZGe, mgm'vU Ggbfvte eY'v KiTZ nte, hvTZ Kti tmB 'elg'wU _uofvte ntq | t|v|

w'Zxq avtc, mgm'vU tK m'bw' t' KiTZ nte Ges mgm'vi metPtq 'i'ZcY'AskwU tK wKQlv wek' fvte eY'v KiTZ nte| A_ f, mgm'vi c'KwZ eY'vq mgm'vU thfvte we' gvb itqtQ Ges mgm'vU tK MtelK thfvte t' LtQb Gi gta' Kvi 'elg'wU tK wek' fvte eY'v KiTZ nte| mgm'vU tKvb A'j ev RbtM'votK c'fweZ Kti, KLB, tKv_vq Ges wKfvte mgm'vU NtU, Zvi web'vU eY'v KiTZ nte| mgm'vU KZUKzwe'Z, KZUKzXe', Gi dtj wK dj vdj ntZ cvti, BZ'w' welq_ tji v G ch'q we' wwi Z eY'v KiTZ nte|

ZZxq avtc, gj mgm'vU tK eY'v Kivi ci mgm'vU tK wK wK Dcv'vb c'fweZ Kti Zvi eY'v KiTZ nte| A_ f, wK wK Kvi'tY mgm'vU D''e NtU, Zv w'Pw'YZ KiTZ nte| 'i'ay w'Pw'YZ Kiti B nte bv| tmB Dcv'vb_ tji vi m' t_ mgm'vU wK m'utK' itqtQ, Zv m'bw' t' KiTZ nte| tmB Dcv'vb_ tji v mi vmi c'fweZ Kti, bv wK Ab' tKvb Dcv'vtbi gva'tg c'fweZ Kti, tmB m'utK' t' j v'Kl m' uofvte w'bw' t' KiTZ nte|

GB wZbwU avc m'ub'etKiTZ ntj, mgm'vU Dci c'Zw'Z Z'j; c'c'c'w' Pwj Z MtelYv, c'Kw'Z we'U, Ac'Kw'Z c'Zte' b, 'wj -c', Avf' A' e'w' i gZvG, tM'v'x, ev c'Z'v'tK ch'j vPbv KiTZ nte|

mgm'vi Dci we' gvb Z'j; MtelYv I Avtbi ch'j vPbv (Review of Theory, Research and Existing Knowledge on the Problem)

c'ZwU MtelYv c'Zte' tb, wetkl Kti Avf'w' t' f'(thesis), MtelYv m'wnt'Z'i ch'j vPbv (review of research literature) Dc'vcb GKwU w'bgw'EK I c'tqRbxq welq ntq 'wotqtQ| MtelYv mgm'vi m' exKi'tYi t' t' t', GB ch'j vPbv KZUv 'i'ZcY'ntZ cvti, Zv A'tB mgq Avgv' i ' w' tZ aiv cto bv| wK' w' Avbm'z Avtbi c'AvFeb ntj v, GK' j Mtel tKi Kv'Ri Dci Avt' K' j Mtel tKi Kv'Ri μgm'Az th' Mdj | GB μgm'Az NtU c'c'p' Avt'K aviv'w'K ci' uivq P'vtj A' Kti bZb Avb c'Z'v' gva'tg| GB c'p'vq we'f'be welq m'utK' wK'Z Z'j; w'bg' nq, hv MtelYvi Dj 'b' j (taking-off point) w'w'vte KvR Kti | G mKj Z'j; ch'j vPbv we'f'bvte MtelYv th'v' mgm'vi Rb' we'f'bv'avi Yvi Rb' w' tZ

mrvnh` Kti | thgb, GKRb MtelK mivmwi GKw ZĒ; ev ZtĒj Aaxb`-tkvb wov` cŵvebv (proposition), ev ZĒj t_k Avnwi Z cŵvebvK cixŷıvi Rb` AvMŷx ntZ cvřib| G mKj ZĒj t_k GKRb MtelK Zvi AvMŷni tkvb cŷıqv ev AvPiYtK Dcj wai Rb` GKw ıwŷfızi wbt` kŷv tctZ cvřib| G mKj ZĒj enr cwi gvtY msMnxZ DcvĒtK msMwZ Kivi tŷıřt GKw ZwiĒK KvVtgv cŵvb KitZ cvři, hv Ab` tkvb wŷqtgi gvařg mgwq Kiv mwe bv etj MtelK gtb Křib|

th cŷızi Dci MtelYvi Rb` MtelK AvMŷx ntqtQb Ges MtelYvi Rb` wbeŷb KřitQb, tmB wbeŷPZ cŷızi Dci ctecwı Pwıj Z MtelYv,tjvi chřj vPbv MtelYv mgmıvi mřexKiřY weřfbřte mrvnh` KitZ cvři | thgb, ctecwı Pwıj Z MtelYvi djvdj ev eıvLıřK Pıřj Ā Kři GKw bZb MtelYv cKı MŷY Kiv thřZ cvři | ctecwı Pwıj Z MtelYvq cŷı djvdj i AřbŷnZ cŷıqv,tjvtK iıxKiřYi Dř` ıM mrvte MtelK GKw MtelYv cKı MŷY KitZ cvřib| ctecwı Pwıj Z MtelYvi ĉpıveĒ Kři tmB MtelYvq cŷı djvdj,tjv Aveı l cvl qv hvq wk bv, GıU cixŷıv Kři ř` Lvi Rb` MtelK GKw cKı MŷY KitZ cvřib| cteŷ MtelYvtK mrcŷıvi Z Kři bZb cĀ eıvLıřq eıenvi Kivi Rb` MtelYv cKı MŷY Kiv thřZ cvři | cteŷ MtelYvq cŷı AcĒıwkZ djvdj,tjvtK ev e` fıel`ŷvYřK eıvLıř Dřıřk` GKw MtelYv cKı MŷY Kiv thřZ cvři | GKw MtelYvq eıeüZ cxıZ l řKřkj,tjv Ab` MtelYvq cŷıqvM Kiv hvq wk bv, Zv cixŷıv Kři ř` Lvi Rb` MtelK GKw cKı MŷY KitZ cvřib| Ggb wk ctecwı Pwıj Z ııU cŷızi Dci cwi Pwıj Z MtelYvtK hř Kři GKw bZb ıwŷfızi Rbř` eıv Rb` l MtelK GKw MtelYv KitZ cvřib| AZGe, ř` Lv hvř`Q th, MtelYv mrvntZ`i chřj vPbv i`agvı cŷıřte`tb Dc`vřtbi Rb` GKw ıwŷıĒK welq bq| GıU MtelřKi wřıı bZb ı Mř-DřıřPřtbi Rb` GKw kıř`křj x nıwZqı |

th cŷızi Dci MtelYvi Rb` MtelK AvMŷx ntqtQb Ges MtelYvi Rb` wbeŷb KřitQb, tmB wbeŷPZ cŷızi Dci ctecwı Pwıj Z MtelYv,tjvi chřj vPbv MtelYv mgmıvi mřexKiřY weřfbřte mrvnh` KitZ cvři |

MtelYvi Dřıřk` (Objectives of the Research)

MtelYvi mgmıv wbeŷb, mřexKiřY eYŷv l thřıř`KZvi cieZřıvcıU ntjv, MtelYvi Dřıřk` wbařıY | G welřq Avřj vPbıv Mřıřı hveı cteGKw ı`ZřYıwıelřı Dřj l Kiv cŷıqvRb| wkOz cxıZıwıe Āvbx gtb Křib th, MtelYvi Dřıřk` wbařıřYi cteAbKıřı wbgvř Kiv cŷıqvRb| hřııU ntjv th, mgmıvi eYŷvq thřnZı MtelYv mgmıvi gřı Kvi weřfbřcĒ`řı mřıKıřıvtK mřıwŷıřte eYŷv KitZ nq, tmřnZı řm mKj mřıřıřK mřı řı AbKıřı wbgvř bv Křıř MtelYvi cKıw l Dřıřk`řK wbařıřY Kiv hvře bv | Aveı wkOz cxıZıwıe Āvbx wřbřZ řcvY Křıř | Zřı` i gřZ, AvcıZřı wŷřZ hřııU MŷYřıvM` gtb ntj l welqıU AřbKıv řNvovı AvřM Mıox řřo ř` eıv gZ ntj v | KviY, MtelYv mrvntZ`i chřj vPbıv ci MtelKřK ımıřıwıřıwıřZ nte th, MtelYıU wk eYŷvřj K nte, bv wk eıvLıřvj K nte? hıř` MtelYıU eYŷvřj K nq, Zře tm MtelYvq AbKıřı cixŷıv Kiv nq bv | eis MtelYv řkřı cŷı mřıKřıgřıni Dci wřıĒ Křı fıel`r MtelYvi Rb` wkOz AbKıřı wbgvřı Křıř nq | hıř` MtelYıU eıvLıřvj K nq, tm tŷıřt MtelYvi gvařg cixŷıv Křı ř` Lvi Rb` KZ,tjv AbKıřı wbgvřı Křıř nq | cĀentjv, tm,tjv wk Dřıřk` wbařıřı cteřıte, bv wk Zvi řı nte?

MtelYvi mgmıv wbeŷb, mřexKiřY eYŷv l thřıř`KZvi cieZřıvcıU ntjv, MtelYvi Dřıřk` wbařıY |

wřbře gZvej řı cxıZıwıe Āvbxřı` i gřZ, AbKıřı wbgvřı Rb` MtelYv mgmıvi gřı Kvi cĒ`q,tjvi gřı mřıřıřK eYŷv hřı_ř bq | cĒ`q,tjvi Ařřıř Pj K,tjvtK wPıřZ Křı řm,tjvi Kvhřı msĀvqb Křıř nte | hıř` Pj K,tjvi GKwaK mPK ıřK, tm tŷıřt řm,tjvi wPıřZ Křı Kvhřı msĀvqb Křıř nte | Kvhřı msĀvqbı gvařgB řKej gıř AıřĀZvj řřıte chřıřıřıvM` cwi gřıci GKK,tjv cvl qv mřı | GKw Pj řKı hZıU mPK ıřKře ZZıU AbKıřı wbgvř nte | G mKj Kgřıvı cwi gıv cŷıqvı mřı_ RıwZ | AZGe,

cwi gvc c0uqvi mvt_ cwi wPZ nevi cteAbKí wbgfY c×wZMZFvte thšw³K bq| i'ayZvB
bq, MtelYvi Dfík" wbaftYi mvt_ AbKí wbgfYi tPtq MtelYvi cKwZ wK nte, Zv tekx
m=úKfj | G weZtKbv RwoTq GUKzejv hvg th, thtnZi MtelYvi Dfík" wbaftYi cte
MtelYvi cKwZ wK nte tm m=úKfm×vš-tbevi c0qvRbw tekx „i"Zcy, tmtnZi Avgiv
AbKí wbgfYi c0uqwu MtelYv c0uqvi cieZpatc Avtj vPbv Kitev |

MtelYvi Dfík" wbaftYi gva'tg MtelYv cKí wK mybow 0KiYi Pevš-KvRw m=úv`b Kiv
nq| thgb, hw` MtelYvi welqew wki't i weKvtk `qZv AR0 m=úwKZ nq, Zte MtelYv
cwi Pvj bvi j'tq" wbow 0 mgTqi Rb" cwp eQtii Kg eq` wki't i `qZv AR0bi qJgZvi
Dci chfeqY KiTz nte | hw` MtelYwu eY0vgj K nq, Zte MtelYvi Dfík" wbgvj wLZ
DcvTq Dc`vcb KiTz nte |

GB MtelYvi mybow 0 Dfík" wLZ nTjv:

- cwp eQtii Kg eq` wki't i `qZv AR0bi ifc chfeqY Kiv |

A_0, GB MtelYvi Awfc0quw nTjv wki'iv Zvt' i weKvtk wKfvte wewfbwKgrvt0i gva'tg
tefo l'vi `qZv AR0 Kti Zvi eY0v Kiv | MtelYv tkTl nqtZv MtelK wewfbwAvPiYi
gfa" m=úK`vcTbi gva'tg wK0zAbKí wbgfY KiTz m'qg nteb |

MtelYvi Dfík" GKwaK nTz cvti | MtelYvi welqew hw` eq` gvbTl i tmev c0vb mspvš-
bwZgvj v nq, Zte MtelYvi Dfík" wbgvj nTz cvti |

GB MtelYvi mybow 0 Dfík" wLZ nTjv:

- GKwL weTKl m=úvTqi gfa" wK cwi gvY eq` gvbTl i tmev c0vb Kiv c0qvRb,
Zvi msL`v wbaftY Kiv;
- eq` gvbTl i tmev mspvš-we`gvb bwZgvj vmgn chfj vPbv Kiv; Ges
- eq` gvbTl i tmev c0vTbi Rb" wK cwi gvY A_eivl Kiv c0qvRb, Zv wbaftY
Kiv |

G t'qTl MtelYvi gj j'q'w nTjv, GKwL weTKl eqTm0xi RbmsL`vi c0qvRbxqZvtK wby0
Kiv, tKvb m=úKf cixq'v ev Kv0Kvi Y m=úK`vL`v bq |

MtelYwu hw` e'vL'vgj K nq, tm t'qTl Dfík" i msL`v ew× cvte | thgb, hw` wki't i
weKvtk `qZv AR0bi ifc chfeqYi cvkvcwK wK wK Dcv`vb `qZv AR0b cv_R" mjo
Kti, ev `qZv AR0bi cv_R" tK cfwewZ Kti, Zte MtelYvi Dfík" wbgvj ewY nte |

GB MtelYvi mybow 0 Dfík" wLZ nTjv:

- cwp eQtii Kg eq` wki't i weKvtk `qZv AR0bi ifc chfeqY Kiv;
- `qZv AR0b wK wK cv_R" i tqt0, Zv chfeqY Kiv; Ges
- cv_R" mjoTz wK wK Dcv`vb cfwewZ tdtj, Zv wbaftY Kiv |

GKwL mý úofvte msÁwqZ mgn'v t_tK thšw³Kfvte MtelYvi Dfík" wLZ v DmZ nl qv DwPr |
MtelYvi Dfík" wLZ MtelYvi cZ`wKZ Ae`vb wLZ vTq eY0v Kti | MtelYv c0uqvq wK wK

cvfVvEi gj`vqb

`be⁹³K c⁰ke

m⁰WK DEti i cvfk WJK (v) vPy w`b -

1| m⁰gm`vfk ZLbB Mtel YvthvM` etj wefePbv Kiv hvte, hLb tmU _____ kZ⁰ciY
Ki te|

- K. 1uU
- L. 2uU
- M. 3uU
- N. 4uU

2| Mtel Yv m⁰gm`v vPyZKi⁰Yi t⁰q⁰t⁰ GKwU KvRi c⁰wZ nt⁰Q:

- K. ce⁰Mtel Yvi dj v⁰dj ch⁰ej vPbv
- L. M⁰S' ch⁰ej vPbv
- M. mi Kvi KZR c⁰KwkZ Z` ch⁰ej vPbv
- N. Dc⁰ti i me|

3| weAvbm⁰sZ Avtbi c⁰AvFeb nt⁰Q:

- K. `jRb Mtel t⁰Ki c⁰B Z⁰ i thvMdj
- L. M⁰S' M⁰ti eB-Gi msL⁰v
- M. GKRB Mtel t⁰Ki KvRi Dci Avt⁰K`j Mtel t⁰Ki KvRi μ gmi⁰AZ thvMdj
- N. Dc⁰ti i me|

msv⁰q⁰B c⁰ke

1| Mtel Yv m⁰gm`v eY⁰vi t⁰q⁰t⁰ tKvb tKvb avc Ab⁰ni Y Ki t⁰Z nq?

2| Mtel Yv m⁰gm`v vba⁰q⁰ t⁰Y Mtel Yv ch⁰ej vPbvi `i"Z;wK?

i Pbvqj K c⁰ke

1| Mtel Yv c⁰Zte`b c⁰vq⁰tb Mtel Yv m⁰wnZ` ch⁰ej vPbvi `i"Z; Avt⁰j vPbv Ki "b|

2| Mtel Yv m⁰gm`vfk Dc`vcb Kivi t⁰q⁰t⁰ tKvb tKvb vel q `i"Z; cvl qv D⁰Pr etj Avcub
gtb K⁰ti b? D`vni Ymn Avt⁰j vPbv Ki "b|

Measurement and Scaling

MtelYvthvM" mgm"vi wbePb I mfeXKitYi ci MtelYv mgm"vi mv_ msuk-cL"q,tjvi my_úo msÁvqb Kiv c0qvRb| KviY, wKQz wKQz cL"q itqtQ th,tjvtK msÁvqZ Kiv mnR Ges tm,tjvi AwfÁZvj ä`enkó"tK cL"q fivte chfe"Y Ki tZ tekx teM tctZ nq bv| wKŠ' wKQz cL"q itqtQ th,tjvi ev`e Aw`ZtK ctiv" fivte Abgvb Ki tZ nq| th c0qv gva"tg GB ctiv" Abgvvbi Kvh"m`úv`b Kiv nq, tmB c0qvvtK cwi gvc c0qv ej v nq _vtK| cwi gvtci ciB tKej GKw cL"q wbfPkj ev`xaxb Pj tKi ifc tbq| hw` GKw Pj tKi GKwaK mPK _vtK, Zte tmB mPK,tjv Pj K I cL"qtK c0zwbazj Kti| cL"tqi chfe"YthvM" `enkó",tjv weifb0gvT v I gvcbxZ cwi gvc Kiv nq _vtK| wKŠ' AwfÁZvj ä`enkó",tjvtK cwi gvtci mgq weifb0fvte áwš-c0ek Kti etj cwi gvtci wbfPthvM"Zv I h_v_Zvi gvT v wbjcY Kiv c0qvRb| GB BDwbT U G mKj wel q wbtq Avtj vPbv Kiv nqtqQ| Zte wel qe`i wjj _vKvi Kvi tY wKQz wKQz t"tT 0mvgwRK cwi msL`vb cwi wPwZ0 (mgvRZÉj-4) M0š' c0m0zK Astki mv_ mv`k`_vKte|

GB BDwbT Avgiv th cW,tjv Aa"qb Ki tev, tm,tjv ntj v:

- ◆ cW - 1 : KvhRi msÁvqb I cwi gvc
- ◆ cW - 2 : cwi gvtci gvT v - 1: e"wb0gj K I AbjcvZgj K
- ◆ cW - 3 : cwi gvtci gvT v - 2 : e"wb0gj K I AbjcvZgj K
- ◆ cW - 4 : cwi gvtci wbfPthvM"Zv
- ◆ cW - 5 : cwi gvtci h_v_Zv
- ◆ cW - 6 : gvcbx tKŠkj

KvhRi msAvqb I cwi gvc
Operationalization and Measurement

GB cW tkfI hv Rvbr hvte —

- msAvqfbi „i“Zi
- cLZ`qMZ-ZE`MZ msAv
- KvhRi-AwfAZvj ä msAv
- cwi gvc cW`uqv

msAvqfbi „i“Zi (Importance of Definition)

MtelYvi Df`k` cKwZ,
cxwZ, DciE msMni cxwZ
I wefkHYi gvIv wK nte, Zv
wbfP Kti MtelYvthvM`
mgm`vi wbePb I Gi h_vh_
mfexKiYi Dci|

BDwbU 2-G Avgiv tRtbiQ th, th tKvb A`eY`MtelYvi Rb` cW`uqKfite „i“ZcY`wcl quU
ntjv GKwU MtelYvthvM` mgm`vi wbePb I Gi h_vh_ mfexKiY| KviY, MtelYvi Df`k`,
cKwZ, cxwZ, DciE msMni cxwZ I wefkHYi gvIv wK nte, Zv wbfP Kti MtelYvthvM`
mgm`vi wbePb I Gi h_vh_ mfexKiYi Dci| MtelYvi t`f`f`I wZxq „i“ZcY`wcl quU
ntjv, MtelYv mgm`vi mvt_ msukE-cLZ`q,tjvi m`uó msAvqb| KviY, cLZ`q,tjvi gva`tg
Avgiv Avgvt`i wPShi th thSw`KZwUtK cKvk KwI, Zv AtbK mgq_vtK A`uó, O`R I
Ah_v`w` wKQz cLZ`q itqtQ th,tjv cW`uqwaZKvix e`ev Zt`i Lp KvQvKwQ| thgb, Ogbyl O
cLZ`quU w`tq GKRb gbyl tK t`Lvtrv ev teiSvtrv Lp mnR nq| tKb bv, gbyl bvtgi `k`gub
e`uU mntrB t`Lv hvq, tQuqv hvq Ges eY`Bv Kiv hvq| gbyl i th`wko`_tjv w`tq GB
cLZ`quU MwZ ntqtQ, Zv mntrB chf`e`Y`thvM`| wKs` wKQz cLZ`q itqtQ, hv Lp mntr
t`Lvtrv m`e`ntq DtV bv| t`c`Yv, ZwiB, tkYx`B, MYZSj; ivR`wZK `wofwz, BZ`w` ntjv G
aitYi wKQzcLZ`q|

cLZ`q ntjv GK aitYi
cLZ`K, hv fvti Av`vb
cW`vbi Rb` e`euZ nq|

cLZ`qMZ msAv mZ`I bq, w`v`l bq| KviY, cLZ`q ntjv GK aitYi cLZ`K, hv fvti Av`vb
cW`vbi Rb` e`euZ nq| MtelYv I thvMvthvM cW`Zovi Rb` cLZ`q DcthvMx ntZ cvti, A`ev
AbjcthvMx ntZ cvti | cLZ`tqi msAvi tevaMg`Zv ev epx`Mh`Zv wbtq cKctZjv thtZ cvti;
A`ev Gi e`envti i mvgAm`Zv wbtq mgvtj vPbv Kiv thtZ cvti | wKs` GwU ejv hvte bv th,
cLZ`qMZ msAv mZ` wK w`v`l|

mvgwRK weAvbri v Zvt`i
wbr`wclqe`tk wekóZv
`vtbi j`f`f`I `uó I h_v`
cLZ`q cW`Zovi Rb` memgq
mtPó t`tKtQb|

i`ayZvB bq, weifbocLZ`q weifbogvbtI KvtQ weifbocA`enb Kti Ges weifbocW`vctU wfboc
wfbocwclqtK wPwYZ Kivi KvtR G`_tj vtK e`envi Kiv ntq_vtK| cLZ`tqi GB O`R, A`uó
I Ai`x e`envi cW`Zw`tbi fvti Av`vb cW`vbi Rb` tZgb tKvb eo aitYi mgm`v`Zwi Kti
bv| wKs` G aitYi A`uó I Ah_vh_ fvlv e`envi Kti weAvb weKwKZ ntZ cvti bv| tm
KviY, cW`ZwU weAvbB Zvi wbr`^c`vej x wbtq ht`ó DwOMe`vtK| mvgwRK weAvbri v Zvt`i
wbr`wclqe`tk wekóZv `vtbi j`f`f`I `uó I h_v`cLZ`q cW`Zovi Rb` memgq mtPó
t`tKtQb| GB cW`uqvq, hw` I eU cLZ`q Aw`e`KZ ntqtQ, e`euZ ntqtQ, cwi`x ntqtQ Ges
cwi`Z`^3 ntqtQ, wKs` AtbK cLZ`q GLtbr O`R I AmvgAm`cY`itq wMtqtQ| GtZ Aek`
wev`SZ nevi wKQz tbB| KviY, mvgwRK weAvtbi cLZ`q,tjvtK mvariY gbyl i O`v
mvariYfvte e`euZ c`vej x t`tK cv`R` wY`Q Kiv Lp mnR KvR bq| wKs` Zvici I
mvgwRK weAvtbi Ges Gi c`vej xi weKvk GwMtq Ptj tQ cLZ`q,tjvi m`uó I h_vh_
msAvqfbi gva`tg| cLZ`tqi e`envti m`Zv I `uóZv ARB Kitz ntj, GKRb weAvbvtK

Zvi e`envt`i i c`vej xtK mÿúófvte msÁwqZ KiþZ nte| msÁvqtbi `ñu chfç iþqtQ – cL`qMZ-ZËMZ (conceptual-theoretical) Ges KvhRi-AwfÁZvj ä (operational-empirical)| GB `ðaiþYi msÁvtK wKQlv we`wi Zfvte Avtj vPbv Kiv hvK|

msÁvqtbi `ñu chfç iþqtQ
- cL`qMZ-ZËMZ Ges
KvhRi-AwfÁZvj ä|

cL`qMZ-ZËMZ msÁv (Conceptual –Theoretical Definitions)

th mKj msÁv GKwU cL`qtK Ab` cL`q e`envt`i i gva`tg msÁwqZ Kti, ZvtK cL`qMZ-ZËMZ msÁv etj | thgb, 0ñgZv0 cL`qwtK msÁwqZ Kiv hvq Gfvte th, 0ñgZv ntjv GKRb e`w³, GKwU tMv0x ev ivt0f Ab` e`w³, tMv0x ev iv0fK w`tq tKvb KgRvU ev`evqb Kwitq tbevi kw³, mvg_©ev `ñZv| Gi Abjcw`wZtZ Ab` e`w³, tMv0x ev iv0fK w`tq tmB KvRwU Kwitq tbqv mæe ntZv bv| GLvtb j ñYxq welqW ntjv th, ñgZvtK msÁwqZ KiþZ wMtq 0kw³0, 0mvg_©, 0`ñZv0 I 0KgRvU0-Gi gZ Avtiv KtqKwU cL`q e`envi Kiv ntqtQ| GB cL`q_¸tjvi A_©GtKK Rþbi KvtQ GtKK iKg ntZ cvi | tKD cKokitZ cviþ, 0kw³, mvg_©ev `ñZv ej tZ wK tevsvq0? 0kw³ wK kvi xwi K, bv wK gvbmK0? 0mvg_©wK A_ðwZK, bv wK ivRðwZK0? 0`ñZv wK evK-PvZthP, bv wK Kr.-tKškj MZ0? BZ`w` | AZGe, ñgZvi msÁvqtB GB cL`q_¸tjvtKl mÿúófvte msÁwqZ Kivi c0qvRb iþqtQ| w0Zxq chfçl hw` tKvb cL`q e`eüZ ntq_¸vtK, Zte tm_¸tjvtKl msÁwqZ KiþZ nte|

th mKj msÁv GKwU
cL`qtK Ab` cL`q
e`envt`i i gva`tg msÁwqZ
Kti ZvtK cL`qMZ-ZËMZ
msÁv etj |

cL`qMZ msÁv `ðaiþYi c` wbtq MwZ nq| GKwU ntjv 0Avw`g c`0 Ges Ab`wU ntjv 0Avnw Z c`0| msÁvqtbi c0qvvi GK chfç t`Lv hvte th, cL`qtK Avi Ab` tKvb cL`q ev c` w`tq msÁwqZ Kiv hv`Q bv| GB c`_¸tjvtK 0Avw`g c`0 (primitive term) etj | Aw`g c`_¸tjvi A_©mæutK©GKwU HKgZ`_¸vtK| mvaviYZt, Zvt`i A_¸K D`vniþYi gva`tg Ávcb Kiv nq| G_¸tjv fvlvi tgšwj K c`vej x weKvtki Rb` e`eüZ nq| Avnw Z c` ntjv tm mKj c`, hv Aw`g c` e`envt`i i gva`tg MwZ nq| AZGe, hw` 0e`w³0, 0`ß ev ZtZwaK0, 0nbqwgZ0, BZ`w`i gZ Aw`g c`_¸tjv mæutK©Avgiv GKgZ ntZ cwii, Zte tMv0xi gZ GKwU Avnw Z c`tK msÁwqZ Kiv hvq| Avnw Z c`_¸tjvi c0vb mÿeav ntjv, Zvt`i e`envi AwakZi KvhRi ntq_¸vtK Ges G_¸tjvi msÁvqtB Aw`g ct`i Zj bvq Kg c0vm c0qvM KiþZ nq| D`vniY w`tq welqWtK tevSvi tP0v Kiv hvK| thgb, GKwU w`fR ntjv wZbwU mij tiLvi thvMdj Ges mij tiLv ntjv KZ_¸tjv we`y thvMdj | wKš`we`tK Avi tKvb c` ev cL`q w`tq msÁwqZ Kiv hvq bv, tKej gv` we`y Aw`Zi eY0v Kiv hvq| GB 0we`ð c`wU ntjv 0Avw`g0 c` Ges 0mij tiLv0 ntjv 0Avnw Z c`0 (derived term)| Avi I GKwU D`vniY t`qv thtZ cvi | thgb, mgvRtK msÁwqZ Kiv hvq mvgwRK tMv0xi mgæftq MwZ GKwU GKK wntmte| Avevi mvgwRK tMv0x ntjv, `ß ev ZtZwaK e`w³i wbcwgZ cvi`úwi K wq_©qvvi gva`tg MwZ GKwU Rbmguó| G tñt`I, e`w³ ntjv 0Avw`g c`0 Ges mvgwRK tMv0x ntjv 0Avnw Z c`0|

th mKj cL`qMZ msÁv frtei Av`vb c0vb ev thvMvthvM c0Z0vtK kw³kvj x Kti tZvtj , tm mKj msÁvtK KZ_¸tjv `i`ZcY©ewkó` AR0 KiþZ nq| cLgZt, th cL`qtK msÁwqZ Kiv nq, GKwU msÁvtK tmB cL`tqi Abb` `ewkó` I `Yvej xtK wPvYZ KiþZ nte| w0ZxqZt, GKwU msÁv tKvbfrteB eÉvKvti cwiiãvg`gvb (circular) ntZ cviþe bv| A_¸, GwU msÁvqtB Ggb tKvb c` e`envi Kiv hvte bv, hv H c`wUtKB msÁwqZ Kti | thgb, ñgZvi msÁvqtB ej v hvte bv th, ñgZv ntjv Ggb GKwU `Y, hv GKgv` ñgZvevb gvþfI iB iþqtQ| G aiþYi msÁv thvMvthvM tK kw³kvj x Kti bv| ZZxqZt, GKwU msÁvtK avZKfrte Dc`vcb KiþZ nte| thgb, eÿxgÉvtK hw` Ggbfvte msÁwqZ Kiv hvq th, GwU ntjv gvþfI i Ggb GKwU `ewkó`, hvi tKvb i0, ifc, I Rb ev `f` tbB, Zte tmB msÁv eÿxgÉvtK eštZ mwnh` Kti bv| KviY, cL`extZ Ggb AtbK welq ev e`iþqtQ th_¸tjvi i0, ifc ev

th mKj cL`qMZ msÁv
frtei Av`vb c0vb ev
thvMvthvM c0Z0vtK kw³kvj x
Kti tZvtj tm mKj msÁvtK
KZ_¸tjv `i`ZcY©ewkó`
AR0 KiþZ nq|

ᶿ tbB | PZzZt, GKw msÁvtK eYbvP tᶿtᶿ memgq ᶿúó c`vej x e`envi KiᶿZ nᶿe | thgb, wewQbzvtevtai A_ᶿewfbaᶿvbtᶿi KvᶿQ wewfbaᶿi Kg | AZGe, Gi Kg 0`ᶿ kā ev c` msÁvq e`envi Kiv DvPr bq |

Kvhᶿi -AwfÁZij ä msÁv (Operational – Empirical Definitions)

*Kvhᶿi msÁv cᶿ`tqi A_ᶿK
Avgvᶿ`i AwfÁZvi Avl Zvq
AvbᶿZ wᶿtq wK KiᶿZ nᶿe
Ges wK chᶿeᶿY KiᶿZ nᶿe,
Zv etj t`q |*

Avgiv Rwb th, cᶿ`qtK cᶿZwbwZ; Kᶿi Ggb AwfÁZij ä `enkó` ev NUbv cᶿqkt cᶿ`ᶿfᶿvᶿe chᶿeᶿY Kiv hvq bv | gj`teva, eᶿxgEᶿ, mšᶿó, `wófwb, BZ`w` nᶿj v Ggb wKQycᶿ`q | G me tᶿtᶿ, GKw cᶿ`tqi ev`e Aw`ZᶿK cᶿivᶿfᶿvᶿe Kvhᶿi ev AwfÁZij ä msÁvqᶿbi gra`tg Abgvb (infer) KiᶿZ nq | GKw cᶿᶿÁi ev`emᶿZ Aw`Z; ev Aw`ᶿZj gvᶿv cᶿkᶿbi Rb` th mKj cᶿqvRbxq KgᶿvÜ mᶿúv`b KiᶿZ nq, Kvhᶿi msÁv tmB mKj KgᶿvÜi wbgvejᶿK wᶿ`ᶿ Kᶿi | Kvhᶿi msÁv cᶿ`tqi A_ᶿK AbᶿfethwM` Kᶿi tZvᶿj | Kvhᶿi msÁv cᶿ`tqi A_ᶿK Avgvᶿ`i AwfÁZvi Avl Zvq AvbᶿZ wᶿtq wK KiᶿZ nᶿe Ges wK chᶿeᶿY KiᶿZ nᶿe Zv etj t`q | thgb, Rbᶿkj Zv (fertility) GKw cᶿ`q | Rbᶿkj Zv cᶿ`qᶿK ev`ᶿe wKfᶿvᶿe cwigvc Kiv hvq, Kvhᶿi msÁv Avgvᶿ`i Zv etj t`ᶿe | A_ᶿ, GKRB bvix Zvi cᶿiv cᶿRbb eqᶿm ᶿgvÜ KZw mšᶿb Rbᶿ t`ᶿeb, Zvi msL`v wᶿYᶿ Kivi cᶿwZw Kvhᶿi msÁv eYᶿv Kᶿi `vᶿK | GB eYᶿvi gra`tg Rbᶿkj Zv cᶿ`qᶿ ev`ᶿe chᶿeᶿYᶿwM` nᶿq Dᶿv | Avl GKw D`vniY t`qv thᶿZ cvᶿi | thgb, GKRB e`wᶿi wKᶿwMZ thwM`ZvᶿK cwigvc KiᶿZ nᶿj, tmB e`wᶿi KZ eQi AvbᶿwᶿKfᶿvᶿe tj Lvov KᶿiᶿQb, Zv RvbᶿZ Pvlqvi gra`tg Kvhᶿi msÁv cᶿvb Kiv nq | wewfbaᶿcᶿ`tqi Kvhᶿi msÁvi gvᶿv wewfbaᶿntq `vᶿK Ges tmB wfbᶿvi gvᶿwᶿ wᶿfP Kᶿi, cᶿ`qᶿ KZUKzwegZ`Zvi Dci |

Kvhᶿi msÁvi KvᶿvᶿgwÜ Lᶿ mnRᶿeva` Ges mnRmva` | hw` tKvb e`i Dci GKw D`xcK cᶿqvᶿMi ci t`Lv hvq th, tmB e`wᶿi wbgvZ l mvgAm`cYᶿvᶿe GKw wᶿw`ᶿ cᶿZwᶿqv cᶿkᶿ Kᶿi, Zᶿe ejv hvq th, tmB e`wᶿi cᶿZwᶿqv cᶿwᶿ `enkó`wᶿ itqᶿQ | GfᶿvᶿB Kvhᶿi msÁvi KvᶿvᶿgwÜ `Zwi nq | GKw D`vniY t`qv hvK | aiv hvK, eᶿxgEᶿtK msÁwqZ Kivi tᶿtᶿ MᶿelYvi weᶿe`wᶿmᶿe AskMᶿYKvix e`wᶿi`i Dci GKw eᶿxgEᶿi cixᶿv cᶿqvM Kivi ci th cixᶿv gvᶿwᶿ cvlqv hvq, Zvi wᶿwEᶿZ eᶿxgEᶿtK msÁwqZ Kiv nq | GLvᶿb eᶿxgEᶿi cixᶿwᶿ nᶿjv D`xcK, cixᶿv gvᶿwᶿ nᶿjv cᶿZwᶿqv, Ges eᶿxgEᶿv nᶿjv `enkó` | mvgwᶿRK weAvᶿt`i 0viv e`eüZ eü cᶿ`qtK Kvhᶿi fᶿvᶿe msÁwqZ Kiv nq tKvb wᶿw`ᶿ D`xcK, Ae`v, kZ`ev cwiw`zi cᶿZ cᶿZwᶿqv gvᶿvi Dci wᶿwE` Kᶿi | KviY, e`wᶿi ev NUbvi Dci tᶿšZ cixᶿY, nq ev`emᶿZ nᶿe bv, bZev `bwZKZvmᶿZ nᶿe bv |

Gevi GKw D`P gvᶿvi wegZ`l Rwᶿj cᶿ`tqi D`vniY w`tq t`Lv thᶿZ cvᶿi th, AwfÁvᶿ ä MᶿelYvi tᶿtᶿ tmwᶿtK wKfᶿvᶿe Kvhᶿi msÁvqᶿb Kiv nᶿqᶿQ | mgvRweÁvᶿb 0wewQbzvteva0 GKw cwiwPZ cᶿ`q | GB cᶿ`qᶿK msÁwqZ KiᶿZ wᶿtq t`Lv wᶿtqᶿQ th, Gwᶿi eügwᶿK `enkó` itqᶿQ, hv wewfbaᶿcᶿ`qMZ msÁvtK wᶿ`ᶿ Kᶿi | thgb, cᶿgZt, wewQbzvtevaᶿK ᶿgZvnxZvi gᶿbvᶿvᶿe mᶿt` A_ᶿevaK Kiv hvq | thgb, GKRB e`wᶿi gᶿb KiᶿZ cvᶿib th, wᶿᶿi wᶿqᶿi Dci Zvi tKvb wᶿqšY ᶿbB | A_ᶿ, e`wᶿi hvB Ki`K bv tKb, djvᶿtᶿi Dci Zvi tKvb wᶿqšY `vᶿK bv | G aiᶿYi gvᶿwᶿKZv t`ᶿK wewQbzvteva`Zwi nq | wZxqZt, A_ᶿxvZvi mᶿt`l wewQbzvtevaᶿK mgv`ᶿ Kiv hvq | GKRB e`wᶿi hLb Zvi Avᶿk cvᶿki RMᶿtK eᶿšZ cvᶿib bv, ev Zvi wᶿxvš-MᶿᶿYi tᶿtᶿ ᶿf gvᶿvi e`vL`v lᶿR cvb bv, ZLb Zvi gᶿa` GK aiᶿYi wewQbzvtevaᶿi Rbᶿ nq | ZZxqZt, Av`kᶿxvZv ev c_ä0Zv nᶿjv wewQbzvtevaᶿi AvᶿiKw gvᶿv | hLb gvᶿj gᶿb Kᶿi th, wᶿw`ᶿ j`ᶿ ARᶿb mvgwᶿRKfᶿvᶿe Acᶿ`wKZ AvPiY cᶿqvRb nᶿq cᶿo, ZLb tm cᶿwᶿj Z wbgg-bwᶿz weMRᶿ w`tq `ᶿwᶿ ev

Acivtai mvt_ Rwoq cto, A_ev cPuj Z Av`kQ wekjmK A`Kvi Kti tm,tjvi cwieZfb
mPó nq| thgb, wece-I hyc msNUtb G aiYi gvbwmKZv wekl frte Ae`vb ivtL| A_ŕ,
cPuj Z a`vb ari Yv, i xwZbwZ, AvPvi wekjmK, Zv AbvbwmbK ev AvbpbmbK hvB tnuK bv tKb,
Agvb` Kivi ga` w`tq gvbyl mgvR t_+K wevObentq cto| PZz`Zt, mvgwRK wevObzv GK
aiYi wevObzvteta `Zwi Kti| thgb, mvgwRK frte hLb GKRbtK eRß Kiv nq, ev
GKNti Kiv nq, ev cZ`vL`vb Kiv nq, ZLb tmB e`w³ mgvR t_+K wevObentq cto| A_ev
e`w³ hLb mgvR cZwóZ D`P gj`tevam`ubøj ¶` I Df`k`k`K wbgvqv fvetZ`ii` Kti,
ZLb GK aiYi wevObzvtetai Rbftbq| thgb, j ¶` ARfb wk¶vK mgvR D`Pzi`i`Zi
t`qv nq, A_P e`w³ gtb Kitz cvtib th, Rxfb GB wk¶vi tKvb gj`tbB| tKb bv, cKZ
j ¶` ARfb Zv tKvb frteB mrvh` Kti bv| cAgZt, AvZv wevObzvi wevObzvtetai mvt_
RwoZ| gvbyl hLb gtb Kti th, tKvb wekl KgRvtÜ AskMhY Zvi Rb` tKvb cji`vi etq
Avbte bv, ZLb tm tmB KgRvtÜ AskMhY Kti bv| dtj, GK aiYi wevObzvteta `Zwi nq|

GB ZmEK ev cZ`qMZ Dcj wai Dci wbfP Kti MtelK wbarPY Kiteb, tKvb cñwZv Zvi
MtelYvi mvt_ m/wZcY¶ tmB cñwZv tetQ wbtq wZwb ZLb Gi KvRi msAvqtb cEÈ nteb
Ges Zvi wfiEz DEi`vZvi KvQ cKæivLteb| ivR`wZK wevObzvtetai Dci MtelYvi
t¶t¶ ¶gZvxbZvtK wevObzvtetai gva`tg KvRi frte msAvqZ Kiv hvq| thgb,

- mi Kvi GKw AvBb cYqtb K_v wefePbv Kitz, hv fiel`tz maviY gvbyli Rb` Lp
¶wZKi nte etj Avcub gtb Ktib, G t¶t¶ Avcub wk Kitz cvtib?
- hw` mi Kvti G wv`vS-cwieZfb t¶t¶ Avcub tKvb Df`wM MhY Kitzb, Zte Avcbvi
mdj nevi m`vebv KZUKz_vKzV?
- hw` tmB AvBb cwieZfb tKvb Df`wM tKD MhY Ktib, tm t¶t¶ Avcbvi tmB Df`vM
AskMhYi m`vebv KZUKz_vKte?
- Avcub wk KLtbn tKvb wv`vS-MhYi t¶t¶ `vbxq frte cfrve we`vi Kitz mPó nteb?

Zte, cKæibg¶Yi cte`cZ`qMZ msAv,tjvtK KvRi frte msAvqZ Kti wbtZ nte cZwZ
cZ`qMZ At_¶ mvt_ AwfÁZvj ä ch¶¶t¶Yi mPK wby¶qi gva`tg| mPK,tjvi gva`tg
wk frte cZ`qtK AwfÁZvj ä ev`eZvi mvt_ mvgAm`cY¶Kitz nq, cwi gvc c¶µqv Zvi c`wZ
wbt`R Kti |

cwi gvc c¶µqv (Measurement Process)

GKw cZ`qtK MtelYvq c¶qvM Kitz ntj, GwUtk ev`te cwi gvc thvM` Kti Zj tz nte| GwU
cwi gvc Kivi ciB tKej GKw cZ`q wbf¶kxj ev`vaxb Pjtki ifc tbq| GB Pj K,tjv
ev`e RMtzi wels,tjv evL`vq mnvqZv Kti `vtK| GB Pj K,tjvB cKZct¶ cZ`tqi
cZwbiaZi Kti Ges civ¶YthvM` AbKti i gta` Dc`wcz nq| wKs` hw` GB Pj K,tjv
GtKi Awak mPtki gva`tg cKwKZ nq, Zte tmB mPK,tjv w`tq AbKí Mvb Kitz nq
Ges GKwaK cKæwRAvrv Kti GKw Pjtki Dci DciE`msMh Kitz nq| thgb, awgRZv
cZ`qw cwi gvc Kitz ntj, GKRb gvbyl tKvb ag¶ej w`^i agvI Zv Rvbtj B Pj te bv|
GKRb e`w³ cZw`b KZUKzmgq agx¶ AvPvi Abpvtb e`q Ktib, cZw`b agmß cv Ktib
wk bv, tmevgj K KvR A_`e`q Ktib wk bv, Ggb eü wltqi Dci cKæKitz nq| GKRb
e`w³ KZUKyavwR Zv wbfP Kite G me mPtki Dc`wZ ev Abyc`wZi Dci |

wegZ°cŁ`q cwi gvtci t¶ŕŕŕ
cŁ`qtK cwi gvc bv Kti
mvgmRK weÁvbxiv cŁqkt
cŁ`tqi cŁZwbvZKvix
mPKtK cwi gvc Kti _vtKb/

wegZ°cŁ`q cwi gvtci t¶ŕŕŕ cŁ`qtK cwi gvc bv Kti mvgmRK weÁvbxiv cŁqkt cŁ`tqi
cŁZwbvZKvix mPKtK cwi gvc Kti _vtKb| thgb, MYZš; tcŦYv, Ges ¶ŕgZvi gZ
cŁ`q, tŕjv cŁ`¶ŕfvte chŕe¶ŕY Kiv hvq bv| tŕ, tŕjvtK mPKti cwi gvtci gva`tg Abgvyb
KitZ nq| GKwU ivR%bwZK e`e`vi gta` hw` wboqgZfvte wbe¶ŕb AbŕōZ nq, Zte GKRB
Abgvyb KitZ cvtib th, tŕmB ivR%bwZK e`e`vi gta` MYZtš; Aw`Z; itqtŦ| hw` GKRB
e`w³ tcŦYv cix¶ŕvq GKwU wbow`Ŧ gvb ARŦ Ktib, Zte MtelK tŕmB e`w³ i tcŦYvi gvŦv
m`utK°Abgvyb KitZ cvtib| GB D`vnY, tŕjv t_ŕK tevSv hvq th, w¶ŕyZ Kiv hvq Ggb
AvPiYtK GKwU AšwbnZ cŁ`tqi mPK wnmvte e`envi Kiv ntqtŦ| wKš` wegZ°cŁ`qtK
cŁZwbvZKvix Kivi Rb` GKwU mPKti cwi eŕZ°eü mPKti cŦqRb nq| MYZš; wbe¶ŕbi
AwZwi³ Ab`vb` welqtKl cŁZdwj Z Kti| thgb, wbe¶ŕb `°QZv, msev` cŦi `vaxbZv,
msMvŕbi `vaxbZv, msL`vj Nŕ`i AwaKvi, BZ`w` welq, tŕjv ZvEĶ Ges AwfÁZvj ä
chŕe¶ŕY Dfŕq w` K t_ŕK MYZwšK e`e`vtK w¶ŕyZ Kivi Rb` , i`ZcY°mPK ntZ cvti |
GB mPK, tŕjvtK Kvhŕi msÁvqŕbi gva`tg wbaŕŕY Kti wŦZ nq|

AZGe, cwi gvc cŦuqwu Kvhŕi msÁvi aviYvi mŕ_ l ZtcŦZfvte RwoZ| Kvhŕi msÁv
cwi gvc c`wZi gva`tg cŁ`qMZ-ZEMZ Ges AwfÁZvj ä-chŕe¶ŕYthvM` RMtZi gta` GKwU
tŕmZeÜb `vcb Kti| Avŕiv mŕbow`Ŧ Kti ejv hvq th, cwi gvc ntŕjv Ggb GKwU c`wZ, hvi
gva`tg GKRB MtelK mŕbow`Ŧ wbggvejx AbŕniY Kti AwfÁZvj ä `enkŦó`i cŁZ
msL`wŦŕ`RK cŁZxKx gvb eivl` Ktib| msL`wŦŕ`RK cŁZxK, tŕjv tKvb cŦÁ, e`ev e`w³tK
w¶ŕyZ Kivi KvŕR e`envi Kiv ntq _vtK| cwi gvtci msÁvutZ wZbwU , i`ZcY°welq j ¶ŕYxq
– msL`wŦŕ`RK cŁZxK (numerals), eivl` KiY (assignments) l wbgg (rules)| GB wZbwU
welŕŕi Avŕiv wKŦv e`vL`vi cŦqRb itqtŦ| GKwU msL`wŦŕ`RK cŁZxK, 1, 2, 3, 4,
BZ`w` i AvKvi aviY Kti _vtK| wKš` hZ¶ŕY bv msL`wŦŕ`RK GB cŁZxK, tŕjvi Dci tKvb
A_°Avŕivc Kiv nq, ZZ¶ŕY G, tŕjv tKvb cwi gvYMZ A_°enb Kti bv| GB msL`wŦŕ`RK
cŁZxK, tŕjvi Dci cwi gvYMZ A_°Avŕivc Kivi ciB tKej gvŦ tŕ, tŕjv msL`v ntq DŕV|
cwi gvtci djvdj wnmvte eivl`KZ msL`v, tŕjv weŕfbo`enkŦó`i gta` Zj bv, gj`vqb l
chŕŕj wPbvi KvŕR e`envi Kiv thŕZ cvti| GB msL`v, tŕjv, eYŦv, e`vL`v l fvel`ŦvYxKiŕYi
j t¶ŕŕ` MwywZK l cwi msL`vbMZ tKšKj e`envŕi t¶ŕŕŕŕ mŕvnh` Kti| GB chŕŕq, msL`v
cwi gvYMZ weŕkŕŕYi thvM` ntq DŕV, hv MtelYvq AbŕmÜvŕbi Ašŕŕŕ welq m`utK°bZb
Z_ŕK cKvk Kti |

cwi gvtci msÁvq eivl`KiY kãwU A_°ntŕjv, tKvb e`v, e`w³ ev Pj tKi wecixZ
msL`wŦŕ`RK cŁZxKx gvtbi AvŕivcY| cŁZxKx gvb, tŕjv msL`wŦŕ`RK bv ntq , YMZ cŁZxKl
ntZ cvti | thgb, wj ½ Pj KãwU `ŦwU gvb itqtŦ – bvix l cŕj`l | GB gvb `ŦwU , YMZ cŁZxKx
gvb| GB `ŦwU gvtbi wecixZ msL`wŦŕ`RK cŁZxK (thgb, 1 l 2) e`envi Kti G, tŕjvtK
msL`vmPK Kti tZvjv hvq| msL`v wKfvte Z_ŕK Avgvŕ`i KvŕŦ tŦŦŦŦ t`q, Zv tevSvi Rb`
cŦwŕK msL`v, tŕjvi cKwZ eŕŕZ nte Ges tŕ, tŕjv wK Kti cwi msL`vbMZ weŕkŕŕYi gta`
cŦek Kti, Zvl eŕŕZ nte| tŕmB mŕ atŕ ejv hvq th, wj ½ Pj KãwU , YMZ cŁZxKx gvtbi
(bvix l cŕj`l) wecixZ e`eüZ msL`vmPK cŁZxK `ŦwUB (1 l 2) cŦwŕK msL`vi iŕc cwi MŦ
KtiŕŦ Ges GB msL`wŦŕ`RK gvb e`envŕi gva`tgB cŦwŕK msL`v, tŕjv cwi msL`vYMZ
weŕkŕŕY cŦek KtiŕŦ| GB cŕiv cŦuqwuB cwi gvc cŦuqvi Ašŕŕŕ Ges mŕbow`Ŧ wbggvej xi
Ŧviv cwi Pwŕj Z |

th tKvb e`v`i cŁZ msL`wŦŕ`RK cŁZxK eivŕi i wKŦymŕbow`Ŧ wbggvej x i tqtŦ| thgb, MtelK
KZR ce`wbaŕŕi Z wbgg Abŕvqx ŦGKwU kumb e`e`v hw` cwi cY°MYZwšK nq, Zte tŕ t¶ŕŕŕŕ
15 b`ŕŕ t`qv thŕZ cvti, hw` tKvbfvteB MYZwšK bv nq, Zte 10 b`ŕŕ t`qv thŕZ cvti |

ga`eZr`e`e`v`_tj vtK 11-14 b`at t`qv thtZ cvti0| gvb eivtI i GB wbcg`_tjv cwi gvc
c`xwZi Rb` LpB`_i`ZcY` KviY, GB wbcg`_tjv cwi gvtci MYMZ gvb tK wbaF Y Kti |
mWVK wbcgvej x Abyni Y bv Ki tj , msMpxZ Dcv tEi wbfP thvM`Zv I h_v`_Zv wbtq c`k`et` Lv
w` tZ cvti | Dcmsv t i ejv hvq th, cwi gvc c`p`qv ntjv th tKvb Mtel Yv I cwi msL`vbMZ
wetk`H`Yi tgi`^`U, hv` `p` ntj th tKvb Mtel Yvi D tI k` I cwi msL`vbMZ wetk`H`Y e`vnZ
ntZ eva` | GKwU Mtel Yvi gvb i`agvI h_vh_ Mtel Yv bKkvi DciB wbfP Kti bv, GuU
Mtel Yvq e`euZ cwi gvc c`p`qv gvtbi Dci I wbfP kj |

GKwU Mtel Yvi gvb i`agvI
h_vh_ Mtel Yv bKkvi DciB
wbfP Kti bv, GuU Mtel Yvq
e`euZ cwi gvc c`p`qv
gvtbi Dci I wbfP kj |

mvi vsk

Mtel Yv i`i`i` ceRZ`nt`Q cL` tqi mWVK cwi gvc | GB cwi gvc wbfP Kti cL` tqi mWVK
cwi gvtci avc`_tj vtK h_vh_ fvt` wPvY`Z Kivi gta` | GB cvtV Avgiv cL` tqi mv t_ m`u`wKZ
cL` qMZ-ZE`MZ I KvhRi -Awf`AZvj x msAv wbtq Avtj vPbv Kti wQ | cwi gvtci t` tI th
wel qwU GKRB Mtel KtK gtb ivL tZ nte Zv ntjv, cL` tqi m`u`o msAvqb | Mtel Yvq
AŠfP cL` qtK/cL` q`_tj vtK m`u`ofvt` msAvq tbi Dci wbfP Kti wel qe` i` `u`oZv |
wel qe` h`w` `u`o bv nq, Zvntj Mtel Yvq h_vh_ dj v d j cvl qvi m`e`bv Kg |

cvtVvEi gj`vqb

`be⁹³K c0ke

mWVK DEti i cvtk WJK (v) WPy w`b -

1| cZ`tqi e`envti i m⁹Zv I my`uóZv AR⁸ Ki tZ ntj GKRb weÁvxtK:

- K. Zvi e`envti i c`vej xtK eY⁶v Ki tZ nte
- L. Zvi e`envti i c`vej xtK e`vL`v Ki tZ nte
- M. Zvi e`envti i c`vej xtK my`uófvte msÁwqZ Ki tZ nte
- N. Dcti i me|

2| cZ`qMZ msÁv _____ ai tYi c` wbtq MWZ|

- K. `B
- L. WZb
- M. Pvi
- N. cvP

3| cZ`qMZ fvtei Av`vb c* vb kw³kvj x Kti tZij vi Rb`:

- K. cZ`qtK msÁwqZ Ki tZ nq
- L. cZ`tqi msÁv tKvbfvteB eE^vKvti cwi ávg`gwb ntZ cvi te bv
- M. msÁvtK avZ^WKfvte Dc`vcb Ki tZ nte
- N. Dcti i me|

msv⁹B c0ke

1| cZ`qMZ-ZEjMZ msÁv WK?

2| Kv^hRi -AvfÁZvj ä msÁv WK?

iPbv^gj K c0ke

1| cwi gvc c⁰μqvq cZ`qMZ-ZEjMZ I Kv^hRi -AvfÁZvj ä msÁvi „i“Zi Avtj vPbv Ki“b|

2| mgvR Mtel Yvq msÁvqtbi „i“Zi D`vni Ymn Avtj vPbv Ki“b|

cvW - 2

cwi gvtci gvĭv - 1: bvgmPK I μgmPK *Levels of Measurement - 1: Nominal and Ordinal*

GB cvW tkĭl hv Rvbr hvte —

- cwi gvtci gvĭv
- bvgmPK gvĭv
- μgmPK gvĭv

cwi gvtci gvĭv (Levels of Measurement)

cĭZ`tqi chĕŕŕYthvM` mKj `enkó` ev mPKĭK GKB gvĭvq cwi gvc Kiv hvq bv etj weÁvbxiv cwi gvtci weŕfbægvĭv e`envi Kti `vtKb| chĕŕŕYthvM` `enkó`i cĭZ eivĭKZ cĭZxK`_tjvi (hv`_YMZ ev cwi gvYMZ Dfqb ntZ cvĭi) gĭa` GKwU KvVtgvĭ mgawgZv (similarity of structure) `vKvi dtj cwi gvtci gvĭv weŕfbentq`_vtK| cwi gvc cĭpŕqvi tŕŕĭĭ G melquW LpB`_i`ZcYŕ Avgvt` i memgq j`ŕĭ` ivLĭZ nte th, GKwU cĭZ`q cwi gvc Kivi Rb` th msL`vmPK cĭpŕqvwU (numerical system) e`envi Kiv nq, tmwU tmB cĭZ`tqi KvVtgvĭ mvĭ`_mgagŕ`wKbv| wbaŕwi Z wbtqgi wŕwĒtZ tKvb e` ev NUbvi cĭZ msL`vgj K cĭZxK eivĭi cĭpŕqvtK cwi gvc etj msÁwqZ Kiv ntqtQ| thĭnZi mewKQĭK GKmvĭ`_chĕŕŕY Kiv m`e bq ev KwŕŕZi bq, tmĭnZi tKvb e`; NUbv ev e`w`ĭtK Zvt` i `enkó`i wŕwĒtZ tkYxexKiY Kiv cĭpŕqRb| cwi gvc cĭpŕq Mtel KĭK tm aiĭYi tkYxexKiĭY mŕŕŕg Kĭi |

tKib e` ev NUbvi cĭZ msL`vgj K cĭZxK eivĭi cĭpŕqvtK cwi gvc etj |

Zte GwU gtb ivLv cĭpŕqRb th, weŕfbæPj tKi `enkó`i wecixĭZ eivĭKZ msL`vi gĭa` tgšĭj K cv`ŕ` itqtQ| MtelYv cĭpŕqvi weĭkl e`envĭi Dci wŕwĒ Kti weŕfbæPj tKi `enkó`_tjvi wecixĭZ eivĭKZ msL`vi weŕfbæA`_ŕ itqtQ| thgb, aiv hvK, GKwU MtelYvq MtelK mšv`b msL`v i atgŕ` gĭa` m`úK`Abŕŭvtb AvMĭx| tm tŕŕĭĭ, wZwb gŕnj gvb atgŕ` Rb` 1, wŕ`_yatgŕ` Rb` 2, Lpwb atgŕ` Rb` 3, tešx atgŕ` Rb` 4 Ges Ab`vb` atgŕ` Rb` 5 msL`vtK eivĭ KĭiĭQb| GKBmvĭ`_wZwb DEi`vZvt` i mšv`b msL`vtKl wj wce`x KĭiĭQb| tmB msL`v`_tjv, 0, 1, 2, 3, 4, 5 t`_tK eŭ msL`K mšv`bi msL`v ntZ cvĭi | GB `ŕ` aiĭYi msL`v mŕ`úofvte wŕfbæA`_enb Kĭi | mšv`b msL`vi tŕŕĭĭ MtelK A`_enfvte DEi`vZvt` i Rb` Mo msL`K mšv`bi K`_v ejĭZ cvĭib, wKš` Mo ag`wbYŕqi tPóv nte Aĭhšw`K| HwZn`MZfvte, mswk`e`_Pj tKi cwi gvtci gvĭvi wŕwĒtZ msL`vtK PviwU weŕfbæDcvĭq e`vL`v Kiv ntqtQ| cwi gvtci gvĭv`_tjvtK wbgæ`_tK D`P μgci`úivq weĭePbv Kiv nq Ges tmB μgavi`vq tm`_tjv ntjv, bvgmPK, μgmPK, e`wŕŕgĭ K I AbjcvZgĭ K cwi gvtci gvĭv| GB cvĭV Avgiv cĭg`_ŕwU cwi gvtci gvĭv wbtq Avĭj vPbv Kĭi`ev – bvgmPK I μgmPK|

cwi gvtci gvĭvi (Levels of measument) cwi etZ`AĭtĭK cwi gvtci gvcbx (scales of measurement) c`wUĭK e`envi Kĭib| GKwU gvcbxĭK (scale) cwi gvtci nwiZqvi wŕwŕte fiev thĭZ cvĭi | thgb, tgvUi Mvoxi MwZteM wbt`RK hšĭ Kivco gvcvi wclZv, Zjv`Ū, wbw`ĭ, `wocujv`_I Rb tbevi hšĭ; ntjv G aiĭYi wKQz gvcbx| cwi gvtci gvĭv I gvcbxĭ gĭa`Kvi cv`ŕ`wU memgq`_úo bq| thgb, ejv hvq th, cwi gvtci PviwU gvĭvq PviwU gvcbx iĭtqtQ — bvgmPK, μgmPK, e`wŕŕgĭ K I AbjcvZgĭ K| wKš` gvcbxĭ I weŕfbæc`Kviĭf` itqtQ, hv

cwi gvtci gvĭv`_tjvtK wbgæ`_t`_tK D`P μgci`úivq weĭePbv Kiv nq Ges tmB μgavi`vq tm`_tjv ntjv, bvgmPK, μgmPK, e`wŕŕgĭ K I AbjcvZgĭ K cwi gvtci gvĭv|

Avgiv cvW 6-G Avtj vPbv Ki tev | weáwš-Govtbi Rb GB cvtV Avgiv cwi gvtci gvĪv c`wĪtK e`envi Ki tev |

bvgmPK gvĪv (Nominal Level)

*th tKvb weÁvtbi tgšij K I
cĪwgK KivR ntjv
tkYxe×KiY | cwi gvtci
bvgmPK gvĪv tmB cĪwgK
KivRw m=úbaKti |*

th tKvb weÁvtbi tgšij K I cĪwgK KivR ntjv tkYxe×KiY | cwi gvtci bvgmPK gvĪv tmB cĪwgK KivRw m=úbaKti | bvgmPK gvĪwĪ ntjv cwi gvtci meĪPtq mij gvĪv | GB chĪq, chĪeĪY, tj vtK KZ, tj v mg%enkó`m=úbae` dv ev tMvóxtZ (categories) tkYxe× Kivi Rb` msL`v ev Ab`vb` cĪZxKtK e`envi Kiv nq | GB tkYxe× mg%enkó`m=úbae` dv ev tMvóx, tj vtK Avgiv KZ, tj v mjeavRbK bvg w`tq _wĪK | thgb, msL`vmPK cĪZxK 1 I 2 w`tq Avgiv GKwĪ RbĪtMvóxtK bvix I cj`l GB `ĪwĪ tMvóxtZ wef³ KiĪZ cwi, bvixi weciĪtZ 1 I cj`tli weciĪtZ 2 msL`vmPK cĪZxK eivĪi gva`tg | GKB RbĪtMvóxtK Avevi atg⁹ wfvĪtZ I tkYxe× Kiv hvq | gmwjg, w`y Lóvb, I tešx agĪej xĪi h_vutg, 1, 2, 3, I 4 msL`vmPK cĪZxK eivĪ KĪi | bvgmPK cwi gvtci gva`tg Avgiv GKwĪ tMvóx t_ĪK AvĪi KĪw tMvóxi cv_Ī` wbaĪY KĪi _wĪK | thgb, bvix I cj`tli gĪa` cv_Ī` | RvZxqZv, `eewwK ghv⁹v, AvĪwĪj KZv, ivR`wĪZK `j, BZ`w` ntjv bvgmPK gvĪvq cwi gvcKZ PjĪKi wKQy D`vniY |

*bvgmPK cwi gvtci gva`tg
Avgiv GKwĪ tMvóx t_ĪK
AvĪi KĪw tMvóxi cv_Ī`
wbaĪY KĪi _wĪK |*

cwi msL`vbMZ tKškj cĪqvĪMi Rb` tkYxe× tMvóx, tj vtK b`bZgctĪĪ `ĪwĪ kZ`cĪY KiĪZ nte | GKwĪ ntjv, cyLvbcyLZv (exhaustiveness) Ges Ab`wĪ ntjv, weikóZv (exclusiveness) | A_Ī, GKwĪ tMvóxtK cyLvbcyL ntZ ntj, tmB tMvóxi GKB `enkó`m=úbae` mKj e` ; NUbv ev chĪeĪĪYi m=úY`AšfĪ⁹ KiY ntZ nte | A_Ī, tKvb chĪeĪĪYĪKB MYbv t_ĪK ev `Ī`qv hvĪe bv | Avi weikóZv ntjv, tKvb chĪeĪĪYĪKB GKwĪ tMvóxi AwZwi³ Ab` tKvb tMvóxtZ AšfĪ⁹ bv Kiv | A_Ī, hĪmcrfvĪe GKwĪ NUbv, e` ev chĪeĪĪYĪK GĪKi Awak tMvóxtZ AšfĪ⁹ Kiv hvĪe bv | Ab` K_vq, `ĪwĪ `enkó`ĪK GKB cĪZxK wPwĪZ Kiv hvĪe bv | thgb, cj`lĪK cj`l tMvóxtZ Ges bviĪK bvix tMvóxtZB i agvĪ AšfĪ⁹ Kiv hvĪe |

bvgmPK gvĪvi `ĪwĪ MwYwZK %enkó` iĪtqĪ | GKwĪ ntjv, cĪZmg`Zv (symmetry) Ges Ab`wĪ ntjv, mKgĪZv (transitivity) | cĪZmg`Zv ejĪZ Avgiv eĪS th, hw` K I L-Gi gĪa` m=úKĪw mZ` nq, Zte tmB m=úKĪw L I K-Gi gĪa`l mZ` nte | A_Ī,

$$hw` K = L nq, Zte L = K nte |$$

GKwĪ D`vniY t`qv hvK | Kwig I iwng cĪZmg | KviY, `ĪRbB cj`l | th mKj `enkó`i wfvĪtZ bvix I cj`tli gĪa` cv_Ī` iwPZ ntqĪ Ges Kwig I iwngĪK cj`l ejv ntqĪ, tmB `enkó`i wfvĪtZB GB cĪZmg`Zv `Zwi ntqĪ | thgb, Kwig GKRB cj`l, iwngl GKRB cj`l | KvĪRB,

$$Kwig = iwng, Ges iwng = Kwig |$$

Zte GwĪ gĪb ivLĪZ nte th, GLvĪb cĪZmg`ZwĪ `Zwi ntqĪ i agvĪ wj ½xq `enkó`i wfvĪtZ, Ab` tKvb `enkó`i wfvĪtZ bq | mKgĪZv ejĪZ Avgiv eĪS th,

$$hw`, K = L Ges L = M nq, Zte K = M nte |$$

Avevi I Avgiv cĪe⁹ D`vniYwĪ e`envi KiĪZ cwi |

$$hw`, Kwig = iwng Ges iwng = dwi` nq, Zte Kwig = dwi`, ev dwi` = Kwig nte |$$

bigmPK gvĭvi gva`tg Avgiv tKej gvĭ wPwYzKiY, tkYxe×KiY ev tMvōxe×KiY KițZ cwi | GB gvĭvq wefβetMvōxi gta` Avgiv tKej gvĭ wfbzV wbiſcY KițZ cwi, wKš' tKvb ſYMZ (fvĭj v/g)` ce^oaviYv Abgvb KițZ cwi bv | tMvōx,tjvi gta` fvĭj v-g>` ev Kg-tekx RvZxq tKvb ſYv,Y wePvi KițZ ntj, Avgvĭ i ſYevPK cwi gvĭci gvĭv e`envi KițZ nte |

bigmPK gvĭvq wefβetMvōxi gta` Avgiv tKej gvĭ wfbzV wbiſcY KițZ cwi, wKš' tKvb ſYMZ (fvĭj v/g)` ce^oaviYv Abgvb KițZ cwi bv |

μgmPK gvĭv (Ordinal Level)

mvgwRK MtelK Ggb AĭbK PjK e`envi Kĭib, th,tjv tkYxe×KiĭYi cvkvcvck wKQy m^oúK^o c0 k^o Kĭi | mPivPi t`Lv hvq Ggb m^oúK^otjv ntjv, epEi-ſi Zi, D`Pzi-wbæZi, BZw` | GB m^oúK^otjv 0>0 | 0<0 c0ZxK `ſw w` tġ t`Lvĭbv ntġ _vtK | thgb, tkYx KvVtġvq D`P tkYx, ga` tkYx | wbæ tkYx GKw μgavi vi m^oúK^oc0 k^o Kĭi | G tġĭĭ, D`P tkYx ga` tkYxi Zj bvq Ges ga` tkYx wbæ tkYxi Zj bvq AwKZi mvgwRK gh^ov tfvM Kĭi | A_ſ,

D`P tkYx > ga` tkYx > wbg^otkYx |

A_ev, wbg^otkYx < ga` tkYx < D`P tkYx |

bigmPK gvĭvi gZ μgmPK gvĭvqI cyLvbcyLZv | weikóZvi `enkó` `ſw KvRi _vtK | A_ſ, tkYxe×KiY ev tMvōxe×KiĭY c0ZwU NUbvtK Ašf^o KițZ nte Ges GKwU NUbvtK tKej gvĭ GKwU tkYx ev tMvōxZB Ašf^o Kiv hvte, AbwUĭZ bq | μgmPK gvĭvi wZbwU MwYwZK `enkó` iġq0 | c0gwU ntjv, AbvZġevPKZv (irreflexivity), w0ZxqU ntjv, Ac0ZmwġZv (asymmetry), Ges ZZxqU ntjv, mKgRZv (transitivity) | AbvZġevPKZv ntjv m^oúK^oP gta` GKwU thšw³K `enkó`, hv th tKvb GKwU e` ev e`w³i tġĭĭ mZ` ntj, tmB e`w³ ev e` KLbl tmB GKB e`w³ ev e`i tġtġ D`Pzi ev wbæZi ntZ cvĭi bv | thgb, Kwig mvġne KLĭbv Kwig mvġntei tġtġ D`Pzi ev wbæZi Ae`vĭb Ae`vb KițZ cvĭi b bv | A_ſ,

Kwig mvġne > Kwig mvġne, ev Kwig mvġne < Kwig mvġne ntZ cvĭi bv |

Ac0ZmwġZv ej tZ Avgiv ejS th, K hw` L Aġcſv epEi nq, Zte L KLbl K Aġcſv epEi ntZ cvĭi bv | A_ſ,

hw` K > L nq, Zte L > K ntZ cvĭi bv |

Avi mKgRZvi m^oúK^o ntjv,

hw` K > L Ges L > M nq, Zte K > M nte |

Avgiv mvgwRK gh^ovq tkYx KvVtġvi D`vni YwU w` tġ GB wZbwU MwYwZK m^oúK^oK mntRB eštZ cwi | thgb,

D`P tkYx > D`P tkYx ntZ cvĭi bv |

hw` D`P tkYx > ga` tkYx nq, Zte ga` tkYx > D`P tkYx ntZ cvĭi bv |

hw` D`P tkYx > ga` tkYx Ges ga` tkYx > wbg^otkYx nq, Zte D`P tkYx > wbg^otkYx nte |

μgmPK gvṽvq cwi gvcKZ Pj tKi D`vniY wnmvte gtbvfe (attitude) Pj Kiv tK wetePbv Kiv thtZ cvti | MtelKMY gtbvfe cwi gvc KitZ wMtg avivemKfvte tek wKQy gZvgZgj K wltqi Dtg L-Kti vtKb, hv D`P ev wbgμgavivq mvrvtbv vtK | thgb,

mšym `gtbi j t` AvBb k;Lj v i vKvix ms`v wnmvte cvj k ewnbxtK

- AvaybK cōk`vY cōk`vZ Kti Zj tZ nte
- AvaybK At`m%Z KitZ nte
- `vaxbfvte vlgZv cōqvMi mthwM w`tZ nte
- cōqvRbtefta mšymxtK Aciva Kiv Kvtj vj Kivi vlgZv w`tZ nte

aiv hvK, GB cōk`tj vi weci tZ Pvi ai tYi D`Ei mvrvtbv itqtQ | thgb,

<input type="checkbox"/> c`ivcvi GKgZ	<input type="checkbox"/> GKgZ	<input type="checkbox"/> GKgZ bq	<input type="checkbox"/> c`ivcvi GKgZ bq
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Dcwi vj w-Z gZvgZ v ch`vPbv Kiti t`Lv hvq th, cōg gZvgZw t`tK wZxq gZvgZw wKQyk³ gtbvfe cō kō Kti | GKBfvte, wZxq t`tK Zxq Ges Zxq t`tK PZl` Avtiv tekx Kivb gtbvfe cō kō Kti | D`Ei t`j vi gta`l GKB ai tYi gtbvfei Kvvtgv cō wKZ nq | hv cōg D`Ei wZxq 4, wZxq 3, Zxq 2, Ges PZl` 1 gvb eiv` Kiv nq, Zte th e`w³ Pvi w cōk`ie t`v` c`ivcvi GKgZ tcvlY Kiteb, tmB e`w³ i gvb nte 16, Ges th e`w³ c`ivcvi wZg tcvlY Kiteb, Zvi gvb nte 4 | A`v, 16 gvbavix e`w³ cvj ktK Povš-vlgZv cō vbi gtbvfe w`vGes 4 gvbavix e`w³ cvj ktK tKv cōkvi vlgZv cō vbi AvMōx gtbvfe w`v wnmvte w`v nte | gtbvfe Qvovl, mvgwRK wAvbxiv th mKj μgmPK Pj K e`envi Kti vtKb, tm t`j v nte mvgwRK tkYx, cix vti tMw, tKv cōZvbi μgavivi Ae`vb, BZ`w |

*μgmPK gvṽvq Avgiv wbr`θ
`enkto`i wfvētZ tKej
tkYx ev tMvōx B KitZ
cwi bv, Avgiv Gi v, Yl
Avtiv KitZ cwi |*

μgmPK gvṽvq bvgmPK gvṽvi tPtq wKQv Dbz | KviY, bvgmPK gvṽvq wbr`θ `enkto`i wfvētZ i agvṽ tkYx Kiv hvq, wKŠ tKv vMZ gvb Avtiv Kiv hvq bv | A`v, cv`l | bvi xi `enkto`i wfvētZ `v tMvōxtK Avj v`v Kiv tMj | bvi x Atc`v cv`l tkt wK bv Zv wba`v Kiv hvq bv | wKŠ μgmPK gvṽvq Avgiv wbr`θ `enkto`i wfvētZ tKej tkYx ev tMvōx B KitZ cwi bv, Avgiv Gi v, Yl Avtiv KitZ cwi | thgb, cix vq cōB b`ti wfvētZ Avgiv Qvṽ-Qvṽt` i cōg, wZxq l Zxq tkYx w`f³ KitZ cwi, Ges Gl ej tZ cwi th, cōg tkYx cōB Qvṽ-Qvṽx wZxq tkYx Ges wZxq tkYx cōB Qvṽ-Qvṽx wZxq tkYx cōB Qvṽ-Qvṽt` i tPtq Atc`vKZ fvtj v gvtbi |

*μgmPK gvṽvi mvgvexZw
ntj v th, GB gvṽvq
cwi gvcKZ Pj tKi Ašf`
wfvētDcv`vbi gta`
cv`K`i e`eavb ev e`vBw
wY` Kiv m`e nq bv |*

Zte, μgmPK gvṽvi mvgvexZw ntj v th, GB gvṽvq cwi gvcKZ Pj tKi Ašf` wfvēt Dcv`vbi gta` cv`K`i e`eavb ev e`vBw wY` Kiv m`e nq bv | A`v, GKw Dcv`vb Ab` GKw Dcv`vb t`tK KZUKz ep`Ei ev tkōZi, Zv cwigvc Kiv m`e bq | thgb, Avgiv i ay Rvb tZ cwi th, K L Atc`v ep`Ei | wKŠ Avgiv ej tZ cwi bv KZUKz ep`Ei | Avgiv Gl ej tZ cwi bv th, K l L-Gi gta`Kvi cv`R`w M l N-Gi gta`Kvi cv`R`w i tPtq Kg ev tekx | Gw wY` KitZ ntj, Avgv` i e`vBvj K gvṽvi m`v` wbtZ nte |

mvisk

Mtel Yvq e`euZ cŹ`q,tjvi `enkó` I mPK,tjvtK wevfbaegvĭvq cwi gvc Kiv nq| eZŷvb
cvfV Avgiv `ŷW cwi gvtci gvĭv vbtq AvtjvPbv KtiwQ — bvgmPK I μgmPK gvĭv|
bvgmPK gvĭvq mSL`v ev Ab`vb` cŹxKtK e`envi Kti chŷeŷY,tjvtK KZ,tjv
mg%enkó`m`úbæ`dv ev tMvöxtZ tkYxex Kiv nq| bvgmPK cwi gvtci mvt_ μgmPK
cwi gvtci cv_ŷW ntv th, bvgmPK gvĭvq vbw`ŷ `enkó`i wfvĖtZ i agvĭ tkYxex Kiv hvq,
wKŠ` μgmPK gvĭvq `enkó`_tjvi Dci _YMZ gvb Avtvc Kiv hvq| GKRb Mtel KtK
Mtel Yv`i`i` Kivi AvtMB wK Kti vbtZ nte, tKvb aitYi cwi gvc wZvb e`envi Kiteb|
cwi gvtci aiY vbaŷtYi cŷe`Mtel KtK Mtel Yvq AŠfŷ cŹ`q,tjv m`útK`h_vh_ avi Yv
vbtq AMŷhi ntZ nte|

cvfVvEi gj`vqb

`be⁹³K cġæ

mWVK DĒti i cvfk WJK (√) wPý w`b –

1| cġZmvg`Zv Ges mKgZv ntj v:

- K. bvgmPK gvĪvi `ewkó`
- L. μgmPK gvĪvi `ewkó`
- M. e`wβgj K gvĪvi cwi gvc
- N. Dcġi i me|

2| tkYxexKi tYi cvkvcwk wKQzm^αúK[©]đ kġ Kti :

- K. μgmPK gvĪvi cwi gvġc
- L. AbcvZmPK gvĪvi cwi gvġc
- M. e`wβgj K gvĪvi cwi gvġc
- N. Dcġi i me|

3| μgmPK gvĪvi mvgvexZwU ntj v, cwi gvcKZ Pj tKi Ašf⁹ wewfbæDcv`vġbi gġa`
cv_ġK`i e`eavb _____|

- K. wbyġ Kiv wKQlv m^αe
- L. wbyġ Kiv tgvUvġgwU m^αe
- M. wbyġ Kiv m^αe bq
- N. wbyġ Kiv wetePbvq Avġm bv

mswġB cġæ

1| bvgmPK cwi gvc wK?

2| μgmPK cwi gvc wK?

i Pbvġj K cġæ

1| mġvR Mġel Yvq cwi gvġci cġqvRbvqZv D`vni Ymn Avġj vPbv Ki`b|

2| bvgmPK Ges μgmPK cwi gvġci cv_ġ` D`vni Ymn Avġj vPbv Ki`b|

cw - 3

cwi gvṽci gvĪv - 2: e`vbšgj K I AbčvZgj K Levels of Measurement – 2: Interval and Ratio

GB cw tkṽl hv Rvbr hvte —

- e`vbšgj K gvĪv
- AbčvZgj K gvĪv
- cwi gvṽci PviwU gvĪvi gṽa` Zj bv

e`vbšgj K gvĪv (Interval Level)

cw 2-G Avgiv ṽRṽbU th, bvgmPK gvĪv chṽeṽYṽK tKej gvĪ tkYxe× Kṽi Ges ṽgmPK gvĪv Avgvṽ` i AvṽiK avc GwMṽtq wbtq tkYxe×KiṽYi cvkvcwk chṽeṽYmgṽni gṽa` ṽMZ ṽgavivi GKwU mṽúKṽ`vcb Kṽi| wKŠ` Avgiv GI Rwb th, ṽgmPK gvĪvq cwi gvṽci gṽa`ṽg mṽúKṽṽ GB chṽeṽYṽ,tjvi gṽa` e`eavṽbi gvĪwU wbaṽY Kiv hvq bv| hw` Avgiv cṽZwU chṽeṽYṽi gṽa`Kvi cKZ e`eavbwU RvṽtZ cwi, Zṽe Avgiv cwi gvṽci e`vbšgj K gvĪv ARṽ KṽiZ mṽṽg nB| A_ṽ, tkYxe×KiY Ges ṽMZ ṽgavivi mṽúKṽ`vcṽbi cvkvcwk, GKwU chṽeṽYṽ t_ṽK AvṽiKwU chṽeṽYṽ wK KZ GKṽKi e`eavṽb Ae`vb Kṽi Zv e`vbšgj K gvĪvi gṽa`ṽg wYṽṽ Kiv mṽe| ṽgb, e`vbšgj K gvĪvq cwi gvṽci gṽa`ṽg Avgiv i agvĪ GUKB ej ṽZ cwi bv th, Kwig mṽṽne i wng mṽṽṽei ṽPṽṽ tekx Avq Kṽib, Avgiv GI ej ṽZ mṽṽg nB th, Kwig mṽṽne i wng mṽṽṽei ṽPṽṽ 5000 UvKv tekx Avq Kṽib| GB cwi gvYmZ Zj bwU KṽiZ nṽj Avgvṽ` i Aek`B GKwU cwi gvṽci mṽ² GKK ṽvKṽZ nṽe Ges chṽeṽYṽi cṽZwU GKṽKi gṽa`Kvi e`eavbwU mgvb nṽZ nṽe|

tkYxe×KiY Ges ṽMZ ṽgavivi mṽúKṽ`vcṽbi cvkvcwk, GKwU chṽeṽYṽ t_ṽK AvṽiKwU chṽeṽYṽ wK KZ GKṽKi e`eavṽb Ae`vb Kṽi Zv e`vbšgj K gvĪvi gṽa`ṽg wYṽṽ Kiv mṽe|

e`vbšgj K gvĪvi MwwYwZK `emkó` ,tj v nṽj v:

- Abb`Zv (uniqueness): hw` K I L `ṽwU cKZ msL`vi cṽZwvvaZj Kṽi, Zṽe K+L I K×L GKwU Ges GKgvĪ GKwU cKZ msL`ṽṽK cṽZwvvaZj Kṽi |
- cṽZmvg`Zv (symmetry): hw` K = L nq, Zṽe L = K nṽe|
- wewbgqṽṽM`Zv (commutation): hw` K I L cKZ msL`ṽṽK wbt`R Kṽi, Zṽe K + L = L + K I KL = LK nṽe|
- cṽZKí bv (substitution): hw` K = L I K + M = N nq, Zṽe L + M = N; Ges hw` K = L I KM = N nq, Zṽe LM = N nṽe|
- msmM`Zv (association): hw` K, L I M cKZ msL`ṽṽK wbt`R Kṽi, Zṽe (K + L) + M = K + (L + M) I (KL) M = K (LM) nṽe|

e`vbšgj K gvĪvi mṽṽ bvgmPK I ṽgmPK gvĪvi cṽvb cv`R`wU nṽj v, e`vbšgj K gvĪvq cwi gvṽcZ Pj K, tj vi gṽa` cwi gvṽci GKwU cwi wngZ GKK (standard unit) iṽṽṽ Ges GKwU GKK t_ṽK Ab` GKṽKi mgvb `i Zj iṽṽṽ|

e`vbšgj K gvĪvi mṽṽ bvgmPK I ṽgmPK gvĪvi cṽvb cv`R`wU nṽj v, e`vbšgj K gvĪvq cwi gvṽcZ Pj K, tj vi gṽa` cwi gvṽci GKwU cwi wngZ GKK iṽṽṽ Ges GKwU GKK t_ṽK Ab` GKṽKi mgvb `i Zj iṽṽṽ|

wKṽv e`vbšgj K gvĪvq cwi gvṽcZ GKwU Pj K| wKṽvMz thvM`Zvi wfvE`Z Avgiv wewfbc e`wṽṽṽK wewfbcṽMvṽxZ wefṽṽ KṽiZ cwi Ges tmB tMvṽx, tj v GKwU ṽMZ mṽúṽKṽṽ ṽgaviv

ˆZwi Kti | thgb, cˆAg tkYx chS-ukŋlv mguβ Kitj Avgiv GKRb eˆwˆ3tK cˆUwgK ukŋlvq
ukwŋlz etj _uk, ˆkg tkYx mguβ Kitj Avgiv gvaˆwgK, evtiv eQi mguβ Kitj DˆP
gvaˆwgK, Kgctŋl tPŠi eQi mguβ Kitj øvZK Ges tlvj eQi mguβ Kitj øvZtKvEi ukŋlvq
ukwŋlz etj AwfwnZ Kw | G tŋtŋ, ukŋlvMZ thvMˆZvi wfvEˆZ wewfbøbvqKitYi gvaˆtg
bvqmPK gvŋvi Kvhu mˆúw` Z ntqtQ|

thtñZi cˆUwgK ukŋlv Zj bvq gvaˆwgK ukŋlv DˆPzi | gvaˆwgK ukŋlv Zj bvq DˆP gvaˆwgK
ukŋlv DˆPzi, Ges mæZK ukŋlv Zj bvq mæZtKvEi ukŋlv DˆPzi, tmñZi ukŋlv GB
tkYx,tjv GKul mˆútkP µgaviv ˆvctbi gaˆ w`tq cwi gvtci µgmPK gvŋvi Kvhu mˆúw` b
KitQ| th wclqW GLvfb j ŋYxq tmw ntjv, cˆUg tkYx tˆtK øvZtKvEi tkYx chS-mguβ
KitZ GKRb Qvŋ/QvŋtK cˆZwU tkYxtZ GK eQi mgqKvj AwZµg Kti GKul ewlR
ciŋlvq DExYntZ ntqtQ| A_ŋ, GLvfb GKul cwiwgZ GKtKi cwi gvc AbjmiY Kiv ntqtQ|
cˆZwU tkYxtK GK GKul GKK wmwte wetePbv Kitj tˆLv hvq th, cˆZwU tkYxi gtaˆ
eˆeavb ntjv GK eQi i | GB GK eQi i eˆeavbu cˆZwU tkYxi Rbˆ mguβ I AcwieZŋxq|
Avq, epˆxgEv, tfvUˆ vtb mŋlg RbtMvøx, Rbtvvi, BZˆwˆ ntjv eˆwβgj K gvŋvq cwi gvcKZ
Pj tKi ukQyDˆvniY|

*eˆwβgj K gvŋvi mˆxgveˆxZwU
ntjv, GB gvŋvq cwi gvcKZ
Pj K,tjvi mˆbwˆ Ø tKvb
mPbvˆj ev DrcwEˆj tbB,
hv GKul ˆŋfweK wbi¼k
kbˆ Aeˆvb w`tq wPwYz Kiv
nq|*

eˆwβgj K gvŋvi mˆxgveˆxZwU ntjv, GB gvŋvq cwi gvcKZ Pj K,tjvi mˆbwˆ Ø tKvb mPbvˆj
ev DrcwEˆj (definite origin) tbB, hv GKul ˆŋfweK wbi¼k kbˆ Aeˆvb (absolute
natural zero point) w`tq wPwYz Kiv nq| GB mPbvˆj w Rvbw bv _vKtj, GB gvŋvq cˆU
cwi mSLˆvbMZ DcvEˆ,tjv DˆPzi cwi mSLˆvbMZ wctkˆtY mgmˆv ˆZwi Kti |

AbjvZgj K gvŋv (Ratio Level)

*th me Pj tKi ˆŋfweK
wbi¼k kbˆ Aeˆvb wex`y
i tqtQ ev wbwˆ Ø GKul
DrcwEˆj i tqtQ, tm me
Pj tK AbjvZgj K gvŋvq
cwi gvc Kiv qvq|*

th me Pj tKi ˆŋfweK wbi¼k kbˆ Aeˆvb wex`y i tqtQ, ev wbwˆ Ø GKul DrcwEˆj i tqtQ, tm
me Pj tK AbjvZgj K gvŋvq cwi gvc Kiv hvq| I Rb, mgq, eqm, Zvcgvŋv, ˆNˆBZˆwˆ
ntjv AbjvZgj K gvŋvq cwi gvc thvMˆ Pj tKi ukQyDˆvniY| eˆwβgj K I AbjvZgj K gvŋv
GKB aiŋYi Ges th wbgvejx AbjmiY Kti Pj Kmgŋni cˆZ mSLˆv Avtivc Kiv nq,
tm,tjvl GKB iKg, iayGKul eˆwZµg Qvov| tmB eˆwZµgU ntjv th, AbjvZgj K gvŋvi
tŋtŋ me aiŋYi MwYwZK ev cwi mSLˆwbK KgRvUˆ i iˆ nq GKul wbi¼k kbˆ Aeˆvb wex`y
tˆtK| Abˆ w`tK, eˆwβgj K gvŋvi tŋtŋ tm mKj KgRvUˆ i iˆ nq GKul tˆˆQvgj K mPbvˆj
tˆtK|

eqm Pj KwtK GKul DˆvniY wntmte aiv thtZ cvti | GKul wki i Rtbŋ ci tˆtK GK eQi
cYˆbv nI qv chS-Zvi eqm aiv nq kbˆ eQi | A_vŋ, GKRb eˆwˆ3i eqm MYbv i iˆ nq kbˆ
eQi tˆtK| Abˆ K_vq, eqm Pj Kwti ˆŋfweK DrcwEˆj ntjv Rtbŋ mgqW| GB
DrcwEˆj wU cˆUwZKfvteB mˆp, Kwŋ gfvte bq| wKŠˆ eˆwβgj K gvŋvq, th tKvb ˆvb tˆtK
MYbv i iˆ ntZ cvti | thgb, mšvb Rbŋ vtb mŋlg bviŋtˆ i eqm MYbv m n s w k e m K j c K vi
MwYwZK KgRvUˆ i iˆ nq 15 eQi eqm tˆtK Ges tkl Kiv nq 49 eQi | KviY, GB
Pj KwtK GfvteB mšAwqZ Kiv ntqtQ| tfvUˆ vtb mŋlg eˆwˆ3i MYbv Kiv nq 18 eQi
eqm tˆtK| KviY, 18 eQi eqmtK cˆUBeqˆzvi gvbˆU wntmte wPwYz Kiv ntqtQ Ges GB
cˆUBeqˆzvb tfvUˆ vtb thvMˆZvtK wbi¼cY Kti |

Zvcgvŋv ntjv AbjvZgj K gvŋvq cwi gvcKZ Ggb Avti Kwt Pj K, hvi GKul cˆUwZK I
wbwˆ Ø kbˆ DrcwEˆj i tqtQ| KviY, cwmb kbˆ ZvcgvŋvZB eitd cwiYZ nq| wKŠˆ hLb
GKRb wPwKrmK GKRb eˆwˆ3i kixti Rŋi i Zvcgvŋv cwi gvc Ktib, ZLb wZwb tˆtLb th,

ZvcgvĪv 98.6 wMMĀ dvtibnvBU AwZμg KtiĪQ wKbv| hw` tmB e`w³i kixĪi ZvcgvĪv 98.6 wMMĀ dvtibnvBtUi Dcti nq, Zte wZib tmB e`w³i Rj ntqĪQ etj wPwYz Ktib| G tĪĪĪ, ZvcgvĪv Pj KūU AbjcvZgj K `ewkó` nwiĪq e`wBggj K-G cwiYZ nq| GKūU Pj KtK `ŲU gvĪvq cwi gvc Kiv mæe etj AĪbK mgq e`wBggj K I AbjcvZgj K cwi gvĪci gvĪv GKB AĪ_ē`eüZ ntq _vĪK| wKŠ` Zv c×wZMZfvte mWVK bq|

AbjcvZgj K gvĪvi cwi gvc (hv maviYZt cĀKūZK weAvĪbi tĪĪĪB tekx cĀqvM Kiv ntq _vĪK) AwRZ nq ZLbB, hLb Pviw `ewkó`B GKūU Pj tKi gĪa` _vĪK| %ewkó` ,tjv ntjv: (K) mgv_RZv (equivalence), (L) epĪi-Īi` Zi (greater than-less than), (M) th tKvb `ŲU e`eavĪbi AvZ `ĪZi (known distance of any two intervals), Ges (N) GKūU mwZ`Kvi kb`Īj ev DrcwĪĪ`j (a true zero point or origin)| Zte Gwū mZ` th, mKj `ewkó`B kb` t_ĪK cwi gvc Kiv hvq bv| thgb, kb` mīgwūRK tkYx tKvb A_ēn cĪZ`q ntZ cvĪi bv| Ab`w`ĪK, kb` wKĪwMZ thvM`Zv AvgvĪ` i `úó aviYv t`q th, GKRb e`w³i tKvb cĀwZōmbK wKĪv tbB|

AbjcvZgj K gvĪvi cwi gvc
AwRZ nq ZLbB, hLb Pviw
`ewkó`B GKūU Pj tKi gĪa`
_vĪK|

cwi gvĪci gvĪv ,tj vi gĪa` Zj bv (Comparison between the Levels of Measurement)

cwi gvc c×wZi cĀvb Pviw gvĪvi gĪa` Zj bvĪj K AvĪj vPbvq mswĪĪBfvte ej v hvq th,

- bvgmPK gvĪvq Avgiv tKej mgv_RZv `vcb KiĪZ cwi |
- μgmPK gvĪvq mgv_RZvi cvkvcwK epĪi-Īi` Zi ,YmZ μgavi vi mæúK`wcz nq|
- e`wBggj K gvĪvq mgv_RZv I ,YmZ μgavi vi mæúK`P mĪt_ GKūU GKK t_ĪK Ab` GKtKi gĪa` e`eavĪbi `ĪZūU wbarPY Kiv hvq, hv memgq mgvb `ĪZi ntq _vĪK|
- AbjcvZgj K gvĪvq mgv_RZv, ,YmZ μgavi vi mæúK`Ī GKKmgĪni gĪa`Kvi e`eavĪbi AvZ `ĪZi QrovI GKūU mĪbw`Ī, `ĪfvweK I wbi ¼k DrcwĪĪ`j wBYĪ mæe, hvi MYbv kb` t_ĪK `i` nq|

wbtæi mviwYw chĪeĪY KiĪj Pviw gvĪvi Zj bv AvĪv `úó ntq DVte|

<i>cwi gvĪci gvĪv</i>	<i>chĪeĪYi Zj bvi Dciq</i>	<i>D`mi Y</i>
bvgmPK	• chĪeĪY ,tj v wK wfbæ	%ewwK ghv`v
μgmPK	• chĪeĪY ,tj v wK wfbæ • tKvb chĪeĪYw epĪi?	mīgwūRK tkYx
e`wBggj K	• chĪeĪY ,tj v wK wfbæ • tKvb chĪeĪYw epĪi? • KZUKzenĪi?	eqm
AbjcvZgj K	• chĪeĪY ,tj v wK wfbæ • tKvb chĪeĪYw epĪi? • KZUKzenĪi ? • chĪeĪYwūi wK GKūU mĪbw`Ī/ wbi ¼k kb` DrcwĪĪ`j iĪqĪQ?	ZvcgvĪv

Gm Gm GBP Gj

metk†l ej v hvq th, cwi gvtci gvĭwU wbarĭ Z nq Pj †Ki cKwZi Dci | AZGe, cwi gvtci
cĭμqv wbarĭY Kivi cĕPj †Ki cKwZ†K mwKfvte eS†Z nte |

mvisk

cĕP cv†V Avgiv bvgmPK Ges μgmPK cwi gvc m᳚ú†K©Av†j vPbv K†iwQ | eZĭv†b cv†V
bvgmPK | μgmPK gvĭvi †Ptq DbzZi `ĭU cwi gvc — eĭwβgj K Ges AbjcvZgj K —
m᳚ú†K©Av†j vPbv Kiv n†qt†Q | eĭwβgj K cwi gvtci ††††, Dcv†Ei †kYre×KiY Ges , YMZ
μgavivq m᳚úK©†c†bi cvkvcwK, GKwU chĕ††Y ††K Abĭ chĕ††Yi `†Zj KZ GK†Ki
eĕar†b Aeĭvb K†i, Zv cwi gvc Kiv m᳚e | Abĭw†K, th Pj †Ki ĭ†fweK | mĭbwĭ kbĭ
Aeĭvb i†qt†Q, Zv cwi gvc Kivi Rbĭ AbjcvZgj K cwi gvc eĕeüZ n†q ††K |

cvfVvEi gj`vqb

`be⁹³K cċke

mWVK DĒti i cvfk WJK (√) WPy w` b –

1| GKWJ chēŋY t_ŋK Avti KwJ chēŋYi e`earb wBYŋq:

- K. bvgmPK cwi gvc h_vh_ dj t` q
- L. μgmPK cwi gvc h_vh_ dj t` q
- M. e`wβmPK cwi gvc h_vh_ dj t` q
- N. Dcti i me|

2| _____ gvŋvi mxgre×ZwJ ntjv th, cwi gvcKZ Pj K_ŋj vi mjbw`θ tKvb mPbv`j tbB|

- K. bvgmPK
- L. μgmPK
- M. e`wβgj K
- N. Dcti i me

3| th me Pj ŋKi wbi ¼k kb` Ae`vb itqtQ, tm me Pj KŋK _____ gvŋvq cwi gvc Kiv hvq|

- K. bvgmPK
- L. μgmPK
- M. e`wβgj K
- N. AbjcvZgj K

4| cwi gvtci gvŋwJ wbaŋi Z nq Pj ŋKi :

- K. msL`vi Dci
- L. Ae`vtbi Dci
- M. AvqZŋbi Dci
- N. cċwZi Dci |

mswŋB cċke

1| e`wβgj K cwi gvc wK?

2| AbjcvZgj K cwi gvc wK?

iPbvj K cċke

1| e`wβgj K Ges AbjcvZgj K cwi gvtci e`envi D`vni Ymn Avtj vPbv Ki`b|

2| mgvR Mtel Yvq e`eūZ cwi gvtci gvŋv_ŋj vi gta` Zj bvj K Avtj vPbv Ki`b|

cwi gv̄tci wbf̄P̄thvM̄Zv
Reliability of Measurement

GB cW tk̄t̄l hv Rv̄bv hv̄te —

- cwi gv̄tci āv̄š-
- cwi gv̄tci nwiZqv̄ti āv̄š+ D̄rm
- wbf̄P̄thvM̄Zv wK
- wbf̄P̄thvM̄Zv c̄l̄° j t̄bi c×wZ

cwi gv̄tci āv̄š-(Errors of Measurement)

*cwi gv̄tci gvātg c̄l̄B
gv̄b, t̄j vi ḡta c̄KZ
%enkóMZ cv_R̄" Q̄ov Ab̄"
th me cv_R̄" t̄ Lv hv̄q,
tm, t̄j v̄tK cwi gv̄tci āv̄š
etj |*

c̄l̄Zw cwi gv̄tci ḡta "̄ŃU Dcv`vb it̄qt̄Q – GKw c̄KZ `enkóMZ Dcv`vb Ges Ab̄w āv̄š+ Dcv`vb | th t̄Kvb `enkóti c̄l̄Z msL`wb̄t`kR̄ c̄l̄ZxK, msL`v ev gv̄b eiv̄t̄i gvātg weAv̄bxiv cwi gvc c×wZi e`envi K̄tib | gv̄b eiv̄t̄i nt̄q t̄M̄t̄j tmB gv̄tbi ḡta th wfb̄zv `Zvi nq, Zv `t̄Uv D̄rm t̄_t̄K D̄mZ nq — GKw nt̄jv, th %enkótk̄ cwi gvc Kiv nq, Zvi ḡta c̄KZ cv_ŔK̄i Ńviv m̄p āv̄š-Ges Aciv̄w nt̄jv, cwi gv̄tci nwiZqv̄i t̄_t̄K, ev th t̄c̄l̄v̄c̄t̄U `enków̄t̄K cwi gvc Kiv nq, Zv t̄_t̄K m̄p āv̄š+ wei × cwi gvc, t̄jv %enkóti ḡta Kvi c̄KZ wfb̄zv̄t̄K c̄Kvk K̄ti | wKš' cwi gvc, t̄jv K`wPr wei × nt̄q v̄t̄K | tm, t̄jv iay c̄KZ cv_Ŕt̄KB c̄l̄k̄B K̄ti bv, Kw̄g cv_Ŕt̄KI w̄b̄t`R̄ K̄ti | cwi gv̄tci gvātg c̄l̄B gv̄b, t̄j vi ḡta c̄KZ %enkóMZ cv_R̄" Q̄ov Ab̄" th me cv_R̄" t̄ Lv hv̄q, tm, t̄j v̄tK cwi gv̄tci āv̄š-etj |

*cwi gv̄tci āv̄š+ eū D̄rm
it̄qt̄Q | G mKj D̄rm t̄_t̄K
th āv̄š, t̄j v Rb̄f̄t̄bq,
tm, t̄j v nq ŃbqgZw̄šK̄l̄,
bZev Ń̄Ńēl̄ c̄KwZi nt̄q
v̄t̄K |*

cwi gv̄tci āv̄š+ eū D̄rm it̄qt̄Q | G mKj D̄rm t̄_t̄K th āv̄š, t̄j v Rb̄f̄t̄bq, tm, t̄j v nq ŃbqgZw̄šK̄l̄ (systematic), bZev Ń̄Ńēl̄ (random) c̄KwZi nt̄q v̄t̄K | hLbB cwi gv̄tci nwiZqv̄iw c̄l̄qv̄M Kiv nq, ZLbB w̄bqgZw̄šK̄ āv̄š+ Rb̄f̄t̄bq Ges GB āv̄š, t̄j v M̄t̄elYv | e`w̄š+ t̄f̄t̄` v̄qxf̄v̄te we`gv̄b v̄t̄K | tm, t̄j v Dcv̄t̄Ei ḡta w̄bqgZw̄šK̄f̄v̄te Am̄w̄Zi Rb̄f̄t̄q | w̄bqgZw̄šK̄ āv̄š-m̄w̄ZcYf̄v̄te GKw m̄v̄viY ifc w̄b̄t̄q v̄t̄K | Ńe āv̄š-cwi gv̄tci nwiZqv̄ti c̄l̄Zw e`env̄t̄i t̄Ńt̄t̄ w̄v̄f̄b̄v̄f̄v̄te cwi gvcw̄t̄K c̄f̄w̄eZ K̄ti | thgb, GKRB D̄Ei v̄Zv c̄k̄gv̄j vi GKw c̄k̄w̄f̄j f̄v̄te c̄t̄Z cv̄tib, ev GKRB m̄v̄Ńv̄Kvi M̄hYKvix GKw c̄l̄k̄e D̄Ei f̄j f̄v̄te w̄j w̄c̄e× K̄it̄Z cv̄tib, A_ev GKRB Dcv̄E w̄t̄k̄K̄ Kw̄v̄DUv̄t̄i f̄j f̄v̄te Dcv̄E w̄j w̄c̄e× K̄it̄Z cv̄tib | G, t̄j v nt̄jv Ńe āv̄š+ aiY Ges M̄t̄elYvi th t̄Kvb ch̄f̄q G, t̄j v c̄l̄ek K̄it̄Z cv̄tib | Zte Gme āv̄š+ Aw̄Kv̄sk̄B w̄t̄kl̄ hZ̄el m̄v̄v̄bvi gvātg t̄k̄v̄iv̄t̄bv hv̄q | Gicil th, t̄j v it̄q hv̄q, tm, t̄j v Ńe c̄KwZi Kvi t̄Y Ḡt̄K Acit̄K em̄Zj K̄ti t̄`q etj Ab̄gv̄b Kiv nq | wKš' Ńe āv̄š+ c̄l̄vb m̄gm̄w̄U nt̄j v th, G, t̄j v m̄Zv̄t̄K `eP̄ K̄ti t̄`q | G, t̄j v P̄j t̄Ki ḡta m̄v̄v̄K̄w̄b̄f̄t̄Y w̄eāv̄šK̄i djv̄dj c̄l̄vb K̄it̄Z cv̄tib |

*Ńe āv̄š+ c̄l̄vb m̄gm̄w̄U
nt̄j v th, G, t̄j v m̄Zv̄t̄K
`eP̄ K̄ti t̄`q | G, t̄j v
P̄j t̄Ki ḡta m̄v̄v̄K̄w̄b̄f̄t̄Y
w̄eāv̄šK̄i djv̄dj c̄l̄vb
K̄it̄Z cv̄tib |*

*w̄bqgZw̄šK̄ āv̄š Ńe āv̄š+
gZ Ḡt̄K Acit̄K em̄Zj K̄ti
bv | w̄bqgZw̄šK̄ āv̄š-Ńe
āv̄š+ t̄P̄t̄q t̄ek̄w̄w̄c̄3̄4̄K̄ |
Kvi Y, G, t̄j v Aw̄K̄Zi
w̄eāv̄šK̄i djv̄dj i Rb̄f̄t̄
t̄`q |*

w̄bqgZw̄šK̄ āv̄š-Ńe āv̄š+ gZ Ḡt̄K Acit̄K em̄Zj K̄ti bv | w̄bqgZw̄šK̄ āv̄š-Ńe āv̄š+ t̄P̄t̄q t̄ek̄w̄w̄c̄3̄4̄K̄ | Kvi Y, G, t̄j v Aw̄K̄Zi w̄eāv̄šK̄i djv̄dj i Rb̄f̄t̄`q | GKw D`v̄niY t̄`qv hv̄K | thgb, Av̄Bb k̄;Ljv i Ńv̄Kvix ms`vi Ńviv c̄`ZKZ c̄l̄Zte`t̄b Aciv̄tai gv̄l̄vi nvi mem̄gq Kg etj D̄t̄j K̄iv nt̄q v̄t̄K | Ab̄w̄t̄K, `v̄axb M̄t̄elYv c̄l̄Zv̄t̄bi c̄l̄Zte`t̄b Aciv̄tai gv̄l̄vi nvi mem̄gq t̄ek̄w̄w̄c̄3̄4̄K̄ | Kvi Y, Aciv̄tai w̄K̄vi nt̄q̄Ob, Ggb eū e`w̄3̄ Rv̄bvR̄wb nt̄q h̄v̄ei f̄t̄q, ev t̄fv̄w̄w̄š-nt̄Z cv̄tib ḡt̄b K̄ti, Av̄Bb k̄;Ljv i Ńv̄Kvix ms`vi Kv̄t̄Q

mnvth'i Rb` hvb bv| A_P, Mteliki KvQ Zv `xKvi Ktib tMvcbxqZv iŋvi ktZ` eü
e`w³MZ I cwi ewi K Aciva m`útk`msuké`ms`vi KvQ AwfthvM Kiv nq bv| Acivtai GB
jKwqZ Nubv,tjv AnaKvsk tŋtŋ Aciva m`úmKZ cwi msL`vtbi gta` Ašfß nq bv| Gi
dtj, GKw mgvtR Acivtai gvT v m`útk`fj aviYvi Rb` nq Ges Aciva `gtb mwK
c`tŋc MhY Kiv m`e nq bv| G aitYi áwššK wbtq MtelK tek DvMæ_vtKb| Zte, G
mKj áwš`n`fmi Rb` wefwbetKškj itqtQ, hv MtelK wefwbecwi`wZtZ cŋqM Kti
_vtKb|

cwi gvtci nwmZqvti áwšš Dm (Sources of Errors in Measuring Instrument)

GKw Av`k`cwi gvtci KZ,tjv `i`ZcY`enkó` itqtQ| tm,tjv ntjv, cŋmwZKZv,
wbfŋthvM`Zv, h_v_Zv I mste`bkj Zv| mvgwRK weÁvtb, cKZctŋ Lp Kg cwi gvc c`wZ
itqtQ, hv G mKj `enkó` ev gvb` Ü citY mg`nq| KviY, gvbtli AvPiY, AbŋvZ, ŋlgZv,
Ggb wK, `wK `enkó`l mgtq mgtq cwi ewZ nq| AZGe, tKvb cwi gvtci nwmZqv B GKw
cŋqM t`tk Ab` cŋqvM GKB iKg djvdj cŋvb Kite bv| Ab` K_vq, Pj Ktk cwi gvtci
Rb` mvgwRK weÁvbxiv th mKj tKškj cŋqM Ktib, tm,tjvi GKkŋ fM m`wZcY`djvdj
ARŋbi m`ebv tbB| thgb, `ŋZv wbfctYi cixŋvq e`w³i `ŋZvi gvTb th tKej wbaŋ K
fugKv cvjb Kti Zv bq, cixŋv MhYi mgq e`w³ KZUKz mZK, Kvš, wei³,
mnhwMvZvgjK, ev cixŋvi welqe` m`útk`Zvi KZUKz AwfÁZv itqtQ, Gi meB `ŋZv
wbfctYi cixŋvq cŋve we`wi Kti _vtK| cŋq mKj tŋtŋ, GKw cwi gvtci nwmZqv tKvb bv
tKvb gvTq wbfŋthvM` ntq _vtK| Dciš, tKvb nwmZqv B wbi`kfvte h_v`bq| cwi gvtci
djvdj `iay th cwi gvcKZ `enkó`tKB cŋZdij Z Kti Zv bq, Ab`vb` ÁvZ Ges AÁvZ
Dcv`vb cwi gvcKZ `enkó`tK Ges cwi gvtci cŋqvM cŋveZ Kti| wbtgæGgb wKQz m`e`
áwšš Dm Dti Kiv ntjv|

*GKw Av`k`cwi gvtci
KZ,tjv `i`ZcY`enkó`
itqtQ| tm,tjv ntjv
cŋmwZKZv, wbfŋthvM`Zv,
h_v_Zv I mste`bkj Zv|*

cŋgZt, th `enkó` cwi gvc Kiv nq, tm,tjvi gta` cKZ wfbZvi dtj wfbæwfbægvbtbi Rb`
nq| thgb, ag`Mf`vZ, BZ`w`i gZ wel tqi cŋZ `ŋRb gvbtli wfbægvbtvive wfbægvbtbi Rb`
t`te| *wZiqZt*, cwi gvtci nwmZqv cŋqvMi ci th gvb,tjv cvl qv hvq, tm,tjv Ggb tKvb
mnhwMx `enkó`i mvt_ msuké, hv MtelK cwi gvc Kitz Pvb bv| wKš`tm,tjvi gta`
cv`K`i dtj wfbæwfbægvbtbi Rb` nq| epxgEv, epxb¼, wŋv, AwfÁZv, mvgwRK ghPv,
BZ`w`i gZ `enkó`_tjv cŋqkt Mteliki chŋeŋYtK cŋveZ Kti| thgb, `wZKZv
weKvtki cwi gvc mspvš`cŋkæ DÈi t`evi Rb` DÈi`vZvi GKw wbw`ŋ gvTvi epxgEv I
mvgwRK mPZbZvi cŋqvRb ntZ cvti| G cŋkæ DÈi cKZctŋ `wZKZv weKvtki
cvkvcwk, epxgEv I mvgwRK mPZbZvi gZ mnhwMx `enkó`i gta` cv`K`i cŋvetKI
cŋZdij Z Kite| GB mnhwMx Dcv`vtbi cŋvte dtj cwi gvtci áwš`nq| *ZZiqZt*, `ŋ`,
Kwš, tgRvR, gvbmK Ae`vi gZ ŋY`vq e`w³MZ Dcv`vtbi gta` e`w³ t`tk e`w³tZ
wfbZv I cwi eZtbi KvitY djvdj wfbægvbtbi Rb` t`q| *PZtZt*, cwi w`wZMZ KvitY
wfbZvi mw³ nq, hv cwi gvtci áwšš` Rb` t`q| thgb, `ŋgx ev kŋi`oxi mvgtb GKRb Mpeaj
mŋŋvKvi MhY Kiti, tm tŋtŋ cKZ gvb cvl qv m`e nq bv| Ggb wK, mŋŋvKvi MhYKvi xi
eqm, wj ½, tek`f`v, BZ`w` mŋŋvKvi cŋvbKvixi DÈitK cŋveZ Kivi ga` w`tq áwš`
`Zwi Kitz citi| *cAgZt*, cwi gvtci nwmZqv cŋqvM c`wZi wfbZvi KvitY wfbægvb cvl qv
hvq| *lŋZt*, bgpvqb c`wZi KvitY wfbZv `Zwi nq| thgb, hv` GKw mgjfc RbtMvöxi ga`
t`tk bgpv wbePb Kiv nq, Zte wfbZv chŋeŋYi Rb` cŋZwbazkxj bgpv cvl qv hvte bv,
bgpvw cŋcV`p nte| *mbgZt*, cwi gvtci nwmZqv i A`úóZv I wfbæ`vL`vi KvitY áwš`

gvb cvl qv thtZ cvti | thgb, ^eewnK ghv^ovi welquU A⁻úó ntj , fj DEi cvl qv thtZ cvti | AógZt, cwi gvtci nwiZqvíU c^oqv^tMi mgq th tKvb ai^tYi A⁻v^fweKZv ev hwišK mgm^vi dtj cwi gvtci áwš-Zwi Kí^tZ cvti | thgb, mv^qvrKvi M^ht^Yi mgq tUc tiKW^qi i e^vUvix Ktq tMtj DEi⁻vZvi e³e⁻ A⁻úófvte tiKW^RZ ntZ cvti Ges Zv cieZx^fZ fj gvtbi Rb^f t^{te} | begZt, cwi gvtci nwiZqv^ti i Kiv^tgvMZ wfb^zvi dtj wfbegvb cvl qv thtZ cvti | ^kgZt, DcvÉ c^oqv^tKiY ev w^etk^tYi mgq áwš-ntj wfbegvb cvl qv hvte | thgb, Kw^úDUvti DcvÉ c^oetki mgq fj mwi^tZ DcvÉ Dc⁻vcb Kí^tj m^wK gv b cvl qv hvte bv |

wb^fP^thM⁻Zv wK (What is Reliability)?

GKuU cwi gvtK GKB
cwi w⁻úZ^tZ, ev wfb^z
cwi w⁻úZ^tZ wfb^zM^te^lK^t i
O^vi vⁱ e^vi c^oqv^tM Kí^vi cⁱ
h^w c^ev^ei GKB iKg
djvdj cvl qv hvq, Zte ej v
hvte th, cwi gvtU
wb^fP^thM⁻ |

mvavi Yfvte, wb^fP^thM⁻Zv ej tZ GKuU cwi gvtci nwiZqv^ti i m^zwZcY^odj c^okv^tki q^lgZv^tK tevSvq | A⁻ŕ, GKuU cwi gvtK GKB cwi w⁻úZ^tZ, ev wfb^zcwi w⁻úZ^tZ wfb^zM^te^lK^t i O^vi vⁱ e^vi c^oqv^tM Kí^vi cⁱ h^w c^ev^ei GKB iKg djvdj cvl qv hvq, Zte ej v hvte th, cwi gvtU wb^fP^thM⁻ | h^w wfb^zcv^oedj t⁻q, Zte tevSv hvte th, cwi gvtU wb^fP^thM⁻ bq | wb^fP^thM⁻Zv^tK m^zwZcY^oZvi mv^t _ mgv⁻R Kiv nq | Kí^vY, wb^fP^thM⁻Zv m^zZv l e⁻w^oZvi O^vi vⁱ ^ewk^ogv^UZ | m^zZv l e⁻w^oZv O^vov wb^fP^thM⁻Zv AR^o Kiv hvq bv | w^ecixZfvte ej v hvq th, GKuU cwi gvtci nwiZqv^ti i g^ta⁻ th cwi gvY cwi gvtRwbZ áwš-i^tq^tQ, Zvi gv^tU ntj v wb^fP^thM⁻Zv | GKuU ch^fe^qY t⁻tK Av^ti KuU ch^fe^qY áwš-i^t cwi gvY cwi ew^z nq etj GB cwi gvtRwbZ áwš-i^tK cwi eZ^okj áwš-(variable errors) etj Av^fwZ Kiv nq |

GKuU mnR^teva⁻ D⁻vniY w⁻tq welqu^tK tevSvi t^póv Kiv hvK | aiv hvK, GKuU t⁻j w⁻tq t^gt^c GKuU KvMR KvUv ntj v Ges KvUvi cⁱ Avevi KvMRU H t⁻j w⁻tq gv^cv ntj v | w^kš⁻ w^oZxqevi gv^cvi cⁱ t⁻Lv t^mj th, c^ogevi KvMRU th ^N^o cwi gvt Kiv ntq^otj v, w^oZxqevi Zvi t^pq Kg ntq^tQ | ZZxqevi gv^cvi cⁱ t⁻Lv t^mj th, ^N^oU Gevi t^eto w^tq^tQ | hLb G ai^tYi wfb^zv t⁻Lv t⁻q, ZLb th t⁻j w⁻U w⁻tq KvMR gv^cv ntq^otj v, t^mB t⁻j w⁻U wb^fP^thM⁻Zv w^tq c^okv^t t⁻Lv t⁻q Ges avi Yv Kiv nq th, t⁻j w⁻U g^ta⁻ cwi gvtRwbZ áwš-ev cwi eZ^okj áwš-i^tq^tQ | mvgw^rK w^eAv^tb, th^tnZi Av^aKisk c^zq^tK c^ti v^qfvte cwi gvt Kiv nq, t^mnZi mvgw^rK Pj K^z t^j v cwi gvtci mgq th áwš-nq, Zv c^oKuZK ev t^fšZ Pj K^z t^j v cwi gvtci dtj m^o áwš-i^t t^pq tekx ntq⁻v^tK | thgb, GKuU c^okv^t c^tYi mgq q^lw^tKi Ab⁻gb⁻Zv, A⁻úó w^t R^vej x Ges ch^zPMZ ev K^j v^tKšKj MZ mgm^v w^efb^zai^tYi cwi gvtRwbZ áwš-i^t R^bf w⁻tZ cvti | dtj, c^ti v^cvi h⁻v^on^l qv m^tE^l | GKuU cwi gvtci nwiZqv^ti i wb^fP^thM⁻Zvi gv^tv w^tq c^okv^tZv v thtZ cvti |

GKuU cwi gvt c^xúZi
wb^fP^thM⁻Zvi gj⁻vq^oU
ntj v gj Zt q^lY⁻vq^r
Dcv⁻v^tbi c^fv^teⁱ dtj c^oB
djvdj i gvtbi g^ta⁻
KZUK^zwfb^zv⁻Zwi K^ti Zvi
c^oj b |

GKuU cwi gvtci nwiZqv^t ZLbB wb^fP^thM⁻ etj cwi Mw^z nte, hLb c^pt^cp c^oqv^tMi dtj GKB djvdj t⁻te | Zte GuU g^tb ivLv c^ohvRb th, m^zwZcY^ol wb^fP^thM⁻ djvdj gvtbB memgq h⁻v^on^{te}, Ggb tKvb K⁻v t^bB | thgb, GKuU Kvco gv^cvi w^dZv m^te^pP cwi gvtY wb^fP^thM⁻ ntZ cvti , w^kš⁻ t^mU i GKK^z t^j v h^w fj fvte Av^zZ nq, Zte Zv KL^tb^vB h⁻v^o cwi gvt t⁻te bv | A⁻ŕ, GKuU Kvco^tK hZevi gv^cv hvte, ZZevi B Zv GKB cwi gvt t⁻te, w^kš⁻ Zv KLbB m^wKfvte cwi gvtU^tK c^oZ^owj Z Kí^te bv | GKuU cwi gvt c^xúZi wb^fP^thM⁻Zvi gj⁻vq^oU ntj v gj Zt, q^lY⁻vq^r Dcv⁻v^tbi c^fv^teⁱ dtj c^oB djvdj i gvtbi g^ta⁻ KZUK^zwfb^zv⁻Zwi K^ti, Zvi c^oj b | Ab⁻ K⁻vq, wfb^zvi KZUK^z ^oe áwš-i^t Kí^tY N^tU⁻v^tK, Zvi gv^tvB ntj v wb^fP^thM⁻Zv | cwi gvtci nwiZqv^ti i g^va⁻t^g c^oB gvtbi g^ta⁻ GB ^oe áwš-i^t cwi gvY hZ Kg nte, nwiZqv^t ZZ wb^fP^thM⁻ etj cwi Mw^z nte Ges djvdj t^j v ZZ tekx m^zwZcY^ol wb^fP^thM⁻ nte | Gi g^va⁻t^g th Av^z w^lU w^lU c^oZfvZ

nq, tmw ntjv th, thtnZi GKw nwiZqvi wbggZwišK cŕlcwZZ; ōviv `p nq, tmtnZi Guw Ah_v_ŕ ntZ cvti |

wbŕŕthvM`Zv cŕj tbi c×wZ (Methods of Estimating Reliability)

wbŕŕthvM`Zv cŕ`quŕK Lp mnR Ges `úo etj gtb nq| KviY, wbŕŕthvM`Zvi K_v fvetj m½wZcYŕv, i×Zv, m²Zv, BZ`w` kã,tjv gtb gta` tftm DŕV| Gi AšwbnZ Aŕ_ŕ K_v fvetj, GKB cwi gvtci `ŕw cŕqM, A_ev Zj bvgj K cwi w`wZtZ GKB iKg `ß ev ZtZwaK cwi gvtci cŕqM dŕj GKB djvdj cŕv tbi gvŕvi K_v gtb nq| wbŕŕthvM`Zvi wclquw Avmtj tmwUB Ges GKw Av`k`cwi gvtci nwiZqvti i wbi¼k wbŕŕthvM`Zv _vtK| wKš` GB kãwŕK wewfbae mgŕq wewfbae Dŕŕk` Ges wewfbae Aŕ_`e`enwi Kiv ntqtQ etj ev`te wbŕŕthvM`Zvi wclquw ZZUv mnR Ges `úo bq|

wbŕŕthvM`Zvi th w`K,tjv metPtq tekx „i“ZcY`etj MtelKŕ`i `wŕ AvKlŕ KŕiŕQ, tm,tjv ntjv `wqZi (stability), mgv_ŕZv (equivalence) | mgjfcZv (homogeneity)| GKw cwi gvtci nwiZqvti djvdj i `wqZi wbaŕi Z nq cŕtcb cŕqM wŕwEŕZ| th `enkŕ`K cwi gvc Kiv nq, Zvi DVbvgr ev cwi w`wZRwbZ ev ŕY`vq e`w³MZ Dcv`v tbi gta` wfbzvi dŕj mŕ cwi eZŕbi gvŕvi mŕ_ cwi gvtci nwiZqvti i `wqZi wclquw RwoZ| thtnZi cŕw cwi gvtci `ŕw Dcv`v iŕqtQ (cŕKZ `enkŕ`MZ Dcv`v | äwšŕ Dcv`v), tmtnZi cwi gvcKZ `enkŕ`i gta` cŕKZ cwi eZŕbi dŕj mŕ Am½Z Ges ewn` Dcv`v tbi gta` cwi eZŕbi dŕj mŕ Am½Zi gta` cv_ŕ` wŕŕ Kiv DŕPr| cwi gvcKZ `enkŕ`w cwi gvtci nwiZqvti GKw cŕqM t_ŕK Ab` cŕqM wfbentZ cvti | mvgwŕK wE`v th mKj cŕ`A wŕtq AvŕjPbv Kiv nq, Zvi Awakvsk tŕŕŕB G aiŕYi wfbzvi cwi jwŕZ nq| G aiŕYi Am½ZŕK cwi gvtci nwiZqvti AwbŕŕthvM`Zv etj e`vL`v Kiv wK nte bv| wKš` Guw gtb iLv cŕqRb th, cwi gvtci `vqZi wbaŕi ŕYi tŕŕŕ, G aiŕYi Am½Z Rwŕj Zvi mwŕ Kŕi |

wbŕŕthvM`Zvi th w`K,tjv metPtq tekx „i“ZcY`etj MtelKŕ`i `wŕ AvKlŕ KŕiŕQ, tm,tjv ntjv `wqZi; mgv_ŕZv | mgjfcZv | KŕiŕQ, tm,tjv ntjv `wqZi; mgv_ŕZv | mgjfcZv |

cwi gvtci GKw wŕkl nwiZqvi wewfbaeMtelŕKi ōviv GKB e`w³i Dci GKB mgŕq cŕqM, ev wfbwŕfbae cwi gvtci nwiZqvi GKB e`w³i Dci GKB mgŕq cŕqM dŕj KZUKz m½wZcY` djvdj cŕvb Kŕi, Zvi gvŕvi mŕ_ mgv_ŕZvi wclquw RwoZ| thtnZi GKB nwiZqvi, ev GKB iKg wfbwŕfbae nwiZqvi wewfbaeMtelŕKi ōviv GKB mgŕq cŕqM Kiv nq, tmtnZi wfbzvi gvŕv tbi cŕj tbi Rb` cŕkŕYcŕB wewfbaeŕŕK cwi gvtci nwiZqvti i cŕqMŕK chŕŕY Kŕib Ges tm me chŕŕŕYi djvdj i wŕwEŕZ wewfbaeŕŕŕKi gta` mgZvi gvŕv wbiŕY Kŕib| mgv_ŕZv aviYi gj kZŕ ntjv th, hw` cŕZ`ŕK h_vh_fŕte cŕkŕYcŕB nq, Zte GKw cwi gvtci nwiZqvi GKRb cŕqMkvix t_ŕK AvŕiKRb cŕqMkvix ōviv MŕYthvM` fŕte Zj bvgj K djvdj t`te| h_vh_ cŕkŕY wfbzvi mwŕKvix Dm,tj vtK hZUKz m²e KgŕZ mrvh` Kŕi |

cwi gvtci GKw wŕkl nwiZqvi wewfbaeMtelŕKi ōviv GKB e`w³i Dci GKB mgŕq cŕqM, ev wfbwŕfbae cwi gvtci nwiZqvi GKB e`w³i Dci GKB mgŕq cŕqM i Kŕi, Zvi gvŕvi mŕ_ mgv_ŕZvi wclquw RwoZ|

mgjfcZvi A_`ntjv, GKw cwi gvtci nwiZqvti e`eüZ me `dv,tj vtK GKB iKg ntZ nte| G tŕŕŕ, th cŕkŕ gE` tmw ntjv th, cwi gvtci nwiZqvti e`eüZ `dv,tjv GKw `enkŕ`K wK gvŕvq cwi gvc KiŕQ? A_ŕ, th me Dŕi `vZv cŕg `dvi mŕ_ GKgZ ŕcvY KŕiŕQb, Zvi wK cwi gvY wŕZxq `dvi mŕ_ GKgZ ntqtQb? th me Dŕi `vZv cŕg `dvi mŕ_ GKgZ ntqtQb, Zviv wK cieZŕ Ab`vb` `dv,tjvi mŕ_ GKgZ ntqtQb? Ab` K_vq, mgjfcZvi cŕkŕ GKw cwi gvtci wbŕŕthvM`Zvi Af`šŕxY m½Zi wclquwŕK mŕfab Kŕi |

mgjfcZvi A_`ntjv, GKw cwi gvtci nwiZqvti e`eüZ me `dv,tj vtK GKB iKg ntZ nte|

GKw cwi gvtci nwiZqvti wbŕŕthvM`Zv cixŕvi Rb` wewfbae×wZ iŕqtQ| metPtq tekx e`eüZ nq th c×wZ,tjv, tm,tjv ntjv cixŕv-cŕtciŕv c×wZ (test-retest method),

Aa⁹efvRb c×wZ (split-half method), Avš-`dv l `dv-gvcbx cixŋlv (inter-item test and item-scale test), Ges weKí-ifc ev mgvš+vj -ifc c×wZ (alternate-form or parallel-form method) | GB c×wZ, tj vtK wKQlv we`wii Zfvte Avtj vPbv Kiv thtZ cvti |

*cixŋlv-cptcixŋlv c×wZ Z
GKB Mtel Yvi wel tq GKB
cwi gvŋci nwwZqvi w`tq hw
cixŋlv l cptcixŋlv Kiv nq
Ges cŋZevi GKB dj vdj
cyl qv hvq, Zte cwi gvŋci
nwwZqvi w`tq hw
wetePbv Kiv nte |*

cixŋlv-cptcixŋlv c×wZ (Test-Retest Method): GB c×wZ Z GKB Mtel Yvi wel tq GKB cwi gvŋci nwwZqvi w`tq hw cixŋlv l cptcixŋlv Kiv nq Ges cŋZevi GKB dj vdj cyl qv hvq, Zte cwi gvŋci nwwZqvi w`tq hw wbfPthvM etj wetePbv Kiv nte | A_ŋ, ŋw wfbemgtq GKw `tj i Dci GKw wv w cwi gvŋci nwwZqvi cŋqvM Kiv nq Ges ŋw mgtq cŋB gvb, tj v hw KvQvKwQ nq, Zte cwi gvŋci nwwZqvi w`tq hw wbfPthvM etj MY Kiv nq | wKš' G c×wZi tŋtŋ ŋw mgm`v itqtQ | cŋg mgm`wU ntjv, th ceRZw Abgyv Kiv nq, tmU memgq KvRi _vtK bv | AbgyZ ceRZw ntjv, cptcixŋlv mgq tKvb ga`eZP Pj K ev NUbvi cŋve thb bv cto | wKš' cptcixŋlv mgq t`Lv hvq th, memgq tKvb bv tKvb NUbv ev welq gvbŋi Dci cŋve we`w Kti _vtK | thgb, cwi gvŋci nwwZqvi w`tq hw GKw cŋgyj v nq, Zte cŋgevi cŋqvM ci tmU welqe`m`m`úK`g vbŋi ce`avi Yv _vtK etj cieZP mgtqi cŋqvM, tj vi tŋtŋ, Zviv Avtjv tekx mPZb ntq cixŋlv AskMhY Ktib | GtZ Kti wbfPthvM Zvi gvUw Kwi gfvte eo ntq hvq | wZxq mgm`wU ntjv th, mgtqi mvŋ_ mvŋ_ AtbK cŋtAi gta` cwi eZB NtU Ges Gi dtj, wbfPthvM Zvi gvUw Kwi gfvte wgentZ cvti | Ggb ntZ cvti th, wZxqevi cwi gvŋci cteB Pj Kwi gta` cwi eZB NtU, hvi dtj wbfPthvM Zvi mnŋMi gvb tQv ntqtQ |

*weKí-ifc ev mgvš+vj -ifc
c×wZ Z GKw cwi gvŋci
nwwZqvi ŋw aiY
cŋqvRb, hv mgvš+vj ev
GKw AciwU weKí wmwte
wetePbv Kiv hvq |*

weKí-ifc ev mgvš+vj -ifc c×wZ (Alternate-form or Parallel-form Method): cixŋlv-cptcixŋlv c×wZi mgm`v ŋw wbfPthvM Zvi cwi gvŋci weKí-ifc ev mgvš+vj -ifc c×wZ e`envi Kiv thtZ cvti | GB c×wZ Z GKw cwi gvŋci nwwZqvi ŋw aiY cŋqvRb, hv mgvš+vj ev GKw AciwU weKí wmwte wetePbv Kiv hvq | G`ŋw aiY GK`j e`w`i Dci cŋqvM Kiv nq Ges cŋB gvb, tj vi gta` mn-m`úK`P gvUw chŋŋY Kiv nq | thgb, GKB cŋ`qtK cwi gvc Kivi Dti tk` wfbawfbae` dv e`envi Kti GKRB Mtel K`ŋw wfbawfbae`g vb ŋw Ktib | Zvici, GKB mgq GKB `tj i Dci ŋw cŋgyj v cŋqvM Ktib Ges cŋB dj vdtj i gta` m`úK`P gvUw cixŋlv Ktib | hw gvUw AtbK eo mnŋMi Rbŋt`q, Zte cwi gvŋci nwwZqvi ŋw wbfPthvM etj wetePZ nte Ges cixŋlv Rb` Gi th tKvb GKw w`tq e`envi Kiv hvte | GB c×wZ Z ewin`K ev ga`eZx`Dcv`v tbi tKvb cŋve _vtK bv Ges cŋg cixŋlv cŋve wZxq cixŋlv Dci cto bv | wKš' ŋaiŋYi cwi gvŋci nwwZqvi gta` GKw Avti Kwi weKí ev mgvš+vj wK bv, Zv wbaŋY Kiv KwB | cwi mSL`vBMZfvte, Gi mgvš+vj ev weKí `enkó`w wbaŋY Kiv tMŋj l aiY, tj vi welqe`i gj`vqbU Kiv nq wetePbv tvtai gva`tg |

Avš-`dv l `dv-gvcbx cixŋlv c×wZ (Inter-item and Item-Scale Test Method): GB c×wZ Z `dv, tj vi gta` m`úK`P t`Lv nq ev `dv-gvcbx mn-m`úK`P t`Lv nq | GB mn-m`úK`P gvUw cwi gvŋci wbfPthvM Zvi gvUw w`tq R Kti |

Aa⁹efvRb c×wZ (Split-half Method): GB c×wZ Z th mKj `dv, tj v cwi gvŋci nwwZqvi ŋw iZ e`eUz nq, tm mKj `dv tK mgvb ŋw fvm fvm Kiv nq | GK fvm _vtK tRvo mSL`K `dv Ges Ab`fvM _vtK weteRvo mSL`K `dv | ŋw tmŋUi cŋZwŋtK Avj v v Kti wetePbv Kiv nq Ges ŋw wfvwRZ Atp Rb` wfbawfbae`g vb eivl Kiv nq | Gici, GB `B tmU gvŋbi gta` mn-m`úK`P t`Lv nq | hw mn-m`úK`P mnMw 0.90 ev Zvi tŋtq tekx nq, Zte tevSv hvte th, cwi gvcU wbfPthvM | GuU gtb ivLv cŋqvRb th, GB c×wZ Z wfwbae` `dvi mSL`v gvb eivl wU wbfPthvM Zvi cŋ`j btk cŋweZ Kti | thtZ mSL`v, tj v cwi ewZ

nevi mgq `ŃU AŃaP cŃZŃU wfbewfbœ`dvi mgšŃq MŃZ nq, ŃmŃnZz wfbœmn-mœúŃKŃ
mŃŃMi gvb cŃvb KŃi| AZGe, Gi dŃj GKB e`w³i Dci GKB `dvi cŃqvtMi cil wfbœ
cŃ°j Ńbi RbŃŃbŃe| GB mgm`v GovŃbvi Rb` wfvRŃbi cŃqvrB nq bv, Ggb cœŃZ e`envi
Kiv DŃPr|

mvi vsk

GB cvŃV Avgiv cwi gvtci âwšŃ, cwi gvtci nŃwZqvŃi âwšŃ+ Dm, wbfŃŃhvM`Zv I
wbfŃŃhvM`Zvi cŃ°j Ńbi cœŃZ wŃŃq AvŃjvPbv KŃiŃQ| Avgiv tRŃbŃQ th, h_vh_ cwi gvc
MŃelYvi ceŃkZŃ° wKš`GB cwi gvc KiŃZ wŃŃq MŃelKŃK wfvfbœaiŃYi âwšŃ+ mœŃxb nŃZ
nq| GB âwšŃ-`j KiŃZ MŃelKŃK th cœŃZ_Ńjv e`envi KiŃZ nq, Ńm_Ńjv nŃjv, cixŃŃv-
cptcixŃŃv cœŃZ, AaŃwfvRb cœŃZ, AvšŃ-`dv I `dv-gvcbx cixŃŃv Ges weKŃi-Ńfc ev
mgvšŃ+vj-Ńfc cœŃZ| ŃKvb cœŃZŃU h_vh_ nŃe, Zv MŃelYvi aiY, mgm`vi cŃkŃZ, âwšŃ+
gvŃv I iŃci Dci wbfŃ KŃi| mvaviYZt, DcvŃĖi Ń_YMZ gvb Ges Z_`msMŃni ŃKšktj i
h_v_Zv cwi gvtci DŃŃŃk` wbfŃŃhvM`Zv cwi gvc Kiv nq|

cvřVvĚi gj`vqb

`be⁹³K cĕke

mWVK DĚři i cvřk WJK (v) WPy w`b -

1| DĚi`vZv cĕgvj vi GKWU cĕefj fvte cto DĚi w`tj , Zv nte:

- K. WbqgZvřřĕ řvřř-
- L. %e řvřř-
- M. mřřPZb řvřř-
- N. Dcřři i me|

2| cwi gvřřci mWZ`Kvřři i Ae`vřřbi mvt_ Mřřel Yvq cĕř dj vdtj i mWZcY⁹nevi gvřřvřřK
cwi gvřřci :

- K. WbfřřKxj Zv etj
- L. h_vh_Zv etj
- M. h_v_Zv etj
- N. řvřř-etj |

3| cwi gvřřci nWZqvřři ZLbB WbfřřřhvM` nte:

- K. hLb cĕqvřřMi dtj mřřevřř dj cĕvb Ki ře
- L. hLb cřřtcřř cĕqvřřMi dtj Wbi %k dj ř` ře
- M. hLb cřřtcřř cĕqvřřMi dtj GKB dj vřřj ř` ře
- N. Dcřři i me|

msvřřřB cĕke

1| cwi gvřřci řvřřř-WK?

2| WbfřřřhvM`Zv Wk?

i Pbvřřj K cĕke

1| cwi gvřřci řvřřř-WK? cwi gvřřci nWZqvřři řvřřř- Drm Avřřj vPbv Ki "b|

2| WbfřřřhvM`Zv cĕ° j řřbi c×WZmřřř Avřřj vPbv Ki "b|

cvW - 5

cwi gvtci h_v_Zv
Validity of Measurement

GB cvW tkfI hv Rvbr hvte —

- h_v_Zv wK
- h_v_Zv wbfctYi c×wZ

h_v_Zv wK (What is Validity)?

GKRb Mtel K tkvb e` ev e`w³ i th %wkwó`K cwi gvc KitZ Pvb, Zvi mwZ`Kvi Ae`vtbi mvt_ Mtel Yvq cÜB djvdj i m½wZcY`nevi gvTvtK cwi gvtci h_v_Zv etj | Ab` K_vq, h_v_Zvi A_`ntjv, ZEMZ ev cZ`qMZ gvtbi mvt_ m½wZcY`djvdj ev cL`q_s,tjv cKZ At_P mvt_ wgtj hvq, Ggb djvdj Drcv`tbi ¶lgZv | GKwU h_v_`cwi gvc th cwi tek, cwi w`wZ ev Ae`vi Dci Mtel Yv Kiv nq, ZvtK mwZ`Kvi fvte cÜZdwj Z Kti mwK djvdj i Rbft`q | A_`fr, GKRb Mtel K Zvi cwi gvtci nmwZqvti i gva`tg hv cwi gvc KitZ Pvb, tmB nmwZqvti Zv cwi gvc KitZ wK bv h_v_Zv Zvi gvTvtK wbt`R Kti | thgb, hw` ejv nq th, ÜwKQzmsL`K gytgq ¶lgZvai e`w³ hLb mgvtRi mKj m`u` wqšY Ktib, ZLb GKRb ¶lgZvnxb mvaviY gvbj Zvi fvM` cwi eZfb tZgb wKQB KitZ cvtib bvÜ | GB e³e`wÜi mvt_ GKgz ntj, Zv wK wew`Qbzvtertai GKwU mPK wnmte cwi MwYZ nte? G cÜkú Reve w`tZ ntj Mtel Ktk Mtel Yvj ä cÜvY Dc`vcb KitZ nte, hvi gva`tg wZwb cÜZwÜZ KitZ cvitb th, wZwb hv cwi gvc KitZ tPtqtQb cwi gvtci nmwZqvti Zv cwi gvc KitZ Q |

*h_v_Zvi A_`ntjv, ZEMZ
ev cZ`qMZ gvtbi mvt_
m½wZcY`djvdj ev
cL`q_s,tjv cKZ At_P mvt_
wgtj hvq, Ggb djvdj
Drcv`tbi ¶lgZv |*

cL`¶ cwi gvtci t¶tI h_v_Zv ntjv `ZtcÜwYZ | A_`fr, cwi gvcwU tkvb cÜvY QvovB `úo ntq Dtv | wKŠ` mvgwRK weÁvtbi AwaKvsk cL`qtK ctiv¶fvte cwi gvc Kiv nq | ctiv¶ cwi gvtci t¶tI, Mtel K KLbB ctivcvi wüÜZ ntZ cvtib bv th, wZwb hv cwi gvc KitZ Pvb Zv wZwb cwi gvc KitZ cvitQb | wZwb e` ev e`w³ i mwK Ae`vbwU RvbtZ cvtib bv etj mské` cwi gvtci h_v_ZvtK wvavPY Kivi tkvb cL`¶ Dcvq `vtK bv | ctiv¶ cwi gvtci gva`tg tkvb wettqi cwi gvc Kti tKej gvT ev`eZvi mwkUeZr`nlqv hvq | G atYi cwi w`wZtZ, GKwU cwi gvtci h_v_Zv cÜvtYi Rb` Avgvt` i Ab`vb` cÜmwZK cÜvtYi mvt_ cÜB djvdj wU mvgÁm`cY`wK bv, Zv ciL Kti wbtZ nq | cÜmwZK cÜvYwU wK nte, Zv wbfP` Kite cwi gvtci nmwZqvti cKwZ I Dtítk`i Dci |

*cL`¶ cwi gvtci t¶tI
h_v_Zv ntjv `ZtcÜwYZ |
A_`fr, cwi gvcwU tkvb cÜvY
QvovB `úo ntq Dtv |*

*ctiv¶ cwi gvtci gva`tg
tkvb wettqi cwi gvc Kti
tKej gvT ev`eZvi
mwkUeZr`nlqv hvq |*

hw` Avgiv Rwb th, cwi gvtci GKwU nmwZqvti mšw RbKfvte h_v_`Zte cwi gvtci tmB nmwZqvti i wbfP`thvM`Zv wbtq Avgvt` i `yÜŠ+Kievi wKQz`vtK bv | A_`fr, hw` GKwU nmwZqvti h_v_`nq, Zte Zvi A_`ntjv th, tmwU w`tq hv cwi gvc KitZ Pvl qv ntqtQ, Zv Kiv wMttqtQ | tm t¶tI, Ab`vb` Dcv`vtbi (Zv `vqx ev A`vqx hvB tnvK bv tkb) cÜfvte dtj thUKz`áwš+ Rbft`q, ZvtZ Kti Avgiv ejtZ cwi th, cwi gvtci nmwZqvti GKwU MhYthvM` wbfP`thvM`Zv itqtQ | wKŠ` GKwU cwi gvtci mšw RbK h_v_Zv itqtQ wK bv, Zv cte` cwi Pwj Z Mtel Yvi Üviv cÜZwÜZ nevi AvtM Mtel KMY Lp Kgb RvbtZ cvtib | AtbK t¶tI, h_v_Zvi cÜvY m`úYfvte Abcw`Z `vtK | G iKg cwi w`wZtZ, cwi gvtci nmwZqvti wtk Ab`vb` `ewktó`i cwi tC¶tZ gj`vqb Kti Zvi h_v_Zvi Abgvb KitZ nq | G Qvovl, GKwU Mtel Yvq cÜB D`P gvTvi h_v_Zv Ab` Mtel Yvq GKB gvTqv cvl qv hvte, Ggb tkvb wÜdqZv

tbB| AZGe, h_v_Zv cōvYi Rb" `xN©cZx¶vq bv t_†K wbfP†hM`Zvi gvb`ŪwU w`tq cwi gvtci nwmZqvti i DcthwMZvtK gj`vqb Kiv th†Z cvti |

h_v_Zv wbfctYi C×WZ (Techniques of Ascertaining Validity)

cwi gvtci nwmZqvti i h_v_Zv hvPvBtqi `ŪwU cōvb c×wZ itqtQ — AwfÁZvgj K I ZĒMZ h_v_Zvi hvPvB| AwfÁZvgj K h_v_Zv hvPvBtqi t¶†† GKwU cwi gvtci h_v_Zv wbfctY Kiv nq AwfÁZvj ä cōvYi wecix†Z, Ges ZĒMZ h_v_Zv hvPvBtqi t¶††, GKwU cwi gvtci nwmZqvti h_v_Zv wbfctY Kiv nq ZĒMZ ev cĹ`qMZ wbg¶¶ e`env†i gva`tg| AwfÁZvgj K h_v_Zv ev`emæSZ ev gvb`Ū wfwĒK h_v_ZvtK (pragmatic or criterion validity) cix¶v K†i | GB c×wZi Aax†b, met†tq tekx e`eüZ cĸiY, t†v n†j v msNUbkxj h_v_Zv (concurrent validity) | fweĹ`ŌvYxg†K h_v_Zv (predictive validity) hvPvB c×wZ| hLb AwfÁZvgj K h_v_Zv wbfctY Kiv mæ nq bv, ev tek Kómvā` n†q c†o, ZLb ZĒMZ ev cĹ`qMZ h_v_Zv hvPvBtqi tĸSkj Aej æb Ki†Z nq| M†el Yvq cōB djvdt†i m†_ hLb ZĒMZ w†tqi bwmZgv†v, t†v m†wZcY`nq, ZLb `vex Kiv hvq th, m†wĸe` cwi gvcw†i ZĒMZ ev cĹ`qMZ h_v_Zv itqtQ| ZĒMZ ev cĹ`qMZ h_v_Zvi w†wfbæ cĸvi†f` itqtQ| thgb Av†vZcōZqgvb h_v_Zv (face validity), bg†v ev w†lqē` h_v_Zv (sampling or content validity) | wbg¶¶ h_v_Zv (construct validity) |

cwi gvtci nwmZqvti i h_v_Zv hvPvBtqi `ŪwU cōvb c×wZ itqtQ — AwfÁZvgj K I ZĒMZ h_v_Zvi hvPvB| AwfÁZvgj K h_v_Zv hvPvBtqi t¶†† GKwU cwi gvtci h_v_Zv wbfctY Kiv nq AwfÁZvj ä cōvYi wecix†Z, Ges ZĒMZ h_v_Zv hvPvBtqi t¶††, GKwU cwi gvtci nwmZqvti h_v_Zv wbfctY Kiv nq ZĒMZ ev cĹ`qMZ wbg¶¶ e`env†i gva`tg| AwfÁZvgj K h_v_Zv ev`emæSZ ev gvb`Ū wfwĒK h_v_ZvtK (pragmatic or criterion validity) cix¶v K†i | GB c×wZi Aax†b, met†tq tekx e`eüZ cĸiY, t†v n†j v msNUbkxj h_v_Zv (concurrent validity) | fweĹ`ŌvYxg†K h_v_Zv (predictive validity) hvPvB c×wZ| hLb AwfÁZvgj K h_v_Zv wbfctY Kiv mæ nq bv, ev tek Kómvā` n†q c†o, ZLb ZĒMZ ev cĹ`qMZ h_v_Zv hvPvBtqi tĸSkj Aej æb Ki†Z nq| M†el Yvq cōB djvdt†i m†_ hLb ZĒMZ w†tqi bwmZgv†v, t†v m†wZcY`nq, ZLb `vex Kiv hvq th, m†wĸe` cwi gvcw†i ZĒMZ ev cĹ`qMZ h_v_Zv itqtQ| ZĒMZ ev cĹ`qMZ h_v_Zvi w†wfbæ cĸvi†f` itqtQ| thgb Av†vZcōZqgvb h_v_Zv (face validity), bg†v ev w†lqē` h_v_Zv (sampling or content validity) | wbg¶¶ h_v_Zv (construct validity) |

msNUbkxj h_v_Zv (Concurrent Validity): hw` GKwU cwi gvtci nwmZqv†i Ggb djvdj cōvb K†i th, th mKj QvĹ`-QvĹ`x wĸ¶v†i AwZwi³ KgRv†Ūi m†_ RwoZ`_†K, Zviv Ab`vb` QvĹ`-QvĹ`x` i Z†v bvq Aw†KZi f†††v djvdj K†i Ges Zv hw` wē`gvb Dcv†Ei gva`tg mgw`_ nq, Z†e tmB nwmZqv†w†i ev`emæSZ h_v_Zv itqtQ et† g†b Kiv nq| GLv†b, h_v_ZvtK h†v Kiv n†tqtQ, Ōhw` wē`gvb DcvĒ Ōviv djvdj mgw`_ nq, Ggb ce`avi Yvi m†_ | G ai†Yi Ae`vq w†i f†cZ h_v_ZvtK msNUbkxj h_v_Zv et† |

cōqkt, cwi gvtci nwmZqv†w†i th fweĹ`ŌvYx K†i, Zv cieZx†Z cōB djvdt†i Ōviv KZUKzmgw`_ nq, Zvi gv†vi gva`tg GKwU cwi gvtci nwmZqv†i h_v_ZvtK hvPvB Kiv nq| hw` cieZx†Z cōB djvdj fweĹ`ŌvYx†K mg_ B K†i, Z†e cwi gvcw††K h_v_`et† `vex Kiv nq| aiv hvK, hw` tKvb M†el Yvq t`Lv hvq th, mgvRwēAv†bi wĸ¶v Kvh†††g D`PZi cwi m†L`vb cv`vb`ii` Ki†† Aw†K cwi gvt† c†††v QvĹ`-QvĹ`xiv Kvh††g Z`wM Ki†e, Ges hw` GB fweĹ`ŌvYxw†i cieZx†M†el Yvq mZ` et† cōwYZ nq, Z†e ejv hv†e th, cwi gvtci nwmZqv†w†i h_v_¶ G ai†Yi h_v_Zv hvPvBtqi c×wZ†K fweĹ`ŌvYxg†K h_v_Zv et† | Gw††K A†bK mgq gvb`ŪwfwĒK h_v_Zv et† | Awf†wZ Kiv nq| Ab` K_vq, fweĹ`ŌvYxg†K h_v_Zv n†j v GKwU cōĒ cwi gvtci djvdj | GKwU ewm`K gvb`†Ūi g†a` mn-mæ††K†P mnM| thgb, GKrb M†el K GKwU e†b†v¼ cix¶v†i h_v_Zv cōvY Ki†Z cv††b GK`j QvĹ`-QvĹ`xi cōB e†b†v¼ cix¶v†i gvb Ges Zv†`i evrmw†K cix¶vq cōB bæ††i g†a` mn-mæ††K†P mnM w†v†††i gva`tg| GB w†vYxZ mnM†K h_v_Zvi mnM et† | Z†e GB mn-mæ††K†P mnMw† GKwU cō††vRbxq ceRZ`n††† | tm†w† h†_ó bq| KviY, cwi gvtci nwmZqv†w†i th P† K††K cwi gvc K†i et† Ab†gvb Kiv nq, tm†w† Av††v Ab` P† K††K cwi gvc Ki†Z cv†† | Gi dt†, h_v_Zvi cwi et†Z`Ah_v_Zv c††Zw†Z n†Z cv†† |

fweĹ`ŌvYxg†K h_v_Zv (Predictive Validity): cōqkt, cwi gvtci nwmZqv†w†i th fweĹ`ŌvYx K†i, Zv cieZx†Z cōB djvdt†i Ōviv KZUKzmgw`_ nq, Zvi gv†vi gva`tg GKwU cwi gvtci nwmZqv†i h_v_ZvtK hvPvB Kiv nq| hw` cieZx†Z cōB djvdj fweĹ`ŌvYx†K mg_ B K†i, Z†e cwi gvcw††K h_v_`et† `vex Kiv nq| aiv hvK, hw` tKvb M†el Yvq t`Lv hvq th, mgvRwēAv†bi wĸ¶v Kvh†††g D`PZi cwi m†L`vb cv`vb`ii` Ki†† Aw†K cwi gvt† c†††v QvĹ`-QvĹ`xiv Kvh††g Z`wM Ki†e, Ges hw` GB fweĹ`ŌvYxw†i cieZx†M†el Yvq mZ` et† cōwYZ nq, Z†e ejv hv†e th, cwi gvtci nwmZqv†w†i h_v_¶ G ai†Yi h_v_Zv hvPvBtqi c×wZ†K fweĹ`ŌvYxg†K h_v_Zv et† | Gw††K A†bK mgq gvb`ŪwfwĒK h_v_Zv et† | Awf†wZ Kiv nq| Ab` K_vq, fweĹ`ŌvYxg†K h_v_Zv n†j v GKwU cōĒ cwi gvtci djvdj | GKwU ewm`K gvb`†Ūi g†a` mn-mæ††K†P mnM| thgb, GKrb M†el K GKwU e†b†v¼ cix¶v†i h_v_Zv cōvY Ki†Z cv††b GK`j QvĹ`-QvĹ`xi cōB e†b†v¼ cix¶v†i gvb Ges Zv†`i evrmw†K cix¶vq cōB bæ††i g†a` mn-mæ††K†P mnM w†v†††i gva`tg| GB w†vYxZ mnM†K h_v_Zvi mnM et† | Z†e GB mn-mæ††K†P mnMw† GKwU cō††vRbxq ceRZ`n††† | tm†w† h†_ó bq| KviY, cwi gvtci nwmZqv†w†i th P† K††K cwi gvc K†i et† Ab†gvb Kiv nq, tm†w† Av††v Ab` P† K††K cwi gvc Ki†Z cv†† | Gi dt†, h_v_Zvi cwi et†Z`Ah_v_Zv c††Zw†Z n†Z cv†† |

fweĹ`ŌvYxg†K h_v_Zv e`env†i t¶†† `ŪwU m†v†i Y w†lq g†b ivLv cō††vRb| GKwU n†j v ewm`K gvb`Ūw†i h_v_Zvi m†_ mæ††KZ, Ges Ab`w† n†j v gvb`Ūw†i e`env†i bv K†i cwi gvtci nwmZqv†i e`env†i | KviY mæ††KZ|

fweĹ`ŌvYxg†K h_v_Zv e`env†i t¶†† `ŪwU m†v†i Y w†lq g†b ivLv cō††vRb| GKwU n†j v ewm`K gvb`Ūw†i h_v_Zvi m†_ mæ††KZ, Ges Ab`w† n†j v gvb`Ūw†i e`env†i bv K†i cwi gvtci nwmZqv†i e`env†i KviY mæ††KZ| w†Zxq w†lq†w† mæ††K`ejv hvq th, gvb`Ū e`env†i bv K†i m†v†i evrmw†K cix¶vq cōB bæ†† cwi gvc Kiv nq t†Kb? KviY, A†bK t¶††

gvb`Ü e`envi KuWb I e`qmvã` ntq cto, Ges KLbl KLbl gvb`Ü e`envt`ii cteB Mtel KtK Pj tKi cwi gvc Ki tZ nq|

AvcvZcöZqgvb h_v_Šv (Face Validity): GKwU cwi gvtci nwiZqv`ii AvcvZcöZqgvb h_v_Šv i tqtQ etj at`i tbqv nq, hw` gtb nq th, cwi gvcwU hv cwi gvc Ki tZ Piv, Zv cwi gvc Kt`itQ| GKwU D`vni Y t`qv hvK, aiv hvK, GKRb Mtel K`kwU cöke GKwU tmU w`tq D`vi Zver` cZ`qwu tK cwi gvc Ki tZ Piv | ckgvjv`Zvii ci wZwb cöZwU cöke e³e`tK evi evi ch`vj vPbv Kti t`Lvi ci wvöZ ntj b th, cöZwU cökeD`vi Zverv`i mvt_ m`úwKŠ ntqtQ| Zvici, mnKqš Ges wettqi Dci wettl Át`i mvt_ Avtj vPbv ci hw` HKgZ` cöZwöZ nq th, cwi gvtci nwiZqv`iU D`vi Zver` tK cwi gvc Kt`itQ, Zte Mtel K at`i tbtb th, ckgvjwU AvcvZ`votZ h_v_Šv etj cöZqgvb ntqtQ| AvcvZcöZqgvb h_v_Švi mgm`wU ntjv th, G tKŠktji gva`tg cwi gvcwU tK cpivq cwi Pvj bv Kti Gi e`MZ gj`vq tbi tKvb c`wZMZ wbt`Rbv clqv hvq bv| AvcvZcöZqgvb h_v_Šv m`úYFvte Mtel tKi fveMZ gj`vq tbi Dci wfvE` Kti wbficZ nq|

GKwU cwi gvtci nwiZqv`ii AvcvZcöZqgvb h_v_Šv i tqtQ etj at`i tbqv nq hw` gtb nq th, cwi gvcwU hv cwi gvc Ki tZ Piv Zv cwi gvc Kt`itQ|

bgbv ev welle` h_v_Šv (Sampling or Content Validity): GB c`wZi cövb weteP` wellewU ntjv th, cwi gvtci Rb` cöZKZ nwiZqv`iU e`envt`ii t`tt, cömwK RbmsL`v t`tK h_vh`fvte Ges ch`š cwi gvtY bgbv wbePb Kiv ntqtQ wK bv| A`š, cwi gvtci nwiZqv`iU wellewU tK ch`š cwi gvtY cöZwvãZi Kt`itQ wK bv| G c`wZi gj` avYwU ntjv th, cöZwU Pj tKi GKwU welle`i mgM tK i tqtQ, hv e`vcK msL`K e³e`, cökev mP`tKi mg`tg MwZ| GKwU h_v_Šv cwi gvtci nwiZqv`i GB welle`i t`jvi h_vh` cöZwvãZi Kti | wKŠ` ev`te welle`i mgM tK msÁwqZ Ki tZ wMtg mgm`vi D`e NtU| Kvi Y, GwU ntjv ZEMZ wbgšY, AvfÁZvj ä bq| GB mgm`wU bgbv h_v_Švi KvhRvixZv tK wKölv LweŠ Kti | Zte, cwi gvtci h_v_Šv wbficY t`tt, bgbv h_v_Šv GKwU „ZcY`Kvh`m`úv`b Kti | GwU Mtel KtK welle`i mgM tK mKj Dcv`vbtK cwi wPZ ntZ mnvvh` Kti | G aitYi h_v_Šv hvPvBtqi tKŠkj mvavi YZt eYšvgj K Mtel Yvq tekx e`eüZ nq| Kvi Y, Mtel K Gi gva`tg cwi gvtci nwiZqv`i wbgšY ctvnx nb Ges Zv`i cögevtie gZ cöqvM Kti b| nwiZqv`iU e`envt`ii ci h_v_Šv hvPvBtqi Rb` Ab`vb` cix`v cöqv tMi gva`tg GwU tK gj`vq b Kiv th tZ cvt`i |

wbgšY h_v_Šv (Construct Validity): Mtel KMY cöqkt Zv`i h_v_Švi cix`v tK fivel`švYxi mPK wnmvte wetePbv bv Kti fivel`švYxi gv`vq AvMöx ntq `vtKb| Kvi Y, wZwb gvbe AvPi tYi th `wko` t`jv m`útK`Dcmsnvi UvbtZ Piv, tmB `wko` t`jv GKwU AvPi tYi gta` cvl qv hvq bv| tm` t`jv eis eü AvPi tYi wegZš ev wbgšY| tmB wbgšYi wfvE`Z h_v_Šv hvPvBtqi c`wZwU tK wbgšY hv_v_Šv etj | wbgšY h_v_Šv GKwU cwi gvtci nwiZqv`i tK GKwU ZvE`K Kvvtgvi mvt_ m`úwKŠ Kti t`tL th, tmB nwiZqv`iU H ZtEj Abgvb I cö`q` t`jv tK cöZdj Z Kti wK bv| hw` tmB m`úKö cöZwöZ nq, Zte ejv hvq th, cwi gvtci nwiZqv`iU wbgšY h_v_Šv ARš Kt`itQ| hw` Mtel Yvi welle`wU nq Qv`t`i cöZ `elg`gj K AvPi Y, tm t`tt Mtel KtK cö`tg Mtel Yv cökececi xZfvte wfbogZvej `š`š`j Qv`t`i wPvYZ Ki tZ nte| Zvici, th cwi gvtci nwiZqv`iU h_v_Šv ch`vY Ki tZ Piv, tmwU tK `š` t`j Dci B cwi Pvj bv Kti Zv`i djvdj t`jv Avj`v Kti wj wceX Ki tZ nte| hw` `šwU `t`j i gta` cv`R` cvl qv hvq, Zte at`i wbtZ nte th, cwi gvtci nwiZqv`iU wbgšY h_v_Šv ARš Kt`itQ|

wbgšY h_v_Šv wbficY Mtel K ZvE`K Kvvtgvi wfvE`Z cwi gvtci nwiZqv`i I Pj tKi gta` cö`wKZ m`úKŠK m`vbw`š Kti b| Zvici, wZwb cwi gvtci wfvE`Z cöB gvb` t`jvi mvt_

Pj K, tj vi m^uK^oWY^q Kti tm, tj vtK c^lvkZ m^utK^p mvt_ Zj bv Ktib| GB Zj bvi
cv_ R^uW hw` 7j^a nq, Zte Mtel^tKi Av^v teto hvte GB t^fte th, Zvi cwi gvcW vbg^p
h_v_2v tctqtQ| thgb, GwU c^lvkZ th, mvgwRK gh^pv, wk^qlv, tckv I Avtqi mvt_
abvZ^kfvt^e m^uwK^z nte Ges m^sv b msl^vi mvt_ FYvZ^kfvt^e m^uwK^z nte| mvgwRK
gh^pvi mvt_ GB Pj K, tj vi gvtbi mn-m^uK^oW hw` c^lvkZ w K I gv^lvq cvl qv hvq, Zte
mvgwRK gh^pvi cwi gvcW h_v_2v c^oWYZ nte|

h_v_2vi wewfb^oec^kiY, tj v Avtj vPbvi ci ^vfweKfvt^eB th c^oW D^l wcz nq tmW ntj v,
h_v_2v wbfct^Yi t^qt^t tKvb c^xwZ^tK Avgiv tetQ tbe? GB c^ok^e mnR mgvavb tbB| GB
c^ok^e i^zj wetePbv Kti wewfb^owel^tqi w^ekl^Atⁱ mg^stq MwZ GKwU w^ekl^A j wZbwU
m^ywi k c^ovb Kti^tQb| c^ogZt, cwi gvc wbg^pYi c^og ch^q, GKrb Mtel^k c^om^wzK
Z^Ej, tj vtK ch^q vPbv Kiteb, hv cwi gvtci n^wzqvi wbg^pYi w^fw^E wnmvte KivR Kite|
w^oZxqZt, GKwU w^elq^e i mgM^ktK ms^AwqZ Kiteb, thLvb t^tK GKwU c^oZw^oz^kxj
bg^pvtK w^be^pb Kiv nte| ZZxqZt, GKwU ewⁿ K gvb^tUⁱ mvt_ m^uK^oW^vc^tbi gva^tg
cwi gvtci n^wzqvi w^li f^wel^ovYxg^j K h_v_2vi hvPvB Kiteb|

mvisk

tg^vU ^oW w^elq^tK tK^s Kti eZ^ovb cvWU i^wPZ ntqtQ| w^elq ^oW ntj v, h_v_2v I h_v_2v
wbfct^{bi} c^xwZ| MtelYv c^oW^qvq Dcv^tEi w^bf^pt^hw^MZv I h_v_2v hvPvB^tqi t^qt^t c^lW^q
cwi gvc tKvb c^oWY QvovB ^uo ntq D^tV| Ab^w tK, ctiv^q cwi gvtci gva^tg ev^eZvi
m^ok^tU t^co^vt^bv m^oe| e^vZt, Dcv^tEi w^bf^pt^hw^MZv I h_v_2v cwi gvc MtelYvi ^yYMZ
gvb^tK ew^x Kti| h_v_2v hvPvB^tq ^oW c^ovb c^xwZ e^euZ ntq ^vtK — Awf^AZvgj K I
Z^EMZ| Awf^AZvgj K h_v_2v gvb^t Ew^fw^EK h_vh_2vtK cix^qlv Kti| Ab^w tK, Z^EMZ
h_v_2v Z^EMZ w^el^tqi b^wzgvj v, tj vi mvt_ m^zwZc^yw^elq, tj vtK cix^qlv Kti ^vtK|

cvfVvEi gj`vqb

`be⁹³K cĳæ

mWVK DĒti i cvfk WJK (√) wPy w` b –

1| GKwJ cwi gvtci nwiZqvti i m½wZcY⁹dj cĳvtki ¶gZvtK _____|

- K. h_v_Źv etj
- L. cwi gvtci i xZv etj
- M. cwi gvtci wbfPthvM`Zv etj
- N. cwi gvtci mWVKZv etj

2| cwi gvtci nwiZqvti i h_v_Źv hvPvBtqi _____ cāv b c×wZ i tqTQ|

- K. 1wJ
- L. 2wJ
- M. 3wJ
- N. 4wJ

3| bgbv h_v_Źv hvPvBtqi tKškj mrvavi YZt:

- K. eY⁹vgj K Mtel Yvq tekx e`eüZ nq
- L. e`vL`vgj K Mtel Yvq tekx e`eüZ nq
- M. cwi wPwZgj K Mtel Yvq tekx e`eüZ nq
- N. bMi Mtel Yvq tekx e`eüZ nq|

4| AvcvZcĳZqgvb h_v_Źv wbfP Kti Mtel tKi:

- K. AwL`R m½wZi Dci
- L. fveMZ gj`vqtbi Dci
- M. Mtel Yv cwi Kí bvi Dci
- N. Mtel Yv Kvtr mgq e`q Kivi Dci |

msw¶B cĳæ

1| h_v_Źv wK?

2| fweL`ŉvYxgj K h_v_Źv wK?

iPbvqj K cĳæ

1| cwi gvtci wbfPthvM`Zv I h_v_Źvi gta` cv`R` Avtj vPbv Ki`b|

2| ŉh_vh_ cwi gvtci Dci wbfP Kti Mtel Yvi , Yv, Yŉ – Avcvb wK GB e³e`i mvt_ GK gZ? Avcbvi DĒti i `c:¶| h⁹³ w` b|

GB cW tkfI hv Rvbr hvte —

- gvcbx wK
- gvcbx tKSkj i cKvi tf`

gvcbx wK (What is Scaling)?

cwi gvtci weifbægvI vq Avgiv t` tLwQ th, wKQz cwi gvc LpB mnR Ges GKwJ gvI `dv ev Pj tKi GKwJ gvI mPtKi gva`tg cwi gvc mæúbeKiv hvq| thgb, GKwJ gvI cOkie gva`tg tKvb e`w³ i eqm cwi gvc Kiv hvq| `eenwK ghP v ev mšvb msL`v RvbtZ ntj I GKwJ cOkie gva`tg Zv cwi gvc Kiv hvq| G mKj Pj K_s t_j v `úó, wbfP`thvM` I h_v`cwi gvc cOvb Kti | wKŠ` Avgiv GI Rvrb th, wKQz Pj K i tqtQ, hv cwi gvc Kiv tek KwB Ges RvUj | wKQz Pj K i tqtQ, hv GKwaK mPtKi gva`tg cKwKZ nq Ges wKQz Pj K i tqtQ, hvi GKwaK gvI v`v`K, hv eú mPtKi gva`tg cKwKZ nq| Avevi Ggb wKQz wclq i tqtQ, thLvrb Avgiv GKwJ Pj K wK gvI vq Dcw`Z i tqtQ Zv RvbtZ PvB| G ai tYi cwi w`wZtZ GK-` dvmæúbe cwi gvtci nwiZvti i e`envi chPß bq|

Ggb wK, DcvE msMni nwiZvti wbgP`Y ht`ó hZvrb nI qv m tEjI GKwJ RvUj Pj K tK GKwJ gvI cOkie gva`tg ht`vchPß fvtc cOZwbaZKxj Kti cwi gvc Kiv hvq bv| GK `dvmæúbe GKwJ cKæfKvb bv tKvb DEi `vZvK fj fvtc cOZwbaZj Kitz cvti | thgb, OGKRb e`w³ wbcqgZ bvgvR ctob wK bv, i`agvI GB GKwJ cKew`tqB awgRZv cZ`quUtK cwi cYFvte cwi gvc Kiv hvq bv| Avtív wKQz mPK i tqtQ, th_s t_j vi Abjxj b awgRZv tK A`en Kti tZtj | GKRb e`w³ wbcqgZ bvgvR bv ctol Ab`vb` mPtKi Abjxj tbi wFwE tZ Awakzi awgR etj weteiPZ ntZ cvtib| Avevi weciXZ fvtc, GKRb e`w³ wbcqgZ bvgvR ctol Ab`vb` mPtKi Abjxj b bv Kivi dtj ZZUv awgR etj weteiPZ bvl ntZ cvtib| A`P, wbcqgZ bvgvR cov GKwJ cOqvRbxq kZ`ntj I awgR nevi Rb` Zv ht`ó bq| cFivcvi awgR etj weteiPZ ntZ ntj wbcqgZ bvgvR covi cvkvcwK GKRb e`w³ wbcqgZ cweI agPß` cv Ktib wK bv, tivRv ivtLb wK bv, hvKvZ t`b wK bv, mZ` K_v etj b wK bv, cOZtekt` i cOZ m`q AvPiY Ktib wK bv, AvZ`qgvbeZvi tmev Ktib wK bv, BZ`w` wclq_s t_j vtKI wetePbvq AvbtZ nte|

*gvcbx ntjv GK ai tYi
thšMK cwi gvc, hv GKwJ
gvtbi mvt` mæúwKZ
KZ_s t_j v e³ e` cwi gvtci
wFwE tZ MvZ nq|*

A`P, G t`P`tI GKwJ Pj K tK cOZwbaZKvix eú-`dvi mgæ`tq GKwJ µgmvÁZ thšMK gvcbx e`envt i cOqvRb ntq ctol A`P, gvtI i gtvfvtK cwi gvtci Rb` Avgiv µgci`úivq mæúKwPß cKgvj vi weciXZ GKRb e`w³ KZUKz KkgZ nb, G ai tYi eú `dvmæúbe cKgvj vi gva`tg GKwJ thšMK cwi gvtci nwiZvti `Zwi KwI, hv tK gvcbx ejv nq| gvcbx AšfPß cOZwJ `dv Ggb fvtc wbePß Kiv nq, thb weifbæ`dvi Dci weifbæ`w³ weifbæ fvtc Zvt` i cOZwµqv e`³ Kti | Ab` K_vq, gvcbx ntjv GK ai tYi thšMK cwi gvc, hv GKwJ gvtbi mvt` mæúwKZ KZ_s t_j v e³ e`, cKæI DEi `dvi mgæ`tq Ges cwi gvtci AšfPß wclq_s t_j vi gta` GKwJ wbeoZv Kivvtgvi (intensity structure) wFwE tZ MvZ nq|

mvgwRK MtelYvi Ab`Zg Dc`thwMx nwiZqvi wnmvte gvcbx wbg`Yi t`q`i KZ,tjv wclq gtb iVlv Lp Ri`ix| tm,tjv ntjv: e³e, c`kel DEi `dvi wbg`Y maviY, `úo l cZ`q fvlv e`envi KitZ nte; `dv,tjvtK msu`B ntZ nte (20 wU ktai tekx bq) Ges tm,tjv thb GKwJ wclqtK c`Zwbaz; Kti; RuUj evK` e`envi cwivni KitZ nte; AZxZtK msuké-Kti Ges Z` m`oj Z `dv`K GovtZ nte; A`úo l Ac`m`wK `dvi Ašfß eR` KitZ nte| Ggb tKvb `dv e`envi Kiv hvte bv, hv mKj DEi `vZvB MhY ev eR` KitZ cvtib| OmKj 0, 0c0qB0, 0tKD bq0, 0KLB bq0, 0GKgvI0, BZ`w` kã,tjvi e`envi cwivni KitZ nte Ges DEi i `dv,tjvtK cvi `úoi Kfvte `Zš; mvgwMk l GKgwI K ntZ nte|

gvcbx tKŠktj i cKvi t`f` (Types of Scaling Techniques)

c×wZMZ `i`Z; Qvovl gvcbx MVtbi KZ,tjv we`kl Dc`thwMzv itqtQ| gvcbx MVtbi gva`tg D`P gvIvi KvhRixKiY l RuUj c`A,tjvi cwigvc m`e nq| Gi gva`tg GKRB DEi `vZvtK avivemKZvi wbg`gvIv t`tK D`P gvIvi Ae`v`b `vc`b Kti| gvcbx MVtbi gva`tg GKwJ cZ`tqi c`q me wclqtK cwigv`ci Avl Zv`fß Kiv hvq| gvcbx D`P gvIvq m²Zv l w`f`thwM`Zv c0vb Kti| gvcbx e`envi i gva`tg we`f`b`DcvEg`jvi g`a` Zj bvtK mnRZi Kti| Dcv`Ei msMh l we`k`Y`K gvcbx mnRZi KitZ mrvh` Kti| wKš` GwUj wbg`Y l cwimsL`vbMZ cix`qv tek Kwvb Ges mgqmv`c`q e`vcvi etj maviY MtelKt` i KvtQ G,tjvi wbg`Y l wKQzwKQzt`q`i, Gi e`envi tZgb AvMh m`j0 Kti bv| Zte, Mtel KMY AZxZ tek wKQz gvcbx tKŠkj wbg`Y Kti`Qb Ges cix`qv Kti`Qb, hv Ab`vb` Mtel Kiv Zvt` i Mtel Yvq mn`RB e`envi KitZ cvtib| G mKj gvcbx tKŠkj cwigv`ci gvIv, D`i k` l MVb c`Yvj xi w` K t`tK wfb`zv c0k0 Kti| mvgwRK MtelYvq, th mKj gvcbx tKŠkj Lp tekx e`eüZ nq, tm,tjv ntjv, `vm`b gvcbx (Thurstone scaling), jvBKvU`gvcbx (Likert scaling), tevMwWm mvgwRK `iZ; gvcbx (Bogardus social distance scaling) l MvUg`vb gvcbx (Guttman scaling)| GB tKŠktj i cKiY,tjv v`btg`Avtj vPbv Kiv ntjv|

gvcbx MVtbi gva`tg D`P gvIvi KvhRixKiY l RuUj c`A,tjvi cwigvc m`e nq|

`vm`b gvcbx (Thurstone Scaling)

gvcbx wbg`Yi t`q`i c0g cw_KZ cj`l ntj b Louis Thurstone| wZwb 1920-Gi `ktK KZ,tjv gvcbx tKŠkj D`m`eb Ktib, hv cieZ`PZ `vm`b gvcbx bvtg cwipZ ntqtQ| `vm`b gvcbx KZ,tjv `dvi mg`tq MvZ, hvi Ae`vbMZ gvb wba`wi Z nq wKQz we`klÁ ev wePvi Kt` i 0viv| `vm`b gvcbx tK cv`R`gj K gvcbx l (differential scale) ejv ntq `vtK| `vm`b gvcbx i wclq wbe`Pb Ges tm,tjvi c0Z gvb eiv`i i Rb` wbtg` c×wZ e`eüZ nq|

`vm`b gvcbx KZ,tjv `dvi mg`tq MvZ, hvi Ae`vbMZ gvb wba`wi Z nq wKQz we`klÁ ev wePvi Kt` i 0viv|

c0tg, MtelK th wcltqi Dci AbjvUvb KitQb, Zvi mvt` thšw³ Kfvte m`úwKZ c0q GKk e³e` msMh Ktib| Zvici, GB e³e` ,tjvtK tek wKQzmsL`K (Kgct`q 25 Rb) wePvi KtK wbg`t`K D`P gvIvq 11wU fvtM tkYx wef³ Kivi Rb` t`qv nq| GKwJ `dv t`tK Avti KwU `dvi e`wšwJtK mgvb etj Abg`vb Kiv nq| c0Z`K wePvi K th e³e`tK MtelYvi wclqe`i Rb` me`Ptq tekx AbKtj gtb Ktib, tm,tjvtK 1 gvb eivI Ktib; th,tjvtK wZwb cieZ`P gvIvq mte`P AbKtj etj gtb Ktib, tm,tjvtK 2 gvb eivI Ktib; Ges th,tjvtK wZwb e³te`i me`Ptq c0ZKtj etj wetePbv Ktib, tm,tjvtK 11 gvb c0vb Ktib| GB avivemKZvq l0Zg ev wbi`c`q Ae`vbwU ntjv Ggb GKwJ we`y hv`Z e³te`i AbKj ev c0ZKj Zvi tKvbwB tbB| ZZxq avtc, wePvi Kt` i 0viv eivI KZ gvtbi Mo ev ga` Ae`vbtK th tKvb `dvi gvcbx gvb wnmvte wB`q Kiv nq| th e³e` Lp tenk e`vcK ev we`Z `vtK, tm,tjvtK A`úo ev Ac`m`wK etj ev `lqv nq| me`ktl, th wclq,tjv gvcbx i GKwU

c0ŠK we`yt_tK AciuW chŠ-mgvbfvte we`Z _vtK, tm wel q,tj vtK Povšfvte wbePb Kiv nq|

AZGe, c0B _vm0b aiYi gvcxwU ntjv tek wKQz avivewNK e3te`i mgw0 Ges tKvb welqe`i c0Z AbKj-c0ZKj gtbvfvtei avivewNKZvi Dci wePviKt`i 0viv tkYwefw3i gra`tg c0ZwU e3te`i Ae`vb wba0i Z nq| GB gvcbx tKŠkj wU tek Srtgj vcY0Ges mgq | m0ut`i w`K t_tK LpB e`qmvtc0| wePviKt`i 0viv eivl KZ gvcbx gvb,tjv Zvt`i wBR` gtbvfvtei 0vivi c0fweZ nevi m0tebv _vtK| c00vjv ciY Kivi mgq, DEi`vZv th e3e`_tjvi mv_t GKgZ, A_ev th wel q,tjv Zvt`i Ae`vtbi KvQvKwQ, Zvt`i tK tm,tjv wPwYZ Ki_tZ ejv nq| wKŠ`c00vjv qv gvcbx gvb_tK t`Lvfbv nq bv Ges `dv,tjv mvaviYZt gvcbx gvb Abjvfti mvRvfbv bv t_tK ``e μgvbmvfti web`-_vtK| dtj, GKB gvfti 0viv wewfbvgtbvfvem0ube` w0fw0i c0Zdj b Nu_tZ cvti |

j vBKvU0gvcbx (Likert Scaling)

j vBKvU0cwi gvc c0wZ A,tbK tekx wbgqZwŠK Ges cwi tkmaZ |

Rensis Likert 1932 mv_tj GKwU gvcbx tKŠkj wbg0P Ktib, hv _vm0b gvcbxi tPtq tekx mjeavRbK| ms0vMZ w`K t_tK j vBKvU0P GB cwi gvc c0wZ A,tbK tekx wbgqZwŠK Ges cwi tkmaZ gvcbx MVfti Dcvq| GB gvcbx tK mgw0gj K (summated) gvcbxl ejv nq| j vBKvU0gvcbxi GB c0Z`qwU GKwU c0keweb`vfti mv_t m0uW0, hv mva0ZKKvtj i Rwi c c00vjv qv c0qB e`envi Kiv ntq _vtK| c00vjv qv DEi`vZvtK GKwU e3e` w`tg wbt`R Ki_tZ ejv nq th, wZwb wK tmB e3e`wU mv_t 0m0uY0fvte GKgZ,0 0GKgZ,0 0Awbw0Z,0 0w0gZ tcvlY Ktib,0 bv wK 0m0uY0fvte w0gZ tcvlY Ktib,0| thgb, GKRb MtelK GKwU mi Kvfti i kvmbvgtj MpxZ wewfb0e Kgf0Pxi M0YthvM`Zv cwi gvc Ki_tZ Pvb| tm t0t0t, MtelK DEi`vZvi KvQ wbg0j wLZ e3e` Dc`vcb Kti Zvt`i gZvgZ PvBteb:

c0ke eZ0vb mi Kvfti i MpxZ Db0bgj K Kgf0Pxi mwZ`Kvi mvgwRK Db0btK teMevb Kti_tQ| Avcwb wK GB e3te`i mv_t_

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m0uY0fvte GKgZ)	(GKgZ)	(Awbw0Z)	(w0gZ tcvlY Ktib)	(m0uY0fvte w0gZ tcvlY Ktib)

j vBKvU0gvcbxi `dv,tjv A`u0ZvtK cwi`0b0fvte `xfZ Kti Ges Pj_tKi GKwU D`P gvTvi h_v_0v l wbf0thvM`Zv c0vb Kti |

DEti i `dv,tjvi k0 web`vm mjeav Abjvqx cwi eZ0 Kti tbi qv th_tZ cvti | thgb, 0GKgZ0 Gi cwi etZ0Ab0gv b Kwi 0, 0m0S0, BZ`w` e`envi Kiv th_tZ cvti | j vBKvU0gvcbxi GB web`vmmU w0tkl _i`ZtU ntjv th, GwU DEi` `dv,tjvi GKwU 0`0xb l `u0 μgmPK gvT v c0 kb Kti | hv` DEi`vZvt`i tK DEti i `dv,tjv c0` Kivi `0axbZv t`qv nq, Zte nqtZv Zviv Ggb wKQz DEi` t`teb th, ZvtZ Kti DEi`vZvt`i gta` wel qwU m0ut`K0gtbvfvti Avtcw0K _i`Z_tK gj`vqb Kiv Kwvb ntq c0te| thgb, j vBKvU0gvcbxtZ Dvj w0Z `dv,tjvi cwi etZ0DEi`vZvi c0` Kiv 0wKQlv GKgZ0 0tgvUvgwU GKgZ0, 0c0q GKgZ0 0mwZ` mwZ`B GKgZ0, BZ`w` i gZ DEi` `dv,tjvi e`envi gtbvfvtei c0KZ gj`vqfti t0t0t, GK aiYi 0`_0v l A`u0Zv`Zwi Ki_tel | j vBKvU0gvcbxi `dv,tjv GB A`u0ZvtK cwi`0b0fvte `xfZ Kti Ges Pj_tKi GKwU D`P gvTvi h_v_0v l wbf0thvM`Zv c0vb Kti | GwU gtb ivlv c0qvRb th, j vBKvU0` dvi DEi`_tjvi gta` c0ZwU `dvq GKB gvTvi ZxeZvi KwWtgv i_tq0 etj Abjvb Kiv nq| GB `ewk0`wUB j vBKvU0gvcbxtK Ab`vb` gvcbx t_tK Abb` Kti tZvtj |

jvBKvUeb`vtmi Avti Kiu w`K ntjv th, Giu mPK MVtbi GKiu tmvRv mvDv cxiwZ | jvBKvU© cxiwZi AšubnZ avi Yvu ntjv th, wewfbae`dvi DEi,tjvi wfiEtZ th mgvMk gvb %Zwi nq, Zv weteP` Pj KtK cOZdij Z Kti Ges tgvUvgvUfite GKiu fvtjv cwigvc cOvb Kti | jvBKvU©gvcxiz, MtelK DEi i`dv,tjvi Dci mgvbfite gvb eivl Ktib| th cuPuU`dvtK Dcti Dti E-Kiv ntqtQ, tm,tjvtK O t_tK 4, ev 1 t_tK 5 mSL`vi gvb eivl Kiv nq| Zte gvb eivl i cte`dv,tjvi w`K wbt`RuUtk (direction) wetePbv Kiv cOqvRb| Gi A_`ntjv th, hw` GKiu`dvtK avZKfite web`-Kiv nq Ges Om`uYfite GKgzO`dvi Rb` 3 gvb eivl Kiv nq, Zte FYvZKfite web`-`dvi t`ttl Om`uYfite wOgz tcvly KtibO-Gi Rbt`l 3 gvb eivl KitZ ntel GLvtb 3 mSL`v gvbWU`i`Zcy`bq,`i`Zcy`wel quU ntjv th, gtbvfiti`wofwZMz w`tki cwi tcttZ gvb,tjvtK m`wZcyfite eivl KitZ ntel

jvBKvU©cxiwZi AšubnZ avi Yvu ntjv th, wewfbae`dvi DEi,tjvi wfiEtZ th mgvMk gvb %Zwi nq Zv weteP` Pj KtK cOZdij Z Kti Ges tgvUvgvUfite GKiu fij cwigvc cOvb Kti |

jvBKvU©gvcxiz GKiu mgm`v ntjv th, hw`l KZ,tjv wbu`O DEi i`dvi thvMdj memgqB GKB tgvU gvb cOvb Kti, wKš`Ab`vb` eu DEi i`mg`atq| GKB tgvU gvtbi Rb`ntZ cvti | thgb, cuP`dv gvcxiz gvb 10 ntZ cvti, cOZwU wfbgZ tcvltYi (hvi gvb 2)`dv t_tK, A_ev GKiu Om`uYfite GKgzO, GKiu wOgzO Ges wZbuU m`uYfite wOgzO`dv t_tK |

tevmwWm mgvWRK`i`Zj gvcbx (Bogardus Social Distance Scaling)

DEi`vZv Ges wfbæag`ev eYfMvöxi gvbtl i gta` mgvWRK`%aKU` ev`i`Zj cwigvtci Rb` GKiu gvcbx wbgZ ntqtQ, hv tevmwWm mgvWRK`i`Zj gvcbx bvtg cwi wPZ| aiv hvK, GKRB MtelK hw` RvbtZ Pvb th, DEi`vZiv wfbæag`ej`at` i mvt` KZUKztgj vtgkv KitZ AvMöx ntZ cvtib, ev`i`Zj eRvq ivltZ Pvb, tm t`ttl GB gvcbx tKškj Abjvqx, Rwi tci mKj DEi`vZvtK wbgj wLZ cke,tjv wRÁvmv Kiv thtZ cvti:

DEi`vZv Ges wfbæag`ev eYfMvöxi gvbtl i gta` mgvWRK`%aKU` ev`i`Zj cwigvtci Rb` GKiu gvcbx wbgZ ntqtQ, hv tevmwWm mgvWRK`i`Zj gvcbx bvtg cwi wPZ|

- K. Avcub wK Avcbvi t`tk wfbæag`ej`at` i evm KitZ w`tZ B`QK?
- L. Avcub wK Avcbvi tjvKmgvR wfbæag`ej`at` i evm KitZ w`tZ B`QK?
- M. Avcub wK Avcbvi emevtmi GjvKvq wfbæag`ej`at` i evm KitZ w`tZ B`QK?
- N. Avcub wK Avcbvi cvtki ewotZ wfbæag`ej`at` i evm KitZ w`tZ B`QK?
- O. Avcub wK Avcbvi mšwtK GKRB wfbæag`ej`at`K wetq KitZ t`teb?

GB cuPuU cOkie Kivtgv Abjvqx, hvi c`iv ms`vigp, Zviv cOZwU cOkie Revte ej`teb, On`w, Ges hvi ms`v`v`Qbæ Zviv cOZwU cOkie Revte ej`teb, Obv| GLvtb j`Yxq wcl quU ntjv th, GKiu cket`_tK Avti Kiu cOkie gta` DEi`vZiv gtbvfiti`wbKUz; ew`x tctqtQ| cke,tjvi GB cv`R``dv,tjvi gta` GKiu Kivtgvtk wbt`R Kti | hw` GKRB DEi`vZv th tKvb GKiu m`uK`tg`tb wbtZ B`QK nb, Zte wZwb Zvuj Kvi Ašf`p Kg wBKUZm`ube m`uK`tjvtKl t`gtb wbtZ B`QK ntel thgb, hw` GKRB DEi`vZv Zvi emevtmi GjvKvq wfbæag`ej`at` i evm KitZ w`tZ m`sz nb, Zte wZwb Zvt`i`Zvi wbtRi tjvK-mgvR l t`tk emevm KitZ w`tZl ivRx ntel wKš`wZwb Zvt`i`tK Zvi cOZteKx, ev AvZ`q ntZ w`tZ ivRx ntel bv|

ev`te, GgbwU cZ`vkv Kiv hvq th, metPtq tewk mSL`K DEi`vZv wfbæag`I eYfMvöxi gvbj tK t`tki bMwi MZ;cOvtb AvcU`E Kit`eb bv, Ges metPtq Kg mSL`K gvbj Zvt`i`mvt` Avš`weevntK t`gtb t`teb| Gw`K t_tK, mn-bMwi KZj ntjv metPtq OmnR`dvO Ges Avš`weevn ntjv metPtq Okuwb`dvO| Awakusk DEi`vZvB Kuwb`dvi tPtq mnR`dvtKB MhY

Kiṭeb| wKQz Aek`ax e`wZµg Qrov, GwU thšw³K th, GKRB DĒi`vZv hw` gvcbxZ Dc`wcz tKvb wētkl `dvtK MḥY bv Kṭib, Zte wZwb tmB `dvi tPtq KwBzi `dv,tj vtK MḥY Kiṭeb br| ṭevMwWm mvgmRK `iZj gvcbxi GKwU „i“ZcYw K ntjv th, GwU Z` mswŋjBKiṭYi GKwU wgzē`qx I KvhRi Dcvq wnmvte KvR Kṭi| thgb, GKRB DĒi`vZv wfbœ agŋl eYŋMvōxi gvbyṭi mvt_ KqU m`uKŋtgb wṭeb, Zv RvbtjB Avgiv ej tZ cwī th, tKvb m`uKwU MḥYthvM` nṭqtQ| Gfvte, tKvb Z` bv nwi tḡ GKwU msL`vi gva`tg cvP ev QquU Rixc DĒi `dvtK wŋjfvte mswŋjB Kṭi Dc`vcb Kiv hvq| GB gvcbx tKŠkj tK µgmmĀZ gvcbx (cumulative scale) brṭgl AwfwnZ Kiv nq|

MvUg`vb gvcbx (Guttman Scaling)

ṭevMwWm mvgmRK `iZj gvcbxi GKwU „i“ZcYw K ntjv th, GwU Z` mswŋjBKiṭYi GKwU wgzē`qx I KvhRi Dcvq wnmvte KvR Kṭi|

Louis Guttman 1944 mvtj GKwU gvcbx tKŠkj D`mṭeb KṭiṭQb, hv eZḡvṭb MṭelKṭi KṭiQ tek Rbwctḡ| GB c`wZi tCQṭb gj Zt, µgmmĀZ gvcbxi aviYwU KvR KṭiṭQ| ṭevMwWm mvgmRK `iZj gvcbxi gZ MvUg`vb gvcbxi mvgmRK `iZj cwī gvṭci Rb` e`envi Kiv nq| ṭevMwWm gvcbx I `vmṭb gvcbxi gZ, GwU KZ,tjv e³e`tK wbgwē`tK D`P µgmmĀZ tmvcwbK AvKṭi Ggbfvte Dc`vcb Kṭi th, hw` GKRB DĒi`vZv GKwU wētkl e³e`tK cZ`vL`vb Kṭib, Zte tmB e`w³ Dwj wēZ `dvi Dctii e³e`tj vtKl cZ`vL`vb Kiṭeb| Avi hw` tKvb e`w³ tKvb wētkl e³e`tK mg`ṭ Kṭib, Zte wZwb tmB e³te`i bxtPi me,tjv e³e`tK MḥY Kiṭeb| MvUg`vb gvcbx Abḥvqx, th me `dvtK wetePbv Kiv nq, tm,tjvi gṭa` wKQz mPK Ab` ,tjvi Zj bvq KwBzi nṭq hvṭK| th me DĒi`vZv KwB `dv,tjv MḥY Kṭib, Zviv mnRZi ,tjvtKl MḥY Kṭib| hw` cixŋvi Aaxb`-DcvtĒi gṭa` Ggb GKwU Kwvṭgvi ifc tbq, Zte Avgiv ej tZ cwī th, `dv,tjv GKwU MvUg`vb gvcbx MvB KṭiṭQ|

GKwU gṭbvfṭei `dv Ab`wU t`tK AwakZi KwB wnmvte weteP` nṭZ cvṭi GB Aṭ`ŋh, GwU Avi I kw³kvj x abvZK gṭbvfem`ubœDĒi`vZv mg`ṭ Kiṭeb| thgb, tKvb DĒi`vZv, hvi agcvṭbi e`vcvṭi tḡvUvgwU FYvZK gṭbvfve iṭqtQ, wZwb nqṭZv tUwj wfkṭb wMvṭiṭUi wēAvcb eU Kivi ctŋl gZvgZ w` tZ cvṭib| wKŠ`hvi gṭbvfve Avi I ṭekx FYvZK Ges wḥwb RbmvariṭY` agcvb wṭwl × Kiv DwPr etj gṭb Kṭib, wZwb Aek`B cŋg `dwiU mvt_I GKgZ nṭeb| wKŠ` Ggb DĒi`vZv Lp Kgb cvl qv hvṭe, hvi v GKB mvt_ RbmvariṭY` agcvb wṭwl × Kivi ctŋl Ges tUwj wfkṭb cṖvi Yv Pj tZ t`evi ctŋl gZvgZ t`ṭeb| thṭnZiGB `ŋwU `dvi gṭa` tKvb thšw³K m`uKŋtgb, ṭmṭnZiGB cwī "Qbrem`uKwU cKZctŋl wē`gvb wK bv, ṭmU AwfĀZvi Avtj vtK cḡvYthvM` GKwU cKḡ G aiṭYi eü`dvi µgmmĀZ gvcbx MvB GKwU RūUj cwī msL`wbK wētklṭYi e`vcvi, hv MvUg`vb gvcbxi gva`tg Kiv m`æ|

MvUg`vb gvcbx tK mvari Yfvte gvcbx wētklY c`wZ ej v nq| GB tKŠkj i GKwU cāvb Dṭi`k` ntjv th, th gṭbvfve ev `enkō`tK MṭelYv Kiv nq, Zv tKej GKgmmĀK wK bv Zv wṭwōZfvte wbiŋY Kiv| MvUg`vb cāµqvq GKwU wēlqe`i mgMMtK ZLbB GKgmmĀK etj wetePbv Kiv nq, hLb GwU mKj m`æe` DĒi `dvtK e`envi Kṭi GKwU wLZ ev cŋg wLZ µgmmĀZ gvcbx Drcv`b Kṭi, hv wṭḡwōc`É QṭKi gZ GKwU ifc MḥY Kṭi |

MvUg`vb gvcbx tK mvari Yfvte ŋgvcbx wētklY c`wZ ej v nq| GB tKŠkj i GKwU cāvb Dṭi`k` ntjv th, th gṭbvfve ev `enkō`tK MṭelYv Kiv nq, Zv tKej GKgmmĀK wK bv, Zv wṭwōZfvte wbiŋY Kiv| MvUg`vb cāµqvq GKwU wēlqe`i mgMMtK ZLbB GKgmmĀK etj wetePbv Kiv nq, hLb GwU mKj m`æe` DĒi `dvtK e`envi Kṭi GKwU wLZ ev cŋg wLZ µgmmĀZ gvcbx Drcv`b Kṭi, hv wṭḡwōc`É QṭKi gZ GKwU ifc MḥY Kṭi |

mvi wY 3.1: MıUg`ıb gvcbr-ıjc

<i>gvcbr gıb</i>	<i>GKgZ</i>						<i>GKgZ bb</i>					
	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
5	Ñ	+	+	+	+	+	+	Ñ	Ñ	Ñ	Ñ	Ñ
4	Ñ	Ñ	+	+	+	+	+	+	Ñ	Ñ	Ñ	Ñ
3	Ñ	Ñ	Ñ	+	+	+	+	+	+	Ñ	Ñ	Ñ
2	Ñ	Ñ	Ñ	Ñ	+	+	+	+	+	+	Ñ	Ñ
1	Ñ	Ñ	Ñ	Ñ	Ñ	+	+	+	+	+	+	Ñ
0	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ	+	+	+	+	+	+

mvi vsk

eZgıtb cıřV gvcbrı wıřfbıw` K Ges aiY wıřq Avřj vPbv Kiv nřqřQ| mıavi YZt, Mřel Yvq eqm, Avq, BZ`wı` Qıovı Ggb me Pj K ıřqřQ, hv DĒi`vZvi gřbvřve cwi gıřci gıa`ıg Avgıv řRřb _wıK| gvcbr řKřkj wU gřbvřve e`³ Kři, Ggb me Pj KřK cwi gıřci Dřı řK` e`eüZ nřq _řřK| wıřfbıwı Křgi gvcbr řKřkřj i cwi Pq Avgıv řcřq _wıK| thgb, _vmřUb gvcbr, jvBKıU`gvcbr, řevMwřm gvcbr| G Qıovı, wKQz gvcbr řKřkj AvřQ, hv Mřel Yv mgm`vi cKvi řřř` e`eüZ nřq _řřK| Dıj wıZ gvcıb řKřkj řjv cřqřMi cře`th cř`Ä`řj řřK cwi gvc Kiv nře, řm`řj řřK ř`úóřře wPwřZ Kři Mřel KřK Mřel Yv cwi Pjv bv KıřZ nře|

cvfVvEi gj`vqb

be⁹³K cke

mVK DEti i cvfk WJK (v) wPy w`b -

1| gvcbx wbg@Yi t`f`f` cW_KZ ntj b:

- K. Thurstone
- L. Bogardus
- M. Guttman
- N. Rensis Likert|

2| 1932 mtj mgvR MtelYvq GKwU t`j cWZ nq| t`j wLi bvg:

- K. vm@b t`j
- L. tevMwWm t`j
- M. MUg`vb t`j
- N. j vBKvU@t`j |

3| MUg`vb gvcbx `Zwi i t`Qtb gj Zt _____ avi YwU KvR Kti tQ|

- K. μg msL`vi gvb
- L. μg msL`vi tK`te`y
- M. μg mWAZ gvcbx
- N. μg web`vmZ gvcbx

msw`f`B cke

1| vm@b gvcbx wK?

2| j vBKvU@gvcbx wK?

i Pbvj K cke

1| gvcbx tKSk`f` i cKvi t`f` ,tj v Avtj vPbv Ki`b|

2| Mlg Dbq`b MtelYvq tKvb t`j wU h_vh_ dj t`te etj Avcwb gtb Ktib? h⁹³ c0vb Ki`b|

ZĚj Ges Mĕl Yvi gĕa" mĕúK©

Relationship between Theory and Research

ZĚj I Mĕl Yvi gĕa" GKwJ Nwbó mĕúK© itqĕQ | Mĕl K ZĚj tĕK wbeŕPZ Mĕl Yvi
wel qe"i Ašfĕ cĕ"q,tj vĕK KvĕRi fĕte msÁwqZ Kĕi AbĕKí cixŕlv Kĕib Ges cĕB
djvdĕj i wŕwĕĕZ ZĚĕK cĕMŕb, cwi eZĕ I cwi gvRĕ Kĕib | Avevi AwfÁZvj × Mĕl Yvi
gva"tg bZb Zĕĕj Rbĕnq | wegzZvi gvĕvi wŕwĕĕZ Zĕĕj tkYx wefĕ³KiY Kiv hvq | Zĕĕj
wŕwĕĕZ Mĕl Yv Kiv nĕe, bv wK Mĕl Yvi wŕwĕĕZ Zĕĕj wĕgZ nĕe, G wĕtq cĕŪZĕ" i gĕa"
weZK© itqĕQ | th weZKB _vKK bv tKb Mĕl KĕK RvbĕZ nĕe th, cĕ"q ej tZ wK tevSĕq?
cĕ"q wK wK Kvĕmĕúv^ b Kĕi? cĕ"q I Pj tĕi gĕa" mĕúK©wK? Mĕl tĕi Avĕiv Rvbv
cĕqRb th, AbĕKí wK? AbĕKí wK fĕte wĕgZ nq I Gi wĕgŕY mĕm"v wK? AbĕKí cixŕlv wK?
BZ"vr | G me wel q wĕtq GB BDĕbĕU Avĕj vPbv Kiv nĕqĕQ | Zĕe wel qe"ĕ wĕj _vKvi Kvi tY
cW 3-Gi wKQz wKQz tĕĕĕĕ ŌmvgwĕRK cwi msL"vb cwi vPwZŌ (mĕvRZĕĕ-4) Mĕšĕi cĕmĕzK
Astĕki mvĕ_mv"ĕ" _vKĕe |

GB BDĕbĕU Avgiv th cW,tj v Aa"qb Kiĕev, tm,tj v ntj v:

- ◆ cW - 1 : ZĚj ebg Mĕl Yv
- ◆ cW - 2 : cĕ"q I Pj K
- ◆ cW - 3 : AbĕKí

ZËj eavg Mtel Yv
Theory versus Research

GB cW tktl hv Rvbr hvte —

- ZËj wK
- ZtËji cKvi tf`
- Av` kqK
- mvgwRK Mtel Yvq ZtËji fvgKv
- ZËj eavg Mtel Yv
- ZËj I Mtel Yvi cvi `úwi K mæúK©

ZËj wK (What is Theory)?

GKw DEg ZËj ntjv
wffp`thM` Ávtbi cL`qMZ
wfiÉ/

wefbavgvbtli i Kvto ÒZËj c`w wewfbaA`enb Kti | A`q e`w³ iv mvavi YZt ZËj I cØqvM
gta` cv`R` wbfCY Kti `vtKb GKw cØPtb gva`tg: Òel qw ZËjMZ w K t`tK wK Avto,
Zte cØqvM t`qtl KvhRi bqØ ZËj I cØqvM gta` cv`R` wYqgi t`qtl mvavi Y I A`q
gvbtli Rb` GB cØPbw wfiÉ wmvte KvR Kitj I cØPbw gta` th e³e`w AšwbnZ
itqtØ Zv ntjv, ÒZËj cØqvM`thM` bqØ ZËj I cØqvM mæúKØi Dci cØPj Z avi YwI
Avgv`i cØZ`wK Rxeþ Avti Kfvte cØZdwj Z nq| thgb, Avgiv etj `wK th, ÒAþK
t`qtl, cix`v-wbix`v I áwšt (trial and error) gva`tg Avgv`i w`q v MØY KiþZ nqØ| G
t`qtl, Òcix`v-wbix`v ntjv cØqvM Ges Òáwšt ntjv ZËj| hLb ZËj cØqvMK Abkxj þb
KvhRi nq bv, ZLb Zv mstkvatþi cØqvRb nq| wKŠ`bwZMZ fvte ZËj Ges Abkxj þbi gta`
tKvb weti va tbB| GKw DEg ZËj ntjv wffp`thM` Ávtbi cL`qMZ wfiÉ| th tKvb cØ`ÁtK
e`vL`v I fweI `ØvYx KiþZ Ges epx`gvb e`enwi K w`xvS-MØtY ZËj Avgv`i i mvvnh` Kti |

hLb ZËj k`bi mvt` weKí iþc wetePbv Kiv nq, ZLb ZËj mæúK`Avti KwI fj avi Yv
`Zwi nq| thgb, tçþv, Gwi tóvUj , j K, gv` Ges tçti þlv-Gi gtZv a`c`x cwÚZt` i tj LvþK
ZËj etj AwfwnZ Kiv nq| cKZct`q, wØxq wekht`xi ce`chS-mvgwRK weÁvtb ZËj k`bi
wefbæifc we`gvb wØj, wtkl Kti `bwZKZvi `k`bi Dci `i`ZpU wØj çavb| thgb,
tçþvi b`vqepvi cØZóvi j t`q` GKw Av`k`vtó`ivR`wZK I mvgwRK AvPiY wK nte ivó`
cwi Pj bvi Rb` tm wettq `vkØK ivRvi wbi`k Ávb `vKtZ nte| wKŠ`bwZK `kØ
gj`tevacthZ gZvgZ c`vb Kti `vtK| tm`tjv bv mZ`, bv wgv`v| KviY, tm`tjv
AwfÁZvj äfvte cix`v`thM` bq| hw` GKRB `pfvte wekym Kti b th mgvRZŠþ ntjv tkØ
A`wZK e`e`v, Zte tKvb AwfÁZvgj K çgvYB tm wekymtK mZ` ev wgv`v etj çgvY KiþZ
cvi te bv| weÁvbmæZ ZËj ntjv AwfÁZvj ä RMtzi wewfbael qtK cØZwbaZKvi x wegzZv|

AwfÁZvgj K Mtel Yvi
Ab`Zg çavb KvRwI ntjv
ZtËji weKvK NUtþv, Gi
cwi gvRØ Kiv Ges ZËj
weKvki gva`tg weÁvtbi
j`q` ARØtK teMevb Kti
tZij v|

mvgwRK weÁvbxiv GKgZ ntqtØb th, AwfÁZvgj K Mtel Yvi Ab`Zg çavb KvRwI ntjv
ZtËji weKvK NUtþv, Gi cwi gvRØ Kiv Ges ZËj weKvki gva`tg weÁvtbi j`q` ARØtK
teMevb Kti tZij v| wKŠ` ZËj KvþK etj G wettq Zviv GKgZ ntZ cvi b wØ| mgvRweÁvtb
ZtËji Ae`v ch`e`qY Kti George Homans etj tØb th, mgmvgwK mgvRweÁvbxiv ZËj
wbg`Y wþRt`i e`-ivL`tj I ZËj wK G wettq K`wPr cwi `vi fvte wKØ etj tØb|
mgvRweÁvbxiv ZtËji cKwZ Avtj vPbv ZËj mæúK`mvavi Yfvte hv etj b Ges cKZct`q th

aiťYi ZťEji Rbť t` b Zv ZĚj m`úťK`Zvť` i A`úóZv I weáwš`KB c`k` Kti | wKQz mvgwRK weÁvbx itqťQb, hviv th tKvb cĹ`wqKiYťKB ZĚj ej teb| thgb, AwfÁZvgj K cĹ`ÁťK msÁwqZ I e`vL`v Kivi Rb` ŐŕlgZvó, ŐmvgwRK ghP vó, ŐMYZšš, ŐAvgj vZšš I ŐAvťcwŕK eÁbvió gZ cĹ`ťqi e`enviťK ZťEji mvt_ mgv_Ŕ Kiv nq| G aiťYi e`vcK Ať_° chŕeŕťYi weciťZ th tKvb aiťYi cĹ`wqKiYB ntjv ZĚj| AvťK aiťYi mvgwRK weÁvbx itqťQb, hviv ŐaviYvi BwZnvmťKŐ ZťEji mvt_ mgv_Ŕ Ktib| Avevi AťbťK ZĚťK msKxY`Ať_°msÁwqZ Kivi tPóv KtiťQb| Gť` i gťZ, ZĚj ntjv cvi`úmi Kfvťe m`úKŕš cĹ`ťqi mg`ťq MvZ GKwU thšw`K Aeti vnx cĹ`uqv, hv t`ťK KZ_ťjv cixŕŕťhvM` cŐvebťK Aeti vnxfvťe AvniY Kiv hvq| ZĚj msÁvqťbi GB weŕfbgťLx`wófw` GK aiťYi weáwš`-Zwi Kti |

mvavi Yfvťe, ZĚj ntjv thšw`Kfvťe cvi`úmi K m`úKŕš KZ_ťjv cŐvebvi mŕnsex Dc`vcb, hv mvgwRK cĹ`ÁmgňťK eYŐv I e`vL`vi gva`ťg GKwU weťkl velťqi ÁvbťK msMvZ I mswŕŕB Kti Ges hv cixŕŕv, cŐMŕb, cvi eZŐ I mstkvatbi Rb` Dbťš`_vťK| ev`eZvi h_v_° eYŐv I e`vL`v t`eri Rb` thšw`Kfvťe cvi`úmi K m`úKŕš GB cŐvebv_ťjvťK wKfvťe mvrťbťv hvq Zvi weŕfbœaiY itqťQ| GB weŕfbœaiY_ťjvB weÁvťbi weŕfbœDťi k` mvaťbi jťŕŕ` weŕfbœcKvi ZťEji Rbť t` q| vel qiuťK tevSvi Rb` ZťEji aiY_ťjv m`úťK`wKQz Avťj vPbv Kiv hvK |

mvavi Yfvťe, ZĚj ntjv thšw`Kfvťe cvi`úmi K m`úKŕš KZ_ťjv cŐvebvi mŕnsex Dc`vcb, hv mvgwRK cĹ`ÁmgňťK eYŐv I e`vL`vi gva`ťg GKwU weťkl velťqi ÁvbťK msMvZ I mswŕŕB Kti Ges hv cixŕŕv, cŐMŕb, cvi eZŐ I mstkvatbi Rb` Dbťš`_vťK|

ZťEji cKviťf` (Types of Theories)

Avgiv BťZvgťa`B tRťbŕQ th, ZťEji Ggb tKvb mvaviY msÁv tbb hvi Dci mvgwRK weÁvbxiv GKgZ ntZ cvťb| Avgiv GI tRťbŕQ th, weŕfbœDťi k` mvaťbi Rb` weŕfbœZĚj wbuqZ nq| AZGe, tevSvB hvť`Q th, ZťEji weŕfbœcKviťf` itqťQ| ZĚťK Zvť` i cwi vai wŕvĚťZ wef` Kiv hvq| thgb, mgwóK ZĚj (macro theories) I e`wóK ZĚj (micro theories)| Kvhŕej xi wŕvĚťZ I ZĚťK`Ŕ fvťM fvM Kiv hvq| thgb, wKQz ZĚj itqťQ th_ťjv w`wZkxj Zv ev MvZkxj ZvťK wbtq Avťj vPbv Kti Ges wKQz ZĚj itqťQ th_ťjv KvVvťgv ev cĹ`uqvťK wbtq Avťj vPbv Kti | KvVvťgvi wŕvĚťZ I ZĚťK wef` Kiv hvq| thgb, thšw`Kfvťe m`úKŕš`Zŕm`gĵK ZĚj Ges wKQz cŐvebvi gva`ťg wXj Xjvfvťe wbuqZ ZĚj| Avevi wegZZvi gvĬvi wŕvĚťZ I ZĚťK weŕfbœfvťM fvM Kiv hvq| wegZZvi gvĬvi wŕvĚťZ Parsons I ShiIs KZŔ cŐ Ě Pvi aiťYi ZĚťK Avgiv wbtgœAvťj vPbv Kti t`Lťev |

AbvbŕwbK tkYxexKiY e`e`v (Ad Hoc Classificatory Systems): ZĚj MVťbi meŕbge chŕq ntjv AbvbŕwbK tkYxexKiY e`e`v| GB chŕq, AwfÁZvj ä chŕeŕŕY_ťjvťK mswŕŕB Kti msMvZ Kivi Rb` KZ_ťjv t`°Qvgj K mg`œwó`m`úbe`dv (arbitrary categories) `Zwi Kiv nq| DcvĚťK mswŕŕB Kti eYŐvi Dťiťk` cĹ`gĵvq DĚi`vZvť` i cŐĚ DĚťi weŕfbœmg`œwó`m`úbe`dv_ťjvťK tkYxex Kiv nq| thgb, `eevŕK ghP vi weciťZ cŐB DĚi_ťjvťK AweevŕZ, weevŕZ, wecZťK, weaev, weevŕ-weŕQbZv, BZ`w` `dvq mvrťbťv ntq _vťK| GK aiťYi`j tkŕYweb`vťmi gva`ťg tkYxexKiťYi GB cĹ`uqvťK AbvbŕwbK tkYxexKiY e`e`v ejv ntq _vťK |

AbvbŕwbK tkYxexKiY e`e`v AwfÁZvj ä chŕeŕŕY_ťjvťK mswŕŕB Kti msMvZ Kivi Rb` KZ_ťjv t`°Qvgj K mg`œwó`m`úbe`dv`Zwi Kiv nq|

tkYxweb`vťmi mťvejx (Taxonomies): wŐZxq gvĬvi ZĚj ntjv mg`œwó`m`úbe`dvi tkYxweb`vťmi cĹ`ĵx ev tkYxweb`vťmi mťvejx| GuU AwfÁvZvj ä chŕeŕŕY_ťjvťK mg`œwó`m`úbe`dvi tkYxexKiťYi gva`ťg mvgÁm`cY`Kti tZjv vi cĹ`uqv, hvťZ Kti tmB tkYx ev`dv_ťjv gťa`Kvi m`úKŕK eYŐv Kiv hvq| tkYxweb`vťmi mťvejxi gva`ťg MvZ mg`œwó`m`úbe`dvi tkYxweb`vťm_ťjv AwfÁZvi RMťZi mvt_ Nibófvťe m`úKŕš |

*tkYweb`v`fmi m`fvej x
Awf`AvZij`ä
ch`e`qY, tj`v`K
mg`e`kó`m`úbe`dvi
tkYxe`Ki`fYi`gva`tg
mvg`Am`cY`Kti`tZij`vi*

mvgwRK weÁv`bi Mtel Yvq tkYweb`v`fmi m`fvej x `jU , i`ZcY`Kv`m`úv`b Kti | G , tj vi mZK` mhZamsÁvqb Awf`ÁZv`thW` ev`eZvi GKk`K we`k`H`Yi Rb` mjbow` Kti Ges tmB GKk , tj v`K w`Kf`v`te eY`v` Kiv n`te Zvi w`K w`b`R` Kti | A` , GwU n`tj v` tkYxe`x`KiY I eY`v` Rb` GKwU m`k`Lj web`v`m | hLb GKRB Mtel K GKwU Mtel Yvi wel`q`e`-`f`K wbe`P`b Kti b, ZLb Mtel K tmB wel`q`e`-`i Aš`f`P , i`ZcY`P`j K , tj v`K tkYweb`v`fmi m`fvej xi gva`tg w`Pw`Y`Z Ki`Z cv`t`b | tkYweb`v`fmi m`fvej xi w`Zxq K`v`RuU n`tj v, msw`q`B`KiY`g`K I eY`v`g`j`K Mtel Yv`K D`v` Kiv | Z`te G ai`f`Yi Z`E`j`i`ayeY`v`v` c`v`b` Kti , t`K`v`b` e`v`L`v` c`v`b` Kti b`v` | Talcott Parsons-Gi mvgwRK Ktg`P we`k`H`Y G ai`f`Yi Z`E`j`i` Avl Zvq` c`to` |

*cL`qMZ Kiv`v`tgvi gva`tg
eY`v`g`j`K tkYx , tj`v`K GKwU
enr`m`P`ú`o` c`v`eb`vi
Kiv`v`tgvi gta`-`v`cb`Kiv
nq`|*

cL`qMZ Kiv`v`tgvi (Conceptual Framework): ZZxq gv`I`vi Z`E`j`i` n`tj v` cL`qMZ Kiv`v`tgvi | Gi gva`tg eY`v`g`j`K tkYx , tj`v`K GKwU enr`m`P`ú`o` c`v`eb`vi Kiv`v`tgvi gta`-`v`cb`Kiv nq` | cL`qMZ Kiv`v`tgvi tkYweb`v`fmi m`fvej x t`-`t`K Db`z` ai`f`Yi Z`E`j`i` KviY, Gi c`v`eb`v` , tj`v` A`b`K tekx Awf`ÁZv`g`j`K ch`e`q`Y`f`K msw`q`B` Kti Ges e`v`L`v` I f`i`el`v`v`Yx c`v`b` Kti | mvgwRK weÁv`b` th`m`K`j` avi Yv Z`E`j`i` e`t`j` cwi`w`P`Z Zv`-`i` Aw`K`v`k`B` cL`qMZ Kiv`v`tgvi Aš`-`f`P , hv` m`j`n`sex` Awf`ÁZv`g`j`K Mtel Yv`K cwi`w`P`w`j` Z` Kti | w`K`š` cL`qMZ Kiv`v`tgvi t`-`t`K Av`n`i` Z` c`v`eb`v` , tj`v` Ae`t`i`v`n`x`g`j` Kf`v`te `w`c`Z` nq` b`v` | GwU tm , tj`vi e`v`L`v` I f`i`el`v`v`Yx Kivi q`l`g`Zv`t`K m`x`g`Z` Kti Ges tm , tj`vi Dc`t`v`M`x`Zv`t`K ev`av`M`-`Kti` |

*eY`v`v, e`v`L`v` I f`i`el`v`v`Yx`K
GKwU m`j`n`sex` Dc`v`t`q
m`ú`m`K`Z` Kivi gva`tg
Z`E`j`i` e`e`-`v` , tj`v`
tkYweb`v`fmi m`fvej x I
cL`qMZ Kiv`v`tgvi`K GKwU`Z
Kti`|*

Z`E`j`i` e`e`-`v` (Theoretical Systems): eY`v`v, e`v`L`v` I f`i`el`v`v`Yx`K GKwU m`j`n`sex` Dc`v`t`q m`ú`m`K`Z` Kivi gva`tg Z`E`j`i` e`e`-`v` , tj`v` tkYweb`v`fmi m`fvej x I cL`qMZ Kiv`v`tgvi`K GKwU`Z` Kti | GB gv`I`v`q, Ab`v`b` c`v`eb`v` t`-`t`K KZ , tj`v` cix`q`v`th`v`M` c`v`eb`v`t`K Av`n`i`Yi Ab`g`w`Z` c`v`b`Kiv`x` cwi`-`ú`m`i` Kf`v`te m`ú`K`H`P` c`v`eb`v` , tj`vi GKwU th`š`w`K Ae`t`i`v`n`x` c`v`u`q`v` w`n`m`v`te Z`E`j`i` Zvi msÁv`K` c`v`Z`d`w`j` Z` Kti | hLb G ai`f`Yi Z`E`j`i` e`e`-`v` M`w`Z` nq, ZLb GKRB weÁv`b`x` `v`ex` Ki`Z` cv`t`b` th, w`Z`v`b` Zvi Av`M`v`ni` c`v`Á`-`t`K e`v`L`v` I f`i`el`v`v`Yx` Ki`Z` m`q`l`g` n`t`q`t`Q`b` | GKwU Z`E`j`i` e`e`-`v` n`tj v` tm`w`U, hv` Awf`ÁZv`g`j`K c`v`Á`-`t`K cY`e`v`L`v`i Rb` GKwU Kiv`v`tgvi c`v`b` Kti | G t`q`f`i`T, Z`E`j`i` Kiv`v`tgvi GKwU Dr`K`ó` D`v`ni`Y` w`n`m`v`te Durkheim-Gi Av`Z`h`Z`vi Z`E`j`i`K D`t`j`-`Kiv` th`Z` cv`t`i` |

Av`k`K (What is a Model)?

*m`k`Lj`f`v`te cL`qMZ
msM`V`t`bi e`e`-`v` w`n`m`v`te
Z`E`j`i` avi Yvi m`v`-`L`p
Nub`o`f`v`te m`ú`m`K`Z` n`tj v`
Av`t`k`P` avi Yv`|*

m`k`Lj`f`v`te cL`qMZ msM`V`t`bi e`e`-`v` w`n`m`v`te Z`E`j`i` avi Yvi m`v`-`L`p Nub`o`f`v`te m`ú`m`K`Z` n`tj v` Av`t`k`P` avi Yv` | c`v`q`k`T, Av`t`k`P` gva`tg cL`qMZ Kiv`v`tgvi msM`V`t`bi D`t`-`v`M` M`v`Y` Kiv` nq` | GKwU Av`k`K` t`K`v` w`K`O`i` c`v`Z`i`f`c` ev` m`v`k` w`n`m`v`te wete`P`b`v` Kiv` nq` | th`g`b, GKRB `v`c`Z`w`e` e`u`Z`j`w`e`k`o` f`e`t`bi GKwU Av`k`K`Z`v`i` Kti `v`t`K`b` | tmB Av`k`K` n`tj v` c`K`Z` f`e`b`w`i` GKwU q`i`-`a` c`v`Z`K`w`Z, hv` f`e`b`w`i` `e`w`k`o` I Kiv`v`tgvi`K cL`q`f`v`te c`v`Z`v`w`a`Z`j` Kti | w`K`š` mvgwRK weÁv`b` t`f`š`w`Z`K` c`v`-`t`P` cwi`e`t`Z`c`v`Z`t`K`i` gva`tg Av`k`K`Z`v`i` nq` | A` , w`K`O`i` Awf`ÁZv`g`j`K c`v`Á`-`i` m`K`j` Dc`v`v`b` Ges Dc`v`v`t`bi gta`-`m`ú`K`H`n` Gi `e`w`k`o` , tj`v`t`K cL`q` , tj`vi gta`-`th`š`w`K` web`v`fmi gva`tg Dc`-`v`cb` Kiv` nq` | Av`t`i`v` m`j`b`w` `v`f`v`te e`j`v` h`v`q` th, Av`k`K` n`tj v` ev`-`e`Z`v` t`-`t`K` m`o` GKwU w`e`g`Z`R`i`Y, hv` ev`-`e`Z`v`t`K` m`K`j` `e`w`k`o`m`n` msM`w`Z` Kiv` Ges m`n`R`t`e`v`a`-`f`v`te Dc`j`w`ai` D`t`i`k` m`v`ab` Kti | AZGe, Av`k`K` n`tj v` ev`-`e`Z`v`i` GKwU c`v`Z`v`w`a`Z`k`x`j` i`f`c` | t`K`v`b` m`g`m`v`i` c`v`m`w`K` ev`-`e` w`e`l`q` , tj`v`t`K` w`P`w`I` Z` Kti tmB m`g`m`v`t`K` Ab`j`n`v`b` Kiv` nq` | GwU tmB w`e`l`q` , tj`vi gta`-`Z`v`r`ch`e`Y`m`ú`K` , tj`v`t`K` m`j`-`ú`o` Kti t`Z`v`t`j` Ges tmB m`ú`K` , tj`vi c`K`w`Z` m`ú`t`K`Awf`ÁZv`g`j`K`f`v`te` cix`q`v`th`v`M` c`v`eb`v` M`V`t`b` m`q`l`g` Kti | Av`t`k`P` cix`q`v`i` ci` ev`-`e` R`M`t`Z`i` w`K`O`i` Ask` m`ú`t`K`G`K`w`U` Aw`K`Z`i` `v`o` Dc`j`w`ai` AR`v` Kiv` m`e` nq` |

cĹ`ŋfite chŋeŋY Kiv hvq bv Ggb cĉĀ m=útk`avi Yv cvevi Rb`I Av`kŋK e`envi Kiv ntq _vtK| thgb, bmxZgvj v weŋkŋYi tŋŋĪ ŋm×vš-MŋŋYi cĉuqv Ges KvVtgv i GKŋU Av`k` wbgŋY Kiv nq Ges tmB Av`k`ŋK ŋm×vš-MŋŋYKvixi AvPiY m=útk`Aeŋivnxgj Kfite wKQz cĉvebv AvniY Kiv nq| Zvi ci, GB cĉvebv,tj vtK AwfÁZvj ä DcvŋEi mvt_ gj`vqb Kiv nq| bmxZgvj v cĉqŋbi tŋŋĪ, fveMZ weŋePbvŋtŋtai Zj bvq Av`k`AwakZi mŋk:Lj wŋwĒ cĉvb Kŋi _vtK| Av`k`ŋtj v e`vL`v Ges fweĹ`ŋvYxKiŋYi nwiZqvi | hw`ŋŋZvi mvt_ wbgŋY Kiv hvq, Zte ŋm,tj v ev`eZvtK cĉZwbŋZi Kŋi | wKš`gtb ivLv cĉqvRb th, Av`k`ŋtj v wŋtRiv KLŋbv ev`eZv bq| ev`eZvtK AwakZi wbfŋfŋte Dc`vcb Kivi Rb` bZb ÁvŋtK Ašŋŋ Kŋi Av`k`me mgqB cwieŋZŋ nq| GKŋU weÁvbm=šZ Av`ŋkŋP meŋPtŋq „i“ZcY`ewkó” ntj v, GŋUŋK AwfÁZvgj Kfite cixŋŋv Kiv hvq Ges fj cĉŋwYZ Kiv hvq|

GKŋU weÁvbm=šZ Av`ŋkŋP meŋPtŋq „i“ZcY`ewkó” ntj v, GŋUŋK AwfÁZvgj Kfite cixŋŋv Kiv hvq Ges fj cĉŋwYZ Kiv hvq|

mvgwRK Mŋel Yvq ZŋEj fvgKv (Role of Theory in Social Research)

mvgwRK Mŋel Yvq ZŋEj i gvbweK weÁvbm,tj v Mŋel Yvi weŋfweDcv`vb I gj`c`ŋtj v AmŋwZcY` AŋP e`envi, Ace`envi Ges weÁvšŋŋ ŋviv`ewkó`gŋUŋZ| weÁvŋbi weŋfweDcv`vb G mŋei e`envi Ges A`wŋtŋq gZvŋŋŋK`i KvŋŋY Gi cŋKvc Avil eŋx`tctŋq| weŋfweDcv`vb weÁvŋbi e`eüZ gj`c`ŋtj v ŋŋŋŋŋxq A`vKŋtj I G,tj v weŋfweDcv`vb weŋfweDcv`vb, weŋfweDcv`v`kŋŋK Hwiŋŋ Ges weŋfweDcv`vb ŋŋŋŋŋ e`eüZ nq| mvgwRK Mŋel Yvq ZŋEj fvgKv wK nŋe Zv wŋtŋq tKvb mŋavi Y HKgZ`ŋbB| KvY, cŋUŋZ I Mŋel Kŋi`i gŋa` e`wŋŋMZ weŋfweDcv`vb ŋŋŋŋŋ I ÁvZwŋEŋK Ae`vb Abŋvŋxq mvgwRK Mŋel Yvq ZŋEj fvgKvi cwieZŋ nq|

mvgwRK Mŋel Yvq ZŋEj fvgKv wK nŋe Zv wŋtŋq tKvb mŋavi Y HKgZ`ŋbB| KvY, cŋUŋZ I Mŋel Kŋi`i gŋa` e`wŋŋMZ weŋfweDcv`vb ŋŋŋŋŋ I ÁvZwŋEŋK Ae`vb Abŋvŋxq mvgwRK Mŋel Yvq ZŋEj fvgKvi cwieZŋ nq|

cŋUŋZiv gŋb Kŋib th, ŋagvĹ` e`envŋi Rb`B Mŋel Yvq ZŋEj e`envŋi cĉqvRb ŋbB| weŋfweDcv`vb I Awfŋm`f`chŋŋŋ vPbv Kŋi t`Lv tMŋQ th, ZwŋEŋK Dc`vcbŋi mvt_ AwfÁZvj ä ev`eZvi tKvb thvŋŋŋŋŋ ŋwcz bv nevi dtj ZŋEj mvt_ cĉB djvdj msŋwZcY`nq bv| Zte RŋUj mvgwRK cĉĀ,tj vi e`vL`v KiŋZ wŋŋŋ Awakvsk cŋUŋZ gŋb Kŋib th, wegz`gŋvq cĉŋwŋZ cĉ`q,tj vi gŋa` wŋŋŋ m=útk`ŋtj vtK t`Lvŋbi Rb` Ges weŋfweDcv`vb ŋbŋŋ I AmŋwKvi wŋYŋŋi tŋŋĪ GK aiŋYi ZwŋEŋK KvVtgv Dc`vcbŋi cĉqvRb iŋŋŋŋŋ tmB ZwŋEŋK KvVtgv chŋeŋY,tj vi mvt_ wegz`ZŋEj GKŋU mŋŋŋŋ ŋZwi Kŋi | chŋeŋŋŋYi mvt_ wegz`ZŋEj,tj vi mŋŋŋŋ mŋŋŋŋ gŋa`ŋg cĉ`q,tj v AwfÁZvgj K A`ARŋ Kŋi |

ZwŋEŋK KvVtgv bmxZgvj v Abŋvi Y bv Kiŋj Mŋel K w`K wŋt`Rbŋŋŋ ntq cŋob Ges tKvb Dcv`vbwŋŋŋ tKŋwŋŋi AvŋM ev cŋi weŋePbv Kiŋŋ Zv wŋŋŋŋŋ KiŋZ wŋŋŋŋŋ I weÁvš-ntq cŋob|

GLŋŋ GKŋU weĹ`q gŋb ivLv cĉqvRb th, ZŋEj wŋŋŋŋŋ cŋŋŋŋŋ I Dchŋŋŋ nŋZ nŋe| GKŋU wŋŋŋŋŋ ZŋEj Avgŋŋ`i „i“ZcY`ŋ h_vh` Dcv`vb,tj vtK wŋŋŋŋŋ KiŋZ mŋŋŋŋ Kŋi | ZŋEj ev`e RMŋZi weŋfweDcv`vb Dcŋwŋi Rb` GK aiŋYi Rvj wŋŋŋŋ KvR Kŋi, hvi gŋa`ŋg chŋeŋŋŋŋŋ mŋŋŋŋŋŋ Kiv hvq| Dchŋŋŋ ZŋEj e`envi GKŋU QvKbxi gZi KvR Kŋi | QvKbxi gŋa`ŋg thgb AveRŋŋ`i Kŋi GKŋU e`ŋK weŋŋ Kŋi tZvj v nq, tZgŋb Dchŋŋŋ ZŋEj e`envi Mŋel Kŋi mŋwK w`K wŋt`kŋŋ w`ŋg _vtK| ZwŋEŋK KvVtgv bmxZgvj v Abŋvi Y bv Kiŋj Mŋel K w`K wŋt`Rbŋŋŋ ntq cŋob Ges tKvb Dcv`vbwŋŋŋ tKŋwŋŋŋ AvŋM ev cŋi weŋePbv Kiŋŋ Zv wŋŋŋŋŋ KiŋZ wŋŋŋŋŋ I weÁvš-ntq cŋob|

ZŋEj ebgv Mŋel Yv (Theory versus Research)

weÁvŋbi kvLv wŋŋŋŋ mvgwRK weÁvbm`ŋŋU cĉvb Dcv`vbŋi Dci`wŋŋŋ iŋŋŋŋŋ GKŋU ntj v ZŋEj Ges Abŋwŋŋ ntj v Mŋel Yv| weÁvŋŋ wŋŋŋŋ mvgwRK weÁvŋŋ v`ŋŋU RMŋZ wŋŋŋŋŋ _vtKb — chŋeŋŋŋŋ I AwfÁZvi RMr, Ges avi Yv, ZŋEj I Av`ŋkŋP RMr| ŋŋU RMŋZi gŋa` GKŋU mŋŋŋŋ m=útk`vcbŋi gŋa`ŋg mvgwRK weÁvŋbi j`ŋŋ` ARŋŋbi c`mŋŋŋ I kvŋŋŋŋ nq| wKš`wKfite GB m=útk`vcb Kiv hŋŋe? cĉŋŋŋ wK Avgiv ZŋEj I Av`k`wbgŋY Kŋi tbe Ges

c̄ti tm₂tj v̄tK cix̄ŋvi Rb̄ AwfÁZvi RMtZ hv̄tev, bv̄ w̄K AwfÁZvgj K M̄tel Yvi gvātg ZĒĵK w̄bgŋY Kītev? G w̄eltq mvgw̄RK w̄eÁvbx̄t̄i gtā w̄eZK̄ītq̄tQ | GK̄j mvgw̄RK w̄eÁvbx̄ gtb̄ K̄tib th, M̄tel Yvq̄ hvevi c̄tēZĒĵw̄bgŋY KītZ n̄te, Ges Ab̄j gtb̄ K̄tib th, M̄tel Yvj ä Áv̄tbi w̄f̄w̄ĒtZ ZĒĵw̄bgŋY KītZ n̄te | ŋw̄ gZĵK w̄KQlv̄ w̄e w̄wi Zfv̄te Av̄tj v̄Pbv̄ K̄ti t̄ Lv̄ hv̄K |

M̄tel Yvi c̄tēZĒĵ (Theory before Research): Avgiv̄ D̄tj Ē K̄tiw̄Q th, w̄KQz mvgw̄RK w̄eÁvbx̄ ītq̄tQb̄ hviv̄ gtb̄ K̄tib th, ZĒĵK Av̄tM Av̄tZ n̄te Ges M̄tel Yv̄ ZĒĵK Ab̄jni Y Kīte | Gw̄t̄K c̄l̄qkt, ZĒĵZvi ci-M̄tel Yv̄ t̄KŠkj (theory-then-research strategy) w̄nmv̄te Av̄L w̄qZ Kiv̄ nq | GB gZvgZw̄t̄K mētP̄tq̄ m̄jnsēx̄fv̄te w̄eKw̄kZ K̄tītQb̄ Karl Popper | Zvi ḡtZ, w̄eÁvbx̄m̄s̄Z Áv̄tbi `Z w̄eKvk N̄tU Ab̄gv̄vgj K avi Yvi w̄eKvk Ges Zvi ci AwfÁZvgj K M̄tel Yvi gvātg tm₂tj v̄tK LŪt̄bi c̄ŌP̄ovi gvātg | w̄Zwb̄ ZĒĵw̄bgŋY M̄tel Yvi w̄bq̄w̄Z Aēv̄b̄t̄K ĀŋKvi K̄tītQb̄ | w̄Zwb̄ gtb̄ K̄tib th, M̄tel Yv̄ K̄w̄Pr̄ bZb̄ ZĒĵi Rb̄t̄q Ges ZĒĵ MV̄t̄bi Rb̄ M̄tel Yv̄ KL̄t̄bv̄B GKw̄U th̄šw̄K c̄x̄w̄Z w̄nmv̄te Kv̄h̄Ki bq | GB t̄KŠkj w̄t̄K w̄KQzmi j x̄Ki Y Kītj t̄ Lv̄ hv̄q th, Gw̄U ch̄ŋq̄m̄gK c̄v̄Pw̄U av̄c Ab̄jni Y K̄ti :

- *c̄l̄tg*, GKw̄U m̄jw̄`Ō ZĒĵev̄ Av̄ k̄ŋMv̄b̄ Kiv̄ nq |
- *w̄ŌZix̄q av̄tc*, AwfÁZvgj K Ab̄jm̄Ūv̄t̄bi Rb̄ M̄w̄Z ZĒĵ ev̄ Av̄ k̄w̄i gā t̄t̄K GKw̄U c̄Ōveb̄v̄t̄K Av̄ni Y KītZ nq |
- *ZZix̄q av̄tc*, c̄Ōveb̄w̄t̄K cix̄ŋvi Rb̄ GKw̄U M̄tel Yv̄ c̄K̄i `Zvi KītZ nq |
- *PZl̄av̄tc*, hw̄ ZĒĵ t̄t̄K Av̄nwi Z c̄Ōveb̄w̄U AwfÁZvj ä Dcv̄Ē w̄tq̄ c̄Ēv̄L̄v̄Z nq, tm̄ t̄ŋt̄Ā, nq ZĒĵw̄t̄K, bZev̄ M̄tel Yv̄ c̄K̄i w̄t̄K m̄st̄kvab̄ KītZ nq |
- *c̄Āg av̄tc*, hw̄ c̄Ōveb̄w̄U c̄Ēv̄L̄v̄Z bv̄ nq, tm̄ t̄ŋt̄Ā cix̄ŋvi Rb̄ bZb̄ c̄Ōveb̄v̄ w̄bēP̄b̄ KītZ nq, ev̄ c̄ŌB dj̄vd̄t̄j i w̄f̄w̄ĒtZ ZĒĵi Av̄t̄iv̄ Dr̄Kl̄ŋm̄v̄at̄b̄ m̄t̄P̄ō n̄tZ nq |

ZĒĵi c̄tēM̄tel Yv̄ (Research before Theory): ZĒĵZvi ci-M̄tel Yv̄ t̄KŠkj i Ḡt̄Kev̄ti w̄ecix̄Z t̄gītZ Aēv̄b̄Kvix̄ mvgw̄RK w̄eÁvbx̄iv̄ M̄tel Yv̄-Zvi ci-ZĒĵ t̄KŠkj w̄U (research-then-theory strategy) Aēj̄m̄b̄ K̄tib | GB t̄KŠkj i c̄Āvb̄ c̄Ē³v̄ n̄t̄j b̄ Robert K. Merton | w̄Zwb̄ hv̄³ t̄Zv̄t̄j b̄ th, M̄tel Yv̄ ZĒĵi h̄v̄Zv̄ c̄ŋY I Ab̄K̄i cix̄ŋvi c̄t̄iv̄ŋ f̄w̄gKv̄B īaycv̄j b̄ K̄ti bv̄, Gw̄U ZĒĵMV̄t̄b̄ c̄Ēŋ f̄w̄gKv̄l̄ cv̄j b̄ K̄ti | M̄tel Yv̄ ZĒĵi w̄eKw̄kZ īfc̄ c̄Ōv̄t̄b̄ AšZt̄ Pvi w̄U Kv̄h̄m̄s̄úv̄`b̄ K̄ti | *c̄l̄gZt*, Gw̄U ZĒĵ MV̄t̄b̄ D̄t̄v̄M̄ M̄h̄Y K̄ti; *w̄ŌZix̄qZt*, Gw̄U ZĒĵK c̄p̄M̄w̄Z K̄ti; *ZZix̄qZt*, Gw̄U ZĒĵK w̄ef̄b̄ḡL̄x̄ K̄ti t̄Zv̄t̄j; Ges *PZl̄Zt*, Gw̄U ZĒĵK t̄kvab̄ K̄ti | AwfÁZvgj K M̄tel Yv̄ ZĒĵi Rb̄ bZb̄ m̄gm̄vi w̄K w̄t̄`R̄ K̄ti, bZb̄ Zv̄w̄ĒK c̄p̄M̄v̄b̄ ev̄ m̄f̄ex̄Ki Ȳt̄K Av̄nev̄b̄ K̄ti, Ges h̄v̄Zv̄ c̄ŋYi Kv̄h̄m̄s̄úv̄`b̄ K̄ti | M̄tel Yv̄-Zvi ci-ZĒĵ t̄KŠkj w̄U w̄bḡŋ w̄LZ Pvi w̄U av̄c Ab̄jni Y K̄ti |

- *c̄l̄g av̄tc*, GKw̄U c̄ĒĀt̄K Ab̄jm̄Ūv̄t̄bi gvātg Zvi `enk̄ó`₂tj v̄tK eYŌv̄ K̄ti |
- *w̄ŌZix̄q av̄tc*, w̄ef̄b̄oc̄wi w̄w̄Zt̄Z w̄P̄w̄yZ `enk̄ó`₂tj v̄tK cwi gvc̄ K̄ti |
- *ZZix̄q av̄tc*, m̄s̄úv̄t̄K̄P̄ īfc̄₂tj vi gtā t̄Kvb̄ m̄jnsēx̄ w̄f̄b̄z̄v̄ ītq̄tQ w̄Kbv̄ Zv̄ w̄b̄Ȳŋi Rb̄ c̄ŌB Dcv̄ĒK̄ w̄et̄k̄w̄Y K̄ti |
- *PZl̄av̄tc*, hLb̄ m̄jnsēx̄ īfc̄₂tj v̄ Aw̄ēZ̄ n̄tq̄ hv̄q, ZLb̄ GKw̄U ZĒĵM̄w̄Z nq | tm̄B ZĒĵ t̄t̄K m̄² th t̄Kvb̄ aīt̄Yi n̄tZ c̄v̄i |

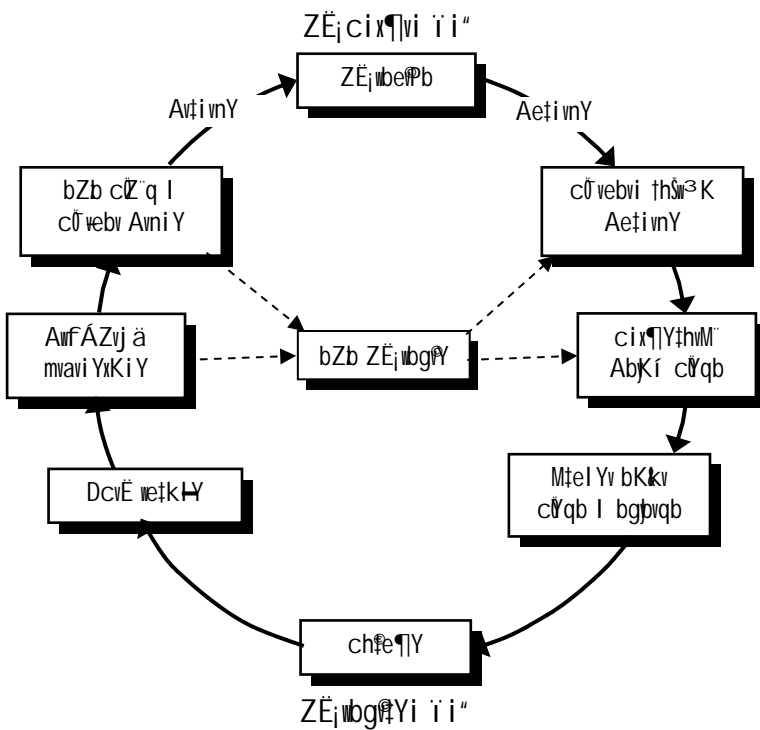
Dcwi vj w-Z weZtK®GkUJ welq my`úo ntqtQ th, Dfq tKŠkj B ZĚtK weÁvbi AMMhzi cKvk wnmvte MY` Kti tQb| wDawU itqtQ tKej gvĭ Mtel Yv cĭuqvq ZtĚi Ae`vbuU tKv_vq nte Zv wbtq| Mtel Yv cwi Pvj bvq G`ŃU cĭwŠK weZtK® tKvbuU tKB AUfvte MhY Kievi tKvb cĭqvRb tbB| Kvi Y, GB weZK®_vKv mtĚj| mvgvRK weÁvb Zvi Avcb MvZtZ weKvkZ ntqtQ Ges`ŃU tKŠktj i AaxtbB wevfbe`eÁvbK KgRvŪ cwi Pvj Z ntqtQ| Dci Š,`ŃU tKŠktj i gta`ecixZ`wU hZUv br ev`e Zvi tPtq tekx AvcvZ`wóZ cĭZqgvb| cKZctŃ, ZĚi I Mtel Yv cĭZwbqZ wq_w`Ńvi ga`w`tq Ávtbi wevfbaKvLvK weKvkZ Kti Ptj tQ|

Dfq tKŠkj B ZĚtK weÁvbi AMMhzi cKvk wnmvte MY` Kti tQb| wDawU itqtQ tKej gvĭ Mtel Yv cĭuqvq ZtĚi Ae`vbuU tKv_vq nte Zv wbtq| ... ZĚi I Mtel Yv cĭZwbqZ wq_w`Ńvi ga`w`tq Ávtbi wevfbaKvLvK weKvkZ Kti Ptj tQ|

ZĚi I Mtel Yvi cvi`úwi K m`úK® (Interrelationship between Theory and Research)

ZĚi Ges Mtel Yv GtK Acti i Dci wbfPkvj Ges GtK Acti i mvĭ_ I ZtcŪZfvte RwoZ| tğšvj K ce`avi Yv I bwiZ-wb`Rbv cĭvĭbi gva`tg ZĚi Mtel Yv tK c_ cĭkŃ Kti | Ab`w`tK, Mtel Yv ZĚi cĭZŃv, m`fexKiY, cYMPb I mstkvaŭbi c`wZ I tKŠkj cĭvb Kti | ZĚi I Mtel Yvi GB ci`úi wbfPkvj m`úK® Aetivn I Avtinv hv`i gva`tg GKUJ eĚveZ`%Zwi Kti, hv wPĭ 4.1.1-G Dc`vcb Kiv ntj v|

tğšvj K ce`avi Yv I bwiZ-wb`Rbv cĭvĭbi gva`tg ZĚi Mtel Yv tK c_ cĭkŃ Kti | Ab`w`tK, Mtel Yv ZĚi cĭZŃv, m`fexKiY, cYMPb I mstkvaŭbi c`wZ I tKŠkj cĭvb Kti |



wPĭ 4.1.1: ZĚi I Mtel Yvi cvi`úwi K m`úK®

ZĚi I Mtel Yvi eĚvetZP wPĭwU chĚŃY Kiti t`Lv hvq th, Mtel Yvi gva`tg ZtĚi cixŃv Ges ZĚi wbgŃY`ŃU Dti k`B mvab Kiv hvq| ZĚi cixŃvi tŃtĭ Aetivnx hv`i bwiZgvj vtK AbvniY Kiv nq| Aetivnxgj K Mtel Yvi`i` nq GKUJ ZĚi wbePb Kti tmB ZĚi t`tK thŠr`Kfvte KZ`_tjv cĭvebv Avni tYi gva`tg| tmB cĭvebv`_tjv t`tK tK>`xq cĭ`q`_tjv vtK wPvYZ Kti cĭvb Pj K`_tjvi wfvĚZ KZ`_tjv cixŃv thvM` AbKí wbgŃY KitiZ nq| GB AbKí`_tjvB Mtel K wK ai tYi DcvĚ mS Mh Kiteb Zv wbaŃY Kti | AbKí`_tjvi mZ`Zv cĭvĭYi Rb` AvfÁZvgj K chĚŃYi gva`tg DcvĚ mS Mh Kiv nq|

Aetivnxgj K Mtel Yvi`i` nq GKUJ ZĚi wbePb Kti tmB ZĚi t`tK thŠr`Kfvte KZ`_tjv cĭvebv Avni tYi gva`tg|

Avtinvx Mtel Yvq cŁ'ŋ
AwfAZij ä chŋŋiYi
gva'ŋg cŁB DcvĒ t_ŋK
Dcmsnvi Ulvb nq|

Ab'w'ŋK, Avtinvx Mtel Yvq cŁ'ŋ AwfAZij ä chŋŋiYi gva'ŋg cŁB DcvĒ t_ŋK Dcmsnvi Ulvb nq| GB Dcmsnvi ,ŋjvi Dci wfwĒ Kŋi KZ ,ŋjv mvaviYxKiY Kŋi ŋmB mvaviYxKiY ,ŋjvŋK cŋivq cixŋŋv Kiv nq| hw' mvaviYxKiY ,ŋjv cŋtčŲZwŲZ nq, Zŋe ŋm ,ŋjvi gva'ŋg ZĒj wbgŋŋYi Dŋ'ŋM MŋŋY Kiv nq| Avtinvx Mtel Yv Abŋŋi Ųvni wbgŋŋZ ,vŋK bv| MtelK Zvi DcvĒĒi gŋa' GK aiŋYi mvaviY ifc chŋŋŋY Kivi tPŲv Kŋib| Pj K ,ŋjvi gŋa' mŋuŋKŲ wfwĒĒZ ŋmB mvaviY ifc ,ŋjv cŲZwŲZ nq| Zŋe GwU gŋb ivLv cŲqvRb th, me MtelK Ges me Mtel Yvi Dŋŋ'k' ZĒj wbgŋŋY bq| eŲ cŲwZwĒvĒv Ges MtelŋKi PŲvŲ-AvKvŲŋwU nŋjv Mtel Yvi gva'ŋg Ggb wKŲdj vdŋj | Rbŋŋ'ŋ' qv, hv nq GKwU ZĒŋK, ev ŋmB ZŋĒji Aaxb' -cŲvebv ,ŋjvŋK, ev ŋmB cŲvebv t_ŋK Avnii Z Abŋŋi ,ŋjvŋK mg'Ų Kŋi | AŋbK MtelK iŋŋŋŲb, hv'ŋ' i KivŲ ^eĒwŲK Mtel Yvi wewfbŋK gŋvŋŋŲi gŋa' ZĒj wbgŋŋYi wŋl qwU Lŋ Kg ,i "ZŲY'GKwU Dcv' vb | G Ųvov, me aiŋYi Mtel Yv ZĒj wbgŋŋYi Rb' cŲqvRbxq kZ'cŲiY Kŋi bv Ges ŋm Dŋŋ'ŋk' cwi Pwŋj ZI nq bv | thgb, eŲ 'Ųev'x MtelK Zvŋ' i Mtel YvŋK ZĒj wbgŋŋYi cwi eŋZ'ŲeYŲv I ŋk'Yxŋe xKiŋYi j ŋŋ' cwi Pwŋj Z KiŋZ cŲ' Kŋib | Ab' 'Ųev'x'iv ZŋĒji cwi eŋZ'Av' k'Ųifc (paradigm) wŋŋŋ Avŋj vPbv KiŋZ cŲ' Kŋib | cwi ŋŋŋŋ ej v hvq th, mvgwŋRK wĒvĒvĒv ZĒj t_ŋK chŋŋŋiYi Aŋŋivn x c_ aŋi ZĒj cŲvŋŋYi Rb' cixŋŋv Kŋib Ges chŋŋŋY t_ŋK mvaviYxKiŋYi Avtinvx c_ aŋi ZĒj wbgŋŋYi Rb' mŋPŲ nb | ZĒj cixŋŋvi Rb' cŲwqwu 'i' nq ZĒj t_ŋK Ges ZĒj wbgŋŋYi Rb' cŲwqwu 'i' nq chŋŋŋY t_ŋK | ŋwU cŲwqvi gŋa'B Mtel Yv cŲwqwu mŋu'Ų |

mvgwŋRK wĒvĒvĒv ZĒj t_ŋK
chŋŋŋiYi Aŋŋivn x c_ aŋi
ZĒj cŲvŋŋYi Rb' cixŋŋv
Kŋib Ges chŋŋŋY t_ŋK
mvaviYxKiŋYi Avtinvx c_
aŋi ZĒj wbgŋŋYi Rb' mŋPŲ
nb |

mvivsk

mvaviYfvŋe Mtel Yv ej ŋZ Z_ msMŋh Kŋi eYŲv KivŋKB Avgiv eŋS _wŋK | wKŲ' ev'ŋe Mtel Yvq Z_ msMŋh ZŋĒji GKwU wewU fŋgKv iŋŋŋŲ | eZŲv cŲv Mtel Yvq ZŋĒji fŋgKv wŋŋŋ Avŋj vPbv Kiv nŋŋŋŲ | Avŋj vPbvq Avgiv t'ŋLwŲ chŋŋŋY t_ŋK ZĒj wbgŋŋYi cŲwqwu 'i' nq, Avevi ZŋĒji h_v'Ųv cixŋŋv wŋixŋŋvi Rb' Mtel Yvi cŲqvRb | Ab'K_vq, ZĒj I Mtel Yv AŲwŋŋKfvŋe RwŲZ |

cvfVvEi gj`vqb

`be⁹³K cke

mVK DĒti i cvfk WJ (√) wPý w` b –

1| _____ etj tQb th, mgvRweÁvxi v ZĒj wlog⁹Y wbtRt`i e`-ivLtj I ZĒj
wK G wcl tq K` wPr cwi`vi fvtē wKQzetj tQb|

- K. Kvj ⁹gvK⁹
- L. AMvó tKur
- M. RR⁹nvgvb⁹n
- N. Gwvj Wj tLBg

2| Av`k⁹(gtWj) ntj v:

- K. Z` Dc`vc⁹bi nwiZqvi
- L. ZĒj`Zwi i nwiZqvi
- M. Z` I ZĒj⁹K e`vL`v Kivi nwiZqvi
- N. e`vL`v I fweL`⁹vYxKi tYi nwiZqvi |

3| AwfÁZvj ä ch⁹e⁹tYi gva`tg c⁹B DcivE t`tK Dcmsv⁹ti DcwbZ nI qvtK ej v nq:

- K. Av⁹i vnx M⁹el Yv
- L. Ae⁹i vnx M⁹el Yv
- M. eY⁹v⁹gvj K M⁹el Yv
- N. e`vL`v⁹gvj K M⁹el Yv|

msv⁹tB cke

- 1| ZĒj wK?
- 2| Av`k⁹wK?

iPbv⁹gvj K cke

- 1| ZĒj wK? ZtĒj c⁹Kvi t⁹f` mg⁹n Av⁹tj vPbv Ki`b?
- 2| mvgv⁹RK M⁹el Yvq ZtĒj f⁹vgKv Av⁹tj vPbv Ki`b?
- 3| ZĒj I M⁹el Yvi cvi`úwi K m⁹úK⁹Av⁹tj vPbv Ki`b?

cZ`q I Pj K
Concepts and Variables

GB cW tkłI hv Rvbn hvte —

- cZ`q wK
- aviYv I cZ`q
- cZ`tqi Kvhfej x
- Pj K wK
- Pj Kmgfni gta` m=utKp wevfbei fc

cZ`q wK (What is Concept)?

MtelYvi Rb` GKwU ZEj wPwYz Kti Ges MtelYvi tKSkj wbafl Y Kivi ci tKD gtb KitZ cvtib th, DcvE msMh Kti Zvi cixflv KivB ntjv cieZxKvR| wKs` ZEj wPwYz Kiv Ges DcvE msMh Kivi ga`eZp chflq Avtiv wKQz KgRvU itqtQ hv ZEj I DcvEtk mgwSZ Kivi Rb` wetkl fvtē i`Zcyfl thgb, ZtEj AšfP cZ`q,tjvtK wPwYz Kti tm,tjvtK ZEMZ I KvhRi fvtē msAwqZ KitZ ntel cZ`q,tjvtK mwKfvte wPwYz I msAwqZ bv Kitj tm,tjvi AšfP Pj K I mPK,tjvtK wPwYz Kiv hvte bv| ZEj Pj K I mPK,tjvi wfvEzB DcvE msMhni nwiZqvi wbgfl Ges AbKí Mvb m=ē nq etj G,tjv wPwYz Kiv Ges msAwqZ Kiv wetkl fvtē i`Zcyfl Avtivnx c=uztZ ZEj wbgflYi tfltl I cZ`qtK msAwqZ Kivi welqul mgvfvte i`Zcyfl AZGe, Avgvt` i Rvbn cqlqvRb th, cZ`q wK? cZ`q wK wK Kvhm=uv`b Kti? cZ`q I Pj tki gta` m=utKwK?

Avgvt` i cZw` tbi chflflYi gta` mewKQB tkvb e`ev welqtK wbi ¼kfvte cZw`waZ; Kti bv| AtbK chflflY itqtQ th,tjvi gta` wKQz wltqi mgifczv itqtQ| GKwU GKK chflflYi wltqi Zj bvq chflflYi GB mgifczvi mgwó th tkvb welqtK Awakzi mvaviY Kti tZvtj | GB mvaviY ifcwU GK chflq Avše³K thwMvthwM cZw`ov ev fvtēi Av`vb c0vte tek DcthwMx ntq cto| Avgiv GB mvaviY ifcwUtk GKwU bvtg bvgwqZ Kti _wK| tmB bvg,tjvB GK GKwU c` ev cZ`q wmwte cwipZ nq| A_w, GKwU mvaviY wktivbvtgi Aaxtb tek wKQz msL`K NubvtK AwzKtiYi gva`tg G aitYi mgifczvi wegZflbtK cZ`q wmwte wPwYz Kiv nq |

*cZ`q ntjv GK aitYi
wegZflbt hv Avgvt` i wPst` I
AwfAZvtK wbgšy`thwM`
GKwU gvbwmK cZ`QwetZ
msMwZ KitZ mrvh` Kti |*

mvaviYfvte, cZ`q ntjv GK aitYi c` hv tkvb NUbv, cwiv`wZ, tMvóx I e`w³tk wbt`R Kti | cZ`q,tjv m=utK^o-vctbi Rb` GKwU AciwUj mvt`_hy³ nq | thgb, hLb Avgiv ewj th, `wi`^gvy| abxt` i tPtq tekx wbi vkvev`x nq, ZLb 0`wi`0 I 0abx0 c``flwU gva`tg`flwU wfbemvgwRK tMvóxK tevSvtbv nq Ges 0bivkvev`x0 c`wU w`tq GKwU gvbwmK Ae`vtK tevSvtbv nq| GB wZbwU c`tk GKwU m=utKp gta` hy³ Kti `flwU mgwRK tMvóx gta` GKwU Zj bvgj`K Ae`vi eY³v Kiv ntqtQ| Ab` K_vq, cZ`q ntjv GK aitYi wegZflbt hv Avgvt` i wPst` I AwfAZvtK wbgšy`thwM` GKwU gvbwmK cZ`QwetZ msMwZ KitZ mrvh` Kti | GwU gtb ivLv c0qvRb th, wevfbe cZ`q Zvt`i m=Zv, cwivwa, `úóZv Ges MhYthwM`Zvi wfvEzZ wfbzv c0k0 Kti | mgwRK tMvóx, wq_w³flv, cZw`ovb, m=c0vq, mgwRK gh³v, tkYx, cwivvi, BZ`w` ntjv G aitYi cZ`tqi wKQzD`vniY |

avi Yv I cĹ`q (Conception and Concept)

gube cRwZi GKU Abb` `enkó` ntjv th, gvbj tKvb melqtK i ayAbfFeB Kti bv, eis tm Zvi Bw` tMvn` AwfÁZvtK eYBv Ges e`vL`vl Kti | AwfÁZvi GB eYBvq gvbj wKQz cĹ`xK e`envi Kti hv thvMvthvMvi gva`g wnmvte wPwYz nq | GB cĹ`xK, tjvi e`envt`ii gta` wfbzvi Kvi tY thvMvthvMi gta` m`Zvi cv`R` NtU | dtj, ep`ewEK ctvrtmi gva`tg gvbj Avtbi, YMZ gvfbvq`tbi jt`q | cĹ`wqZKittYi m`Zv ep`xi Rb` m`Pó nq | AwfÁZvj ä cĹ`tÁi cĹ`ZwbaZKvix cĹ`xtKi µge`x`gub Dbq`tbi Rb` weÁvb mZKZvi mvt`_ GB KvRuUB Kti |

th tKvb melq m`útK`Avgvt`i gtb th gvbmK cĹ`Z`Qwe tftm Dtv tm mKj gvbmK cĹ`Z`QmetK avi Yv (conception) ejv nq | GB avi Yv, tjvtK Avgiv weifboc` w` t`q tevSvtbvi tPóv Kti _vntK | wKŠ`G mKj ct`i gva`tg Avgiv hv tevSvtZ Piv Zv gvbj mntR eStZ cvti bv | Kvi Y, G mKj avi Yv GtKK Rtbi gtb GtKKfvte cĹ`Zwe`Z ntq _vtK | G mKj avi Yvi wKQy nq ev`em`SZ Ges Ab`_tjv bq | GB avi Yv, tjv A`^Q Ges 0t0 cwi cY` dtj GKRTbi gtb avi Yv Atb`i gtb miwmi Qvc tdtj bv | Zte G mKj avi Yvi gta` wKQy wKQy Astki wj _vtK | Avgiv GB wj cvl qv Ask, tjv wbtq GKU c` tK tevSvtbvi Rb` KvRi HKgtZ`i (working agreement) gva`tg GKU MhYthvM` A`_Avtvc Kti _vntK | GKU ct`i A`_ wK ntZ cvti Zvi KvRi HKgz` cĹ`Zóvi cĹ`µqv`K cĹ`wqKiY (conceptualization) etj |

th tKvb melq m`útK`
Avgvt`i gtb th gvbmK
cĹ`Z`Qwe tftm Dtv tm mKj
gvbmK cĹ`Z`QmetK avi Yv
ejv nq |

Avgiv Avgvt`i wPšvi thšw`KZwU cĹ`Kv Kwi fvlvi gva`tg | Avi GB fvlv ntjv Avše`K thvMvthvM cĹ`Zóv ev fvtei Av`vb cĹ`vtbi GKU cĹ`µqv, hv KZ, tjv cĹ`xK Ges tmB cĹ`xK, tjvi eúgw`K mšwgkYm`SZ e`envt`ii weiam`SZ wbgvejxi mg`tq MwZ | weÁvbm`SZ MtelYvi mvt`_ m`úwKZ fvlvi Ab`Zg Zvrch`Y`cĹ`xKwU ntjv 0cĹ`q0 | AwfÁZvj ä cĹ`_extK eYBvi Rb` cĹ``q MVtbi gva`tg weÁvbxiv MtelYv cĹ`µqv i i` Ktib | AtbK, tjv NUBvtK GKU mavi Y wktivbvrtgi Aaxtb Dc`vctbi gva`tg wPšvi cĹ`µqv`K mnR KivB Gi Df`k | cĹ`ZwU weÁvtbi wR`wKQycĹ`q itqtQ | G, tjv weÁvbx`i tckwMZ fvlv MVb Kti Ges Zvt`i Z`_tK enb l tcl`Yi KvR e`eüZ nq | wKQycĹ`q itqtQ th, tjv cĹ`ZwbaZKvix e`_ev Zt`_i Lp` KivQvKwU nq | thgb, 0gvbj 0 cĹ`qW w` t`q GKRB gvbj tK t`Lv`bv ev tevSvtbv Lp` mnR nq | tKbbv, gvbj bvtgi `k`gvb e`wU mntRB t`Lv hvq | gvbj i th `enkó`_tjv w` t`q GB cĹ`qW wbgv` Kiv ntqtQ Zv mntRB chf`Y`thvM` | wKŠ` wKQycĹ`q itqtQ hv Lp` mntRB tevSvtbv ev t`Lv`bv m`e ntq Dtv bv | thgb, ivR`wZK `wofwz, wnsmv, gh`v, b`vq wePvi, cĹ`vkv, wet0l, MYZš, tkYx 000, BZ`w` ntjv G aitYi wKQycĹ`q | G mKj cĹ`qtK weifbomP`Ki gva`tg ctiv`fvte chf`Y`Y Kiv hvq |

weÁvbm`SZ MtelYvi mvt`_
m`úwKZ fvlvi Ab`Zg
Zvrch`Y`cĹ`xKwU ntjv
0cĹ`q0 |

Zte GwU gtb ivLv cĹ`qvRb th, cĹ`q cĹ`Zct`q AwfÁZvj ä cĹ`Á wnmvte Aw`Zgvb bq, tm, tjv eis ev`te `k`gvb cĹ`tÁi cĹ`xK | Ab` K_vq, cĹ`q GKU wegZ` avi Yv, hv GKU e`_ev tmB e`_i tKvb `enkó`, ev tKvb AvPiYMZ cĹ`tÁi (phenomenon) cĹ`ZwbaZKvix ifc | GKU cĹ`q ntjv KZ, tjv avi Yvi cwi evi | GK GKU cĹ`q ntjv GK GKU wbgv, hv KLt`vb cĹ``q ev ctiv`fvte t`Lv hvq bv | Kvi Y, tm, tjv Av`Zi tbB, Avgiv tm, tjvtK `Zwi Kwi | thgb, 0tkYx0 cĹ`qW i tKvb `k`gvb Aw`Zi tbB, Avgiv tkYx Kvvtgv`K wbgv` Kwi | GB cĹ`q, tjvi mvt`_ chf`Y`thvM` `enkó`i `t`Zi hZ evote, cĹ`q, tjv m`útK`fj tevSvi AeKvK ZZ evote | cvkvcwK, G, tjvi AmZK`e`envt`i gv`vl ZZ ep`x crte | tm Kvi tY, ZZteKx cĹ`qvRb cote mwK cwi gv`ci |

cĹ`q GKU wegZ`avi Yv, hv
GKU e`_ev tmB e`_i tKvb
`enkó`, ev tKvb AvPiYMZ
cĹ`tÁi cĹ`ZwbaZKvix ifc |

cĹ`tqi Kvĥej x (Functions of Concepts)

mvgnRK weÁvĥi MtelYvq cĹ`q wKQz „ZcY©Kvĥmáuv`b Kti | cĹ`gZt, cĹ`q ntjv thvMvthvM cĹ`Zóvi wfvĚ | weÁvĥt`i gta` HKgtZ`i wfvĚtZ meRb`xKZ cĹ`q Qvov AvšFveMZ thvMvthvM cĹ`Zóv Kiv máe nq bv | cĹ`q B`xqMZ cĹ`Zmuvq t`tK Rb`tbq Ges cĹ`B avi YvĥK mveRbxbfvte máviY Kti | Avgiv Rmb th, cĹ`q cKZctĦ AwfÁZvj ä cĹ`Á wnmvte Aw`Zgvb `vtK bv | cĹ`q cĹ`Á bq, eis G`tjv cĹ`Ái cĹ`xK | wZxqZt, cĹ`q GK aiĥYi `wofwĥK cwiwPZ Kti, hv AwfÁZvj ä cĹ`ÁtK t`Levi w`K wbt`R Kti | cĹ`q weÁvĥtK ev`ezvi wKQz AskĥK máumKZ KiĥZ Ges Gi mvariY `Yvej x cĹ`vĥb mnvqZv Kti | ZZxqZt, cĹ`q mvariYxKiY I tkYxexKiĥYi Dcvq wnmvte KvR Kti | weÁvĥiv cĹ`tqi gva`tg Zv`i AwfÁZv I chĥeĦYĥK tkYxex Ktiĥ, KvVtgvex Ktiĥ, μgvbmvĥi mVrbv Ges mvariYxKiY Ktiĥ | cĹ`ZmU cĹ`Á Zvi ev`ezvq Abb` | ZvB tKvb cĹ`ÁB cwi cY© cYZvq cĹ`wKZ nq bv | weÁvĥ mvariYxKiY KiĥZ wĥq tmB Abb` `enkó`ĥ AeÁv Ktiĥ | GB cĹ`qvRbxq gj`UKz weÁvĥtK w`tZ nq wegZ©mvariYxKiYĥK ARĥbi Rb` | tKbbv, cĹ`wqKiĥYi A`ntjv wKQz gvĥvq mvariYxKiY, Avi mvariYxKiĥYi A`ntjv wKQz wĥqtK GKBiĥc atĥ wbtq wKQz wĥqtK eRĥ | thgb, Avgiv GKw eĥbi gta` weifbæĥĦi `ZšĥK AeÁv Kti mKj eĦĥK GKw mvariY bĥq AvL`wqZ Kwĥ Ges tmB eĦĦi vRxi mgšĥq GKw ebĥK Dcj wä Kwĥ | PZĥZt, cĹ`q Zĥĥi Dcv`vb wnmvte KvR Kti Ges evL`v I fweL`vYĥK mnRZi Kti |

Pj K wK (What is Variable)?

Avgiv Rmb th, GKw MtelYv mgm`v KZ`tjv cĹ`q w`tq eYĥv Kiv nq | Avgiv GI Rmb th, cĹ`q AwfÁZvj ä cĹ`Ái wĥwKZ wegZ©iĥĥK cĹ`ZmvaZj Kti | cĹ`qMZ gvĥv t`tK AwfÁZvgj K gvĥvq Ae`všĥ KiĥZ ntj cĹ`qtK Pj tK iĥcvšĥ KiĥZ nq | cĹ`ZctĦ, GB Pj K`tjvB cĹ`qtK cĹ`Zdij Z Kti Ges AbKĥi i gta` Dc`wcz nq | cĹ`qtK wKQz gvb eLĥbi gva`tg Pj tK iĥcvšĥ Kiv nq | thgb, tKvb e`i Dci mSL`v gvb eivĥi i gva`tg wKQz e`ĥK gvb eLĥb Kti mSL`vq cwiYZ Kiv nq | mnRfvte ejv hvq th, GKw Pj K ntjv GKw AwfÁZvgj K `enkó`, hv `ĥ ev ZtZwaK gvb MĥY Kti | hv` GKw `enkó`i gvĥbi gta` cwi eZĥ NĥU Zte tmB `enkó`ĥ Pj K etj | mvgnRK tkYĥK Pj K etj MY` Kiv nq G Rb` th, GB `enkó`ĥ AšZ cvĥw gvĥbi gva`tg Avj`v v Kiv hvq | thgb, wbgweĚ, wbgæga`weĚ, ga`weĚ, D`P ga`weĚ Ges D`P tkYx | th Pj tKi `i agvĥ `wU gvb `vtK ZvĥK wĥc`x Pj K etj | thgb, wj ½ ntjv GKw wĥc`x Pj K | KviY, Gwĥi KgctĦ `wU gvb iĥqtQ N bvi x I cĥ`I | Pj tKi cĹ`wZĥK tevSvi Rb` weifbæPj tKi gta` cv`R`ĥK tevSv cĹ`qvRb |

Awev`Qbæĥ weiv`QbæPj K (Discrete and Continuous Variables): Pj tKi Ab`Zg `enkó` ntjv tm`tjvi Awev`Qbæev weiv`QbæZvi cĹ`wZ | GB `enkó` MtelYv KgRvĥŮi gta` cwi gvc c`xwZ, DcvĚ weĥKĥ Ges mvariYxKiYĥK cĥveZ Kti | GKw Awev`QbæPj tKi tKvb me`wbgæ AvKvĥi i GKK tĥB | thgb, GKw weĥK e` 10 BwĀ `xN`ntZ cvĥi, tmwU 10.5 BwĀ ntZ cvĥi, Avevi tmB e`wU 10.5432851 BwĀ `xN`P ntZ cvĥi | Ab`w`ĥK, weiv`QbæPj tKi GKw me`wbgæAvKvĥi i GKK iĥqtQ | thgb, GKw cwi evĥi i AvKvi 5 m`m`weikó ntZ cvĥi, wKš` KLĥbv 5.3 m`m`weikó ntZ cvĥi bv | ev`vĥK Mw`OZ At`P cwi gvY GKw weiv`QbæPj tKi D`vniY ntZ cvĥi, tKb bv gj`ĥi me`wbgæAvKvĥi i GKK iĥqtQ | GKRb e`vsk t`ĥK 50 UvKv ev 50.5 ev 50.52 UvKv Zj tZ cvĥiĥ, wKš` KLbB 50.52743 UvKv Zj tZ cvĥiĥ bv | KviY, gj`ĥi me`wbgæGKK ntjv `kwĥtKi ci `ĥ GKĥKi fMusK |

wbffpkj I vaxb Pj K (Dependent and Independent Variables): Mtel K th Pj KtK eVLv KiTZ Pvb tmB Pj KtK wbffpkj Pj K etj Ges th Pj K wbffpkj Pj KtK eVLv Kti tmB Pj KtK vaxb Pj K etj | wbffpkj Pj KtK AtbK mgq gvb`U Pj K (criterion variable) Ges vaxb Pj KtK eVLvKvix Pj K (explanatory variable) ejv ntq vK | MwYZxK Awfe`w³ Abjvqx, wbffpkj Pj K memgq mgxKiYi evg w`tk Ae`vb Kti | thgb, Avgiv hw` GKwU wbffpkj Pj KtK y Ges vaxb Pj KtK x w`tq wPwyZ Kw, Zte mgxKiYi ifcwU`vovte wbgjfc:

$$y = f(x)$$

A_ŕ, y ntjv x Gi KvñKviYi dj |

GKwU D`vniY t`qv hvK | aiv hvK, GKRB mvgwRK Mtel K tKb wKQz gvb | Awak cwi gvTY ivRbxwZtZ AskMhY Kti Ges Ab`iv Kti bv G wcl qwUtk eVLv KiTZ Pvb | mvgwRK t`vqb ZtEj wfvEtZ Mtel K Abgyb KiTZ cvtib th, GKRB gvbtl i mvgwRK ghP v hZ tekx nte tmB gvb | ZZtekx ivRbxwZtZ AskMhY Kiteb | G t`tt, ivR%bwZK AskMhYtK mvgwRK tkYx Ae`vbi djvdj wnmvte Abgyb Kiv ntqtQ | wclixZfvte ejv hvq th, mvgwRK tkYx Ae`vbtk ivR%bwZK AskMhYi KviY wnmvte Abgyb Kiv ntqtQ | AZGe, ivR%bwZK AskMhY ntjv wbffpkj Pj K Ges mvgwRK tkYx ntjv vaxb Pj K |

GwU gtb ivLv cQvRb th, wbffpkj I vaxb Pj tKi gta`Kvi cv`R`wU wefkYagrGes tKej gvT Mtel Yvi Dtl tk`i mvt_ m`umKZ | cKZ ev`eZvq tKvb Pj KB vaxb ev wbffpkj bq | Mtel K Zvi Mtel Yvi Dtl tk`i wfvEtZ wmvš`-tbb th vZwb tm`_tj vtK wKfvte chfey Ki tbe | GKwU AbmUvbi vaxb Pj K Ab` AbmUvbi wbffpkj Pj K ntZ cvti | thgb, Avgv`i D`vniY Abjvqx ivR%bwZK AskMhYtK wbffpkj Pj K Ges Gi wfbzvi KviY wnmvte mvgwRK tkYxK vaxb Pj K wnmvte MY` Kiv ntqtQ | wKš` hw` GKRB Mtel K mvgwRK tkYx Ae`vbi wfbzvtK eVLv KiTZ Pvb, Zte tm t`tt mvgwRK tkYx Ae`vb wbffpkj Pj tK cwiYZ nq | GB wfbzvtK eVLv Kievi Rb` Ab` GKwU Pj KtK vaxb Pj K wnmvte Abgyb Kiv nq | G t`tt, wKvMZ thvM`Zv tm iKg GKwU vaxb Pj K etj AbjgZ ntZ cvti |

G Qovl mvgwRK weAvbi Mtel Yvq Avtiv GKwU wclq gtb ivLv cQvRb | tmwU ntjv, Awakvsk mvgwRK cčA GtKi Awak Pj tKi djvdj wnmvte gj`vqb Kiv nq | KviY, GKwU gvT Pj tKi gva`tg tKvb cčA`K eVLv Kiti Zv w`tq wbffpkj Pj tKi gta`Kvi wfbzvi Lp Kg AskB eVLv Kiv m`e | hLb ivR%bwZK AskMhYi wfbzvtK tKej gvT mvgwRK tkYx Ae`vb w`tq eVLv Kiv nq, ZLb tmB eVLwU Am`uY`nq | KviY, tkYx Ae`vb Qovl Avtiv AtbK Pj K itqtQ hv ivR%bwZK AskMhYi wfbzvi Rb` `vqx ntZ cvti | G mKj Pj tKi gta` eqm, wj ½, ivRbxwZtZ AvMh, ivR%bwZK `ttZv, BZ`w` i K_v Dtg L`Kiv thtZ cvti |

wbqšK Pj K (Control Variables): AwfAZvgj K Mtel Yvq wbqšK Pj tKi KvRwU ntjv vaxb Pj tKi Oviv wbffpkj Pj tKi gta` cv`R` NUvbi Rb` `vqx bq Ggb Pj tKi eVLvvgj K ttgZv Avtivci SmK nvm Kiv | wbffpkj I vaxb Pj tKi gta` GKwU AwfAZvgj Kfvte chfeyKZ tgmK m`utKp (spurious relation) m`ebvtK cixtt Kivi Rb` wbqšK Pj KtK e`envi Kiv nq | tgmK m`uK`ntjv GK aiYi m`uK`hv vaxb Pj K Qovl Ab`vb` Pj K w`tq eVLv Kiv hvq | Ab` K_vq, mKj cčmU`K Pj tKi cfvteK w`wKZ Kivi cil hw` wbffpkj I vaxb Pj tKi gta`Kvi m`uKwU cčwKZ nq, Zte ejv hvte th,

Mtel K th Pj KtK eVLv KiTZ Pvb tmB Pj KtK wbffpkj Pj K etj Ges th Pj K wbffpkj Pj KtK eVLv Kti tmB Pj KtK vaxb Pj K etj |

wbffpkj I vaxb Pj tKi gta`Kvi cv`R`wU wefkYagrGes tKej gvT Mtel Yvi Dtl tk`i mvt_ m`umKZ | cKZ ev`eZvq tKvb Pj KB vaxb ev wbffpkj bq |

AwfAZvgj K Mtel Yvq wbqšK Pj tKi KvRwU ntjv vaxb Pj tKi Oviv wbffpkj Pj tKi gta` cv`R` NUvbi Rb` `vqx bq Ggb Pj tKi eVLvvgj K ttgZv Avtivci SmK nvm Kiv |

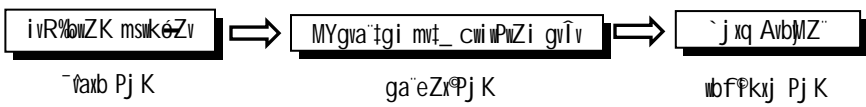
máúK@ú tgmK bq| aiv hvK, ivR%ówZK `k@ I miKvix e`tqi gta` GKúU máúK`chfēY Kiv wMqtQ| GLb c@kēntjv th, miKvix e`tqi cwigvY (wbfPkj Pj K) wK ivR%ówZK `k@bi (vaxb Pj K) Úviv wba@i Z? AvcvZt` w@tZ nqtZv ZvB| wKŠ GKRb MtelK hLb A_ówZK DbqbtK wqSjK Pj K wnmvte cixYv Ki tjb, ZLb wZwb t` Ltjb th, ivR%ówZK `k@ I miKvix e`tqi gta`Kvi máúK@ú Dte tMtQ| G tYtT, ivR%ówZK `k@ I miKvix e`tqi gta`Kvi c@B máúK@úK tgmK etj AwfwnZ Kiv hvq| A_@, A_ówZK Dbqbtbi gvTiv ivR%ówZK `k@ I miKvix e`q DfqtKB cfwēZ Kti tQ| GQovovl Avtiv wewfb@aitYi Pj K itqtQ t hgb, YMZ Pj K (qualitative variables), cwigvYZ Pj K (quantitative variables), ga`eZx@Pj K (intervening variables), ce@Zx@Pj K (prior variables), cixYv Pj K (test variables), ewntw`Z Pj K (exogenous variables), AŠwi Z Pj K (endogenous variables), BZ`w | GB Pj K, tji vi cKwZtK eŠtZ ntj i agvT msAvB ht_ó bq, Pj Kmgfni gta` máúK@ú wewfb@itK eŠtZ nte|

Pj tKi gta` máúK@ú wewfb@itK (Different Patterns of Relationship between Variables)

*th mKj Pj K Ab` Pj tKi
Dci wbfPkj bq ev th
mKj Pj K Ae`vbMZ w`K
t`tK AbKt i cÚtg `vK,
tm mKj Pj KtK vaxb Pj K
ev Úce@Zx@Pj KÚ etj | ...th
mKj Pj K wbfPkj I
vaxb Pj tKi gvSLvB
Ae`vb Kti tm, tji vK
Úga`eZx@Pj KÚ etj |*

Pj tKi gta` máúK@ú wewfb@itK ek` eY@v Ki tZ wMq Avgiv ÚwbfPkj Pj KÚ Ges Úvaxb Pj KÚ c` tji v e`envi Kw | ZÉi | AbKt i gta` wKÚ Pj K Ab` Pj tKi c@Ae`vb Kti | wbfPkj Pj KtK wbtqB Mtel tKi AvM@ tekx| GuU Ab` Pj tKi Dci wbfPkj, hv GuU c@Ae`vb Kti | th mKj Pj K Ab` Pj tKi Dci wbfPkj bq ev th mKj Pj K Ae`vbMZ w`K t`tK AbKt i cÚtg `vK, tm mKj Pj KtK vaxb Pj K ev Úce@Zx@Pj KÚ (antecedent variables) etj | Kv@KviY máúK@ú AbKt i GB Pj K, tji vK ÚKviYÚ Ges wbfPkj Pj K, tji vK ÚdjvdjÚ etj AwfwnZ Kiv nq| th mKj Pj K wbfPkj I vaxb Pj tKi gvSLvB Ae`vb Kti tm, tji vK Úga`eZx@Pj KÚ (intervening variables) etj |

GKúU D`vniY w`tq wélqúK tevSv hvK| aiv hvK, wbe@tB tfvÚit` i tfvU t`evi AvPiY máúK@ú GKúU MtelYq MtelK Abgvb Ki tjb th, tKvb ivR%ówZK `tji mvt_`xN`vqx msúK@Zv `vKtj mg_@t` i `j xq AvbMZ` cÚ`nvti gvTiv Kg nte| G tYtT, ivR%ówZK msúK@Zv ntj v vaxb Pj K Ges `j xq AvbMZ` ntj v wbfPkj Pj K| wKŠ GB máúK@ú gta` GKúU ga`eZx@Pj K wnmvte MYgva`tgi mvt_ cwipwzi gvTivi AŠf@ e`w@i `j xq AvbMZ`i gta` Zvi Zg` NUvtZ cvt| thgb, GKRb mg_@Ki hw` MYgva`tgi mvt_ tKvb cwipwz bv `vK, Zte Zvi AvbMZ`i gvTivi gta` tKvb cwieZ@ nte bv| KviY, tmB ivR%ówZK `tji FYvZK w`K máúK@útmB mg_@ tKvb tLvR Lei ivLteb bv| dtj Zvi wektmi gvTiv AUU `vKte| Avevi hw` GKRb mg_@ MYgva`tgi mvt_ Lp tekx cwipZ nb, Zte wZwb `j máúK@úabvZK I FYvZK me aitYi Z` c@Bxi gva`tg `tji KgRvÚtK gj`vqb Kiteb Ges wZwb Zvi `j xq AvbMZ` cÚ`nvvi Kiteb bv| wKŠ hw` GKRb mg_@ MYgva`tgi mvt_ AvbqgZfvte cwipZ `vKb, Zte wZwb cY@Z` cvteb bv Ges dj`tfc AvsúK FYvZK Zt`i wfvÉtZ Av`vnxvZvq fMteb Ges `j xq AvbMZ` cÚ`nvvi Kiteb| Pj K wZwbú gta` ewY@ máúK@úK wgb@itK cKvk Kiv hvq:

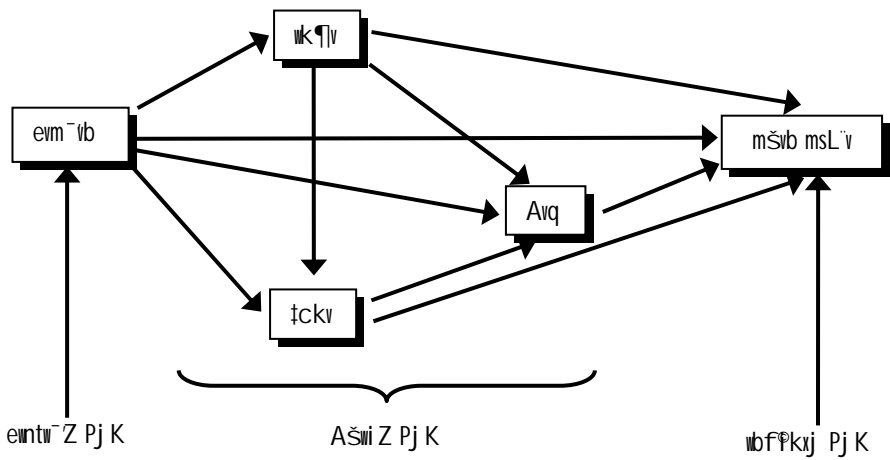


wT 4.2.1: vaxb, ga`eZx@ú wbfPkj Pj tKi máúK@ú

ce@ZP (antecedent) Pj KtK GB m@utKp gta` hš Kti `faxb-ga`eZi@bFpkj Pj tKi GB m@uK@tK Avti v m@cñwi Z Kiv hvq| cUfgx ev cwi w`wZ Gi Kg GKiu ce@Zi@Pj K ntZ cvti | thgb, kvš-cwi w`wZ Z gvb| MYgva`tgi cñZ tZgb AvM@x nq bv etj tfrtUi AvPi`Yi gta` tZgb cwi eZ@ nq bv Ges `j xq AvbMz`l c@q AUU _vtK| wKš` Akvš-cwi w`wZ z hLb msNvZ l cwi eZ@ GKiu `bwgmEK NUbv ntq `wovq, ZLb MYgva`tg c@KvkZ msev` gvb|li AvPi`YtK cfrveZ Kti Ges `j xq AvbMz`i gta` e`vcK cwi gvTY cwi eZ@ NtU|

hLb Kvh@Kvi Y mekt@Yi Rb` eü-Pj Kieikó c_-mekt@Y Kiv nq, ZLb th `faxb Pj Kiu tK Avi e`vL`v Kiv hvq bv, tmB Pj KtK eintw`Z Pj K etj Ges GB eintw`Z Pj K l wbfpkj Pj tKi ga`eZi@ mKj Pj KtK Ašwi Z Pj K etj | GB Ašwi Z Pj K, t j v Ae`vtbi cwi t@tZ KLt@v KLt@v `faxb Pj K, Avevi KLt@v KLt@v wbfpkj Pj tKi fvgKv cvj b Kti | m@uK@ wP 4.2.2 -Gi gva`tg tevSvi tPóv Kiv hvK| G t@t@, evm`vb ntj v eintw`Z Pj K, mšvb mSL`v, wbfpkj Pj K Ges wK@v, tckv l Avq ntj v Ašwi Z Pj K | wKš` evm`vb wK@v, tckv Avq l mšvb mSL`vi Rb` `faxb Pj K | Avevi wK@v, tckv, Avq l mšvb mSL`v evm`vtbi wbfpkj Pj K |

hLb Kvh@Kvi Y mekt@Yi Rb` eü-Pj Kieikó c_- mekt@Y Kiv nq, ZLb th `faxb Pj Kiu tK Avi e`vL`v Kiv hvq bv tmB Pj KtK eintw`Z Pj K etj Ges GB eintw`Z Pj K l wbfpkj Pj tKi ga`eZi@ mKj Pj KtK Ašwi Z Pj K etj |



wP 4.2.2: eintw`Z, Ašwi Z l wbfpkj Pj tKi m@uK@

`faxb Pj K l wbfpkj Pj tKi gta` Aew`Z ga`eZi@Pj KtK cix@v Pj K l (test variable) ejv ntq _vtK| GKiu D`vniY w`tq melqwtK tevSvi tPóv Kiv hvK | GKiu temiKvix mekte` vj tqi OvT-OvT` i miKvix l temiKvix `tj cto@Q wKbv Ges mekte` vj tq Zvt` i c@B tM@Wi wfvE`Z mvRvtbv ntj t`Lv tMj th, hviv miKvix `tj covtkvbn Kti@Q Zvt` i tM@v temiKvix `tj i OvT-OvT` i tM@Wi Zj bvq fvtj v| AvcvZt` w@tZ GB djvdj t`tL gtb ntZ cvti th, `faxb Pj K wnmvte miKvix ev temiKvix `tj i c@wZ mekte` vj tq c@B tM@wtK e`vL`v Kti@Q| wKš` tKD hiv temiKvix mekte` vj tq fiwZP bxwZgvjv m@utK@ l qwKenj _vtKb Zte wZwb m@`n Kitz cvtib th, gva`wgK ch@qi c@k@Y l mekte` vj tq fiwZP ga`eZi@ mgtq Ggb wKQz NtU@Q hvi dtj nqtZv djvdj Ggbw ntqtQ| AZGe, gva`wgK ch@qi `tj i wK@v Kvh@rgtK ga`eZi@Pj K wnmvte hš Kiv t@tZ cvti | hiv fiwZ@c@uqvq temiKvix `tj i Zj bvq miKvix `tj i OvT-OvT` i Rb` D`Pzi gvb`U wba@Y Kiv nq, Zte `faxb l wbfpkj Pj tKi gta` th m@uK@c@e`cvl qv wthwQj Zv Avi _vKte bv| G t@t@ gva`wgK `tj i tiKW@ntj v @cix@v Pj K@|

"eÁmbK c×wZieÁvb mʒZ"i
h_v_Zv hvPvB-Gi j tʒ"
c×wZ I tKŠkj Ges
AwFÁZvj ä e"wbôZvi Rb"
cʒqvRbxq I MhYthvM"
gub`Ü, tʒ vtK mie i m Kʒi
GB gub`Ü, tʒ v
cvi`úmi Kʒi te wFʒkj

GKwU cixʒv Pj K gá"eZʒ Pj K bv ntq ce@Zx©Pj KI ntZ cvti | G tʒtʒ, GKwU chʒeʒʒYKZ mʒúK©GKwU ZZxq Dcv`vtbi wFwEʒZ e"vL"v Kiv nq, hv`ʒaxb Pj tʒKi I cʒe© Ntʒ Ges hv`ʒaxb I wFʒʒkj `ʒwU Pj tʒKi mvt_B mʒúwKʒ | thgb, aiv hvK, Rbʒhvi mʒúwKʒ GKwU MʒelYvq t`Lv tMj th, A_ʒwZK ghʒ vi mvt_ Rbʒhvti i GKwU FYvZʒK mʒúK©i tqtQ | G tʒtʒ, `ʒwU Pj KB cʒB eqʒmi AwFÁZvi cwi gvc | wKŠ`cʒkʒKiv hvq th, Ggb wK tKvb Pj K wQj hvi mvt_ ce©AwFÁZvi Kvi tʒY GB FYvZʒK mʒúK©`Zwi ntZ cvti? wKʒvʒK Ggb GKwU ce@Zx©Pj K wetePbv Kʒi hLb wKʒvMZ thvM"Zvi mvt_ A_ʒwZK ghʒ v I Rbʒhvti i mʒúKʒK Avj v vʒte t`Lv ntʒ v, ZLb A_ʒwZK ghʒ vi mvt_ Rbʒhvti i tmB FYvZʒK mʒúK© Avi i Bʒj v bv | GKwU cixʒv Pj K e"envʒi i dtʒ cʒeʒ e"vL"v wU Ab" GKwU e"vL"v w`ʒq cʒZ`wcz ntqtQ | G tʒtʒ, A_ʒwZK ghʒ v I Rbʒhvti i cʒB mʒúK©tʒK GKwU tʒwK mʒúKʒej v hvq |

mvi vsk

MʒelYvq e"eüZ Pj Kmgʒni gʒa" mʒúʒKʒ eYʒv I e"vL"vi Dci wFʒʒ Kʒi MʒelYvi Pj wPʒ | mgm"v e"vL"vi Dci wFʒʒ Kʒi Pj tʒKi cwi Pq | A_ʒ, tKvb tKvb mgq wKQz wKQz Pj K `ʒaxb Pj K wnmvʒe KvR Kʒi, Avevi tKvb tKvb mgq `ʒaxb Pj K, tʒ v wFʒʒkj Pj tʒK i fcvŠ-wi Z nq | eZʒvb cvʒV cʒZ`q, Pj K Ges Pj tʒKi gʒa"Kvi mʒúK©btqB gj Zt Avʒj vPbv Kiv ntqtQ | e"Zt Pj tʒKi e"envʒi i gʒa" `^QZv bv _vKʒj MelYvi djvdj wʒtkʒY AmvgÁm"Zv t`Lv t`q | dtʒ MʒelKʒK Pj K wbeʒb I e"envʒi i tʒtʒ ZÉMZFvʒe cwi`vi avi Yvi AaxKvi x ntZ nq | Ab`vq, MʒelYvq BwáZ dj j vʒ Kiv mʒe nq bv |

cvfVvĒi gj`vqb

`be⁹³K cĕke

mVVK DĒti i cvfk WJK (√) WPy w` b –

1| cĕ` i KvhRi HKgZ` cĕZōvi cĕμqvĕK:

- K. cĕZ`q e`envi etj
- L. cĕZ`q cvZvĕbv etj
- M. cĕZ`wqKiY etj
- N. Dcĕti i me|

2| DcvĒ weĕkĕY th Pj KĕK Mĕel K e`vL`v Ki ĕZ Pvb tmB Pj KĕK:

- K. `ĕaxb Pj K etj
- L. wbfPĕxj Pj K etj
- M. gy³ Pj K etj
- N. Aaxb Pj K etj |

3| eū-Pj Kweĕkó c`-weĕkĕY th `ĕaxb Pj KĕĕK Avi e`vL`v Ki v hvq bv tmB Pj KĕK:

- K. ci xĕv Pj K etj
- L. ga`eZrPj K etj
- M. eintw`Z Pj K etj
- N. Ašw Z Pj K etj |

msvĕĕB cĕke

- 1| cĕZ`q wK?
- 2| Pj K wK?

i Pbvĕj K cĕke

- 1| cĕZ`q wK? cĕZ`ĕqi Kvhĕj x Avĕj vPbv Ki "b?"
- 2| Pj K wK? Pj ĕKi gĕa` m`úĕK⁹ weĕfĕei fc Avĕj vPbv Ki "b?"

AbKí
Hypothesis

GB cW tkłl hv Rvbn hvte —

- AbKí wK
- AbKí i Drm
- AbKí i cKviłf
- AbKí wbgŃY mgm"v
- AbKí cixŃv wK
- AbKí cixŃvi cKviłf

AbKí wK (What is Hypothesis)?

GKRb MtelK wewfbaPj tKi
gta" m=útkP wfwÉtZ th
ŰÁvbw B AbgvbŰ Kti b tmB
Abgvb, tj v ntj v AbKí |

Z_ıgvj vıK A_eyntZ ntj ZmwEK KvVrtgvi Dci wbfPkxj ntZ nq| KviY, ZÉj Z_ıi wktK k;Lj vex Kti Ges Gi A_ıcŰvb Kti | ZÉj Z_ı AbymŰvtbi w K wbt`Rbvl w tq_ıvtK| hLb Z_ıi wktK GKıł Z Kti k;Lwj Z Kivi ci GKıł m=útkP gta" t`Lv nq Ges evi evi cixŃv wbxŃvi ci tmB m=útkP,tj v cŰZwŰZ `ıvqx ifc tctZ_ıvtK, ZLb Zv ZtÉj ifcvšw Z nq| AZGe, t`Lv hv"Ű th, ZÉj tKvb Abgvb bq, eis Zv Zt_ıi Dci wbgŃ wKŰy thšwK m=útkP mıısj b| ZtÉj AšfŰ wewfbaZ_ıi wktK thšwK fıte wetkŰy Kiv hvq Ges Zt_ıi AšfŰ bq Ggb m=útkP Abgvb Kiv hvq| GKRb MtelK wewfbaPj tKi gta" m=útkP wfwÉtZ th ŰÁvbw B AbgvbŰ (enlightened guess) Kti b tmB Abgvb, tj v ntj v AbKí | GB Abgvb, tj v mZ" wK bv Zv G chŃq Avgiv wbwŰZ fıte ej tZ cwiı bv| wKš' GB mŰex Abgvb, tj v B AbKí MVb Kti Ges G, tj v h_v_Űv cŰwYZ ntj tm, tj v fıel"r ZÉj MVtbi Aštk cwiYZ nq| A_ıŰ, AbKí ev"e I Z_ıwfwEK| Ab" K_vq, ev"e AwfÁZvj ä Abgvbgj K cŰvebv, tj v ntj v AbKí Ges G, tj v h_v_Űv wbaŰ tYi Rb" cixŃv Kiv hvq| Avgiv cKZctŃl hv AbymŰvb KıtZ PvB AbKí Zv eyŰv Kti |

AbKí MVtbi Abgvb, tj v cte"cwı Pwj Z MtelYv ev ZÉj t_ıtk Avnwi Z nq| Avgiv ZÉj t_ıtk BıZvgta" hv tRtbiŰ, hw` Zv w tq_ıı" Kwi, Zte `Ű ev ZtZwaK Pj K wK fıte m=útkŰ tm m=útkŰ thšwK Abgvb KıtZ cwiı | thgb, `RueK Pvc ZÉj (biological stress theory) Abıhvqx `ıN"ıvqx kvııı K Pvc Aetkłl D"P i ı Pvc `Zwi Kti Ges mıgvıRK AwıZKıY ZÉj (social assimilation theory) Abıhvqx, GKıł wfbems"ıZtZ AwıZKıY mnRvZ fıte B gıvıwK Pvc mıı Kti | GB `Űı ZÉj t_ıtk Abgvb Kiv hvq th, th mKj Awıfemx (immigrants) bZb ms"ıZtZ Lvc LvBıq wbtZ Lp tekx Amıeavi m=ııı nb Zııv hvıv Amıeavi m=ııı nb bv Zv" i tPıq tekx D"P i ı Pıtc fıMteb |

GKıł AbKí tK DctıvMx ntZ ntj KZ, tj v "eııkó" _ıkv AZ"vek"K| thgb, AbKí tK Aek" B cıZ"qmZ fıte mııó ntZ nte| AbKıı i AwıfÁZvıthvM" `ııı K (empirical referent) _ıktZ nte| AbKí tK mıııı"Ű ntZ nte| AbKí tK wetkŰyıı we`ııııı tKškj Ges ZmwEK KvVrtgvi mıı_ m=útkŰıı _ıktZ nte|

AwfÁZvj ä m½wZmgñi eYðvgjK AbKí (Hypothesis Concerned with the Description of Empirical Uniformities): GK aiþYi AbKí itqtQ hv tKej AwfÁZvj ä m½wZ,tjvi Aw-ZþK eYðv Kti | G aiþYi AbKí,tjv Awakusk tññt maviY Ávtbi cÜvebv,tjvi weÁvbm=SZ cixñvtK cÜZwbwZi Kti | mvgwRK weÁvtb G iKg eÜ AbKí wbtq MtelYv cwiPwj Z ntq_vtK | thgb, GKw RbtMvóxi Av_@mvgwRK cÜfwg, GKw knñi emYwR^K cÜZövmgn, GKw t`tki agx@ RbtMvóxi web`vm, BZ`w | G aiþYi AbKí,tjv AþK mgq GKw wetkl RbtMvóxi AvPiþYi ifctK eYðv Kti | thgb, cÜg etl® QvT-QvT`xt` i tkYx Ktñi AvPiY, Mvtg@Um kgKt` i e`tqi cKwZ, BZ`w |

GB me AbKtí i weifx AvciE tZjv thtZ cvti th, G aiþYi AbmÜvb KLþbv AbKí cixñv Kti bv | G,tjv wKQyZt`i msthvRb Qvov Avi wKQybq | Avtiv AvciE tZjv thtZ cvti th, G,tjv tKvb DcthvMx AbKí bq | KviY, G,tjv tm mKj welaqK cÜZwbwZi Kti hv meviB Rvov | GB AvciE,tjvi Revte ejv hvq th, mevB hv Rvþbb Zv mZ` bv | ntZ cvti | Zt`i maviY msthvRb ntj | GB AbKí,tjv gvþli maviY ÁvtbK MtelYvi ga` w`tq GKw `eÁvbK wfwE cÜvb Kti Ges weÁvtbi Kivtgi gta` mgwSZ Kti |

th tKvb weÁvtbi KivR nt`Q maviY Ávb,tjvtK cixñv wbiñv Kti m²fvte msÁwqZ cÜ`tqi Aaxb mpmsex Kiv | thgb, mgvtR gvby AþK tjvKR a`vb-aviYv wbtq cÜZw`þbi KgRvÜ cwiPvj bv Kti | mvgwRK weÁvxi KivR ntjv GB tjvKR a`vb-aviYv,tjvi tKvb AwfÁZvj ä m½wZ itqtQ wKbv Zv MtelYvi gva`tg chwñj vPbv Kti tm,tjvtK DcthvMx Ávtb cwiYZ Kiv; Gw Kitz wltq MtelKtK wZbw KivR Kitz nq | cÜgZt, a`vb-aviYv,tjv t`þK gj`teva m=úwKZ cñcvZtK AcmviY Kitz nq; wZxqZt, a`vb-aviYvi AŞF® c` ,tjvtK tkYxex Kitz nq; Ges ZZxqZt, h_v`Zvi cixñv cÜqm Kitz nq | GKw D`vniY t`qv hvK | thgb, gvþli gta` GKw maviY aviYv itqtQ th, Om=ú` kvjx gvþli v mshgnxb Rxeb hvcb Ktib etj Zv`i gta` D`P nvñi weevn we`Q` NtU|Ü GB e³e`w thfvte itqtQ ueü tmfvte cixñv Kiv hvte bv | KviY, GB e³e` hZUv bv Zt`i Dci cÜZwZ Zvi tPtq tekx cÜZwZ five-cÜYZvhþ Abfwzi Dci | GB e³te`i gta` e`eüZ c` ,tjv my`úofvte msÁwqZ bq | GB e³e`w`þK ZLbB GKw DcthvMx AbKtí cwiYZ Kiv hvte hLb Gi ga` t`þK `bwZKZvi welaqU AcmviY Kiv nte Ges c` ,tjvtK mybw`fvte msÁwqZ Kiv nte |

i`ay mvgwRK weÁvtb bq, Ab`vb` mKj weÁvtbB G aiþYi maviY Ávb AþK ,i`Zcy® MtelYvi Rb`w`tqtQ | thgb, GK mgq Avgv` i aviYv wQj th, mh`c_w_exi Pwiw`þK Nñi | wKŠ`eÁvbtKiv MtelYvi gva`tg cÜvY Kti`Qb th, mh`c_w_exi Pwiw`þK Nñi bv, eis c_w_ex mñh® Pwiw`þK Nñi | Avgv` i GI aviYv wQj th, feð mgZj | wKŠ`eÁvbtKiv cÜvY Kti`Qb th, feð mgZj bq, eis Zv tMj vKiv | hvB tnvK, mevB hv Rvþbb Zv cKZ Rvov nq bv hZñY bv Zv cixñvZ nt`Q | AZGe, t`Lv hv`Q th, AwfÁZvj ä m½wZ AbmÜvtbi gva`tg mó cÜ_wgK AbKí ,tjv weÁvtbi weKvtK GKw ,i`Zcy®fwgKv cvj b Kti |

RwJj Av`k`ifci mvt_ m=úwKZ AbKí (Hypothesis Concerned with Complex Ideal Types): GB AbKí,tjvi j`ñ` ntjv AwfÁZvj ä m½wZ,tjvi gta` thšw³Kfvte AvnwiZ m=úK®tjvi Aw-ZþK cixñv Kiv | thgb, AwfÁZvj ä m½wZi mvt_ m=úwKZ AbKtí i tññt t`Lv hvq th, fwg-m=úK®,emYwR^K cÜZövtbi aiY, ñi`RwZmEý, tckvMZ web`vm Ges G iKg Avtiv Ab`vb` cÜt`Ai gta` mþ`nvZxZfvte wKQy AwfÁZvj ä m½wZ itqtQ | GB m½wZ,tjvi cieZ® thšw³K wetkY bZb wKQy AbKtí i Rb` t`q | þmB AbKí ,tjvtK Av`k`ifc AbKí etj |

GB wegz®AbKí Mjtv mgvR Rulj `šik (complex referent) `Zwi i ga` w`tq mij
AurfÁZvj ä m½zi cĹvkvK AwZµg Kti hvq| thgb, me kniB wLz GKtKw`K
eĒwekó bq, mgvRi me gvb| B cĹSK bq, BZ`w | G aitYi cwi w`wZtZ Av`k©fc AbKí
wbgŲ Kti cixŲv Kiv LpB DcĥwMx ntq _vtK| thĥnZi G,tjv AurfÁZvj ä m¾KŲK
AwZµg Kti, tmĥnZi GB wbgŲ,tj vtK Av`k©fc ejv ntq _vtK| Rulj AbymÜvtbi tŲtĪ
G aitYi AbKí i cĹvb KvRulj ntjv fweĹr MtelYvi Rb`wbZ` bZb tKŠkj `Zwi Kiv|

wekĥYi wfbzvi mvt_ m¾KŲß AbKí (Hypothesis Concerned with the Relations
of Analytic Variations): Av`k©fc AbKí i wbgvŲtK AwZµg Kti wegzRiŲYi AvtiK
avc Dcĥi DŲ GB AbKí,tj vtK wbgŲ Kiv nq| thLvtb AurfÁZvj ä m½Zm¾úbe
AbKí,tjv cĹÁmgñi gta` maviY cv`R`ĥK chĕŲŲY Kti Ges Av`k©fc AbKí,tjv
wekĹ wekĹ mgRvZxq Nubvi gta` wfbzvtK chĕŲŲY Kti, tmLvtb wekĥYgĵ K Pj K,tjvi
MtelYvi Rb` GKw Pjĥki GKw `enkto`i gta` cwieZŲbi mvt_ Ab` Pjĥki GKw
`enkto`i gta` cwieZŲbi m¾KŲK chĕŲŲYi cĹqvRb cto|

thgb, Avgiv Rmb th, gvbŲi Rbĥkj Zvi (human fertility) mvt_ m¾` , ag©, wŲŲv,
evm`vb Ges m¾` ĥqi AvKvŲi AurfÁZvj ä m½Z itqŲQ| ersj vt`ĥki `Ųw AĀtj i D`P
Rbĥkj Zvi cwi tĹŲŲZ Gw wetePbv Kiv thĥZ cvti| GKw ntjv PUMŲg wefM Ges Ab`w
ntjv wmtjU wefM| GB `Ųw wefvŲMi wefwe`enkó` thgb, wŲŲvi nvi, A`ŲwZK Ae`v,
agxĕ cŲve, iŲŲYxj Zvi gvĪv, BZ`w wetePbv Kti Rbĥkj Zvi Dci Gt`i cŲvetK wekĥY
Kiv thĥZ cvti| G aitYi AbKí i wbgŲ I cixŲv Rbĥkj Zv Ges Dwj w`Z wefM `Ųw
wefwe`enkto`i wekĥY Avgv`i Rbĥkj Zvi MwZkj Zv m¾tK®AvŲiv DbzZi aviYv I
cwi gvc t`te|

GB AbKí,tjv i ayth Ab` AbKí,tjvi tPtq Awak wegz®ZvB bq, G,tjv ntjv meŲPtq
cwi kxj Z wbgŲ| AbKí i wegzRiŲYi GB gvĪvq th Pj K,tjv wbeŲb Kiv nq Ges wekĥY
Kiv nq tm,tjv i agvĪ GKw ZĒ;Ųiv wbaŲi Z nq| thĥnZi ZĒ;wbŲRB GKw weKvtki chĕŲ
_vtK, tmĥnZi ZĒ;j weKvtk bZb bZb wekĥYgĵ K MtelYvi tŲtĪ `Zwi ntZ _vtK Ges
weÁvb mgx ntZ _vtK|

AbKí wbgŲY mgm`v (Problems in Formulating Hypothesis)

mŲz Ges mwK MtelYv cwi Pj bvi Rb` AbKí i cĹqvRbxqZvi weĹw Abpaveb Kiv wekĹ
cĹqvRb| KviY, AbKí Qrov MtelYvtK j ŲĪ`nx b j vMvgQrov Gtj vtgtjv AurfÁZvgj K wePiY
ejv hvq| AbKí wbgŲY thgb mZKŲv Aej æb Kiv cĹqvRb, tZgwb DcĥwMx AbKí wbgŲY
Ampeav,tjvtKl gtb ivLv cĹqvRb| AbKí wbgŲY MtelKMY cĹvbZt wZbŲw Ampeavi
m¾x nb| cĹgZt, GKw mŲúó ZwiĒK KvŲvtgvi Afve ev ZwiĒK KvŲvtgvi m¾tK®Ávtbi
Afve| Avgiv AvŲMB etjwQ th, AbKí ZwiĒK KvŲvtgvi mvt_ wekĹ fite m¾KŲß|
GKw ĥK, Avgiv Avgv`i AurfÁZvj ä m½Z,tjvtK cixŲv wixŲvi gva`tg fweĹr ZĒ;j
Ask wmwte Mto Zuj Ges Ab`w ĥK, we`gwb Ávb KvŲvtgvi ga` t`ĥK wefwe`cĹvevtK
AbKí Abgvb Kti cixŲv wixŲvi gva`tg tm,tjvi h_v`Ųv cĹvY Kw| KvŲRB, hw`ĥKvb
ZwiĒK KvŲvtgvi Abp`wZ _vtK ev we`gwb ZwiĒK KvŲvtgvi m¾tK®Ávtbi Afve _vtK, tm
tŲtĪ h_vh_ AbKí wbgŲY KwB ntq cto| wZxqZt, ZwiĒK KvŲvtgvi Dcw`wZ ev ZwiĒK
KvŲvtgvi m¾tK®Ávb _vtKtj B i ayPj te bv, GKRB Mtelĥki tmB ZwiĒK KvŲvtgvtK e`envti i
`ŲZv _vKtZ nte| GB `ŲZvi Afve AĥK mgq DcĥwMx AbKí wbgŲY mgm`v `Zwi Kti |
ZZxqZt, GKRB Mtelĥki Rb` MtelYv m¾mKŲ ZwiĒK KvŲvtgvi m¾tK®ĕŲi vcyi I qmKenj

AbKí Qrov Mtel YvtK
j ŲĪ`nx b j vMvgQrov
Gtj vtgtjv AurfÁZvgj K
wePiY ejv hvq|

_vKv Ges tmB ZmwEK KvVtgv e'envt'ii `qZv _vKvB ht_ó bq| wZwb hw` tmB ZmwEK KvVtgv e'envt'ii Rb` we`gvb tKSkj _tjv m=útK@AewNZ bv _vtKb Zte Zvi ct`q Dc`thvMx AbKí wbg`Y Kiv KwB ntq cto|

hw` QvT-QvT`xt`i cKekiv nq th, GKwU „i“ZcY@I cix`qvthvM` cKec`Zwi Kiv KZUKz KwB? Awakvsk QvT-QvT`xB GB cKekie mWk Reve w`tZ e`_c`te| hw` l ev tKD tKD wKQycD`vevbi D`j E-Ki`tZ cvi`te, wKŠ` cKZ AbynÚvrb t`Lv hvte th, tm me cD`vevbi AwakvskB AbKí bq| hviv AbKí wbg`Yi KvQvKwQ th`tZ cvi`te, t`Lv hvte th, wbg`Z AbKí _wj AwfÁZvj ä m½wZi D`ta`DVtZ cvti w| hw` Avgiv GKwU m`ybw`@ ZmwEK KvVtgv Ges h_vh_ M`telYv tKSkj wba`Y Kti M`telYv`i`i` Kwi, Zvntj Avgiv `U ev Zvi Awak Pj`ti gta` m=útK@ m½wZ ch`e`qY Kti GKwU Dc`thvMx AbKí wbe`Pb Ki`tZ cvi`tev|

AbKí cix`qv wK (What is Hypothesis Testing)?

AbKí cix`qv Kv`KviY m=úK@elqK cKekie m`gvaib tctZ mrvh` Kti|

bgpv ch`e`qYi Dci w`fE` Kti mgMk m=útK@Dcmsnvi Uvbvi Rb` th me w`xvšgj K c`wZ i`tqQ tm me c`wZi t`qT` c`h`vR` GKwU c` ntjv ÚAbKí cix`qvÚ| Av`iv mnR Kti ejv hvq th, AbKí cix`qv Kv`KviY m=úK@elqK cKekie m`gvaib tctZ mrvh` Kti | thgb, agcvb wK K`vYt`ii KviY? AbKí cix`qv cv`R` wba`Yi mrvh` Kti | thgb, w`fbc` e`wkt`i w`fE`tZ wK ejv hvq th, w`fbc`fMv`xi gta` we`gvb cv`R` mw`Kvi? mbvZb c`wZi cwi`e`Z@Av`ybK D`w`ebvgj K c`wZtZ w`q`v vb wK mw`B QvT-QvT`xt`i djvdt`j i Dci c`fve tdt`j? cwi`msL`vbMZ AbKí cix`qv`i gva`tg G mKj Kv`KviY m=útK@ h_v_Zv c`gvY Kiv th`tZ cvti| w`fbc`e`ai`Yi AbKí cix`qv c`wZ mgMk`i ev`eZv m=útK@ M`telK`K GKwU cwi`msL`vbMZ w`xvš`-t`c`S`Q`Z mrvh` Kivi D`t`i`k`B wbg`Y Kiv ntqQ| GB me c`wZ wbi`k`f`vte wKQb c`gvwYZ Kti bv, Zte hLb m`fbc`vi AvKv`ti Dc`w`cZ nq ZLb G`_tjv M`telK`K f`w`l`D`vYx Ki`tZ mrvh` Kti| Ab` K_vq, AbKí cix`qv M`telK`K cwi`msL`vbMZ w`xvš`-M`h`Yi Dcvq etj t`q|

AbKí cix`qv M`telK`K cwi`msL`vbMZ w`xvš`-M`h`Yi Dcvq etj t`q|

wekí AbKí $H_1 : \mu_0 \neq k$

- thLv`tb, $H_0 = bw`-AbKí$
- $H_1 = w`ekí AbKí$
- $\mu_0 = th mgMk t`_t`K bgpv msM`h Kiv ntqQ tmB mgMk`i Mo$
- $k = a`eK$

AbKí cix`qv`K c`v`bZt` `U enr cwi`evti w`f`3 Kiv hvq| GKwU c`vgw`K Ges `U enr cwi`evti w`f`3 Kiv hvq| GKwU c`vgw`K Ges Ab`w` ntjv Ac`vgw`K AbKí cix`qv`i cwi`evti|

AbKí cix`qv`K c`v`bZt` `U enr cwi`evti w`f`3 Kiv hvq| GKwU c`vgw`K (parametric) Ges Ab`w` ntjv Ac`vgw`K (non-parametric) AbKí cix`qv`i cwi`evti | c`vgw`K cix`qv`i gj aviYw`U ntjv th, bgpvw`U th mgMk t`_t`K Pqb Kiv nq tmB mgMk`w`U `f`w`eK`f`vte w`b`- Ges mgMk`i cwi`vgZ e`eavbw`U Rvbv _vtK| AbKí _tjv c`vgv`t`bi cwi`t`c`q`t`Z e`w`Z _vtK| c`vgw`K cix`qv`i mvt`_ ms`k`e`- AbKí _tjvi Rb` th cwi`msL`vb w`y`Z nq tm`_tj`vt`K e`w`šgj K ev Ab`cv`Zgj K gv`vq cwi`gv`c`KZ ntZ nq| wKŠ` m`vgw`RK ev`eZvq Avgv`t`i nvtZ c`vgw`K AbKí cix`qv`i Rb` kZ`c`i`Y Kti Ggb DcvE` memgq _vtK bv| G iKg cwi`w`wZ tgvKv`tejvi Rb` cwi`msL`vb w`MY tek wKQz AbKí cix`qv wbg`Y Kti`t`Qb th`_tjv Ac`vgw`K cix`qv etj cwi`w`Z|

Ac`vgw`K k`w`U A`_G`w`U bq th, th mgMk t`_t`K bgpvqb Kiv nq tmB mgMk`i t`Kv c`vgv`t`b| c`vgw`K cix`qv`i mvt`_ Ac`vgw`K cix`qv`i cv`R`w`U ntjv th, c`vgw`K

cixŋvq e`eüZ cwi msL`vb_ t jv wbyŋqi Rb` mgMK m=ú†K†Kvb Kw/b kZ©Av†vc Kiv nq
bv| A_ŋ, AbKí_ t jv civg†bi t cŋ†Z wbygZ nq bv| Ab` K_vq, Acivgwi K AbKí
cixŋv†K web`vmgß cixŋv etj| KviY, G_ t jv civgwi K cixŋvi Zj bvq Kg kZŋß|
Aek` GB wk_w j Zvi Kvi†Y civgwi K cixŋvi Zj bvq Acivgwi K cixŋv_ t jv Kg kw³kvj x
nq Ges Gi dtj AtbK bw-AbKí cZ`vL`vb Kiv hvq bv, hv civgwi K cixŋvq Kiv thZ|
Acivgwi K cixŋv_ t jv bvgmPK I µgmPK gvŋvq cwi gvcKZ Pj †Ki †ŋ†† cŋqvm Kiv
hvq|

civgwi K cixŋv_ t jvi gta` th_ t jv met††q tekx e`eüZ nq tm_ t jv ntjv z-cixŋv,
t-cixŋv Ges F-cixŋv| Acivgwi K cixŋv_ t jvi gta` thw met††q tekx e`eüZ nq tmw
ntjv KvB-eM©(Chi-Square) cixŋv, hv χ^2 -cixŋv bvtg cwi wPZ| G Ovovl GB cwi ex†i
i†††Q Wilcoxon Matched-Pairs Single Ranked Test Ges Wilcoxon Rank-Sum
Test|

mvi vsk

GB cv†V Avgiv M†elYvi Ab`Zg_ i`ZcY©welq AbKí w††q Av†j vPbv K†i wQ| Avgv†` i
Av†j vPbvq AbK††i msÁv, Dm, cKvi††`, AbKí wbg††Y mgm`v, AbKí cixŋv I AbKí
cixŋvi cKvi††` w††q Av†j vPbv K†i wQ| AbKí ntjv Ávbw`ß Abgvb| M†elYvi Ab`Zg
ceRZ©nt`Q h_vh_ AbKí cŋq| M†elYvq cŋß djvdtj i h_v_Zv wbf† K†i AbKí
cixŋvi Dci| AbKí cixŋvi newfbraiY i†††Q hv GB cv†Vi †kl Astk D†j E-Kiv nt††Q|
GKRb M†el K†K M†elYv`i`i c†e`h_vh_ AbKí cŋq| K†i B M†elYv KvR`i`i` Kiv DwPr|

cvfVvEi gj`vqb

`be⁹³K cke

mWVK DEti i cvfk WJK (v) wPy w`b -

1| AbKti i cKvi tF` wbaft Yi wfvE wnmvte KvR Kti :

- K. wegZZvi aiY
- L. wegZZvi gvIv
- M. wegZZvi msL`v
- N. Dcti i me|

2| eYvvgj K AbKti i mgvtj vPbv Kiv nq GB etj th:

- K. eYvvgj K AbKti cixvvi m=ebv`vK bv
- L. eYvvgj K AbKti Zt`i msthvRb Qvov Ab` wKQzbq
- M. eYvvgj K AbKti DcthvMx AbKti bq
- N. Dcti i me|

3| AbKti cixvvtK cAvbZt

- K. `vU cwi evti wF³ Kiv hvq
- L. Pvi wU cwi evti wF³ Kiv hvq
- M. QquU cwi evti wF³ Kiv hvq
- N. AvUwU cwi evti wF³ Kiv hvq|

4| civgvwK cixvvi mv` AcivgvwK cixvvi cv`R` ntj , civgvwK cixvvi vq:

- K. AbKti`_tj v chfevtYi cwi tcvvtZ wbgZ nq
- L. AbKti`_tj v chfevtYi cwi tcvvtZ wbgZ nq bv
- M. AbKti`_tj v civgvvbi cwi tcvvtZ wbgZ nq
- N. AbKti`_tj v civgvvbi cwi tcvvtZ wbgZ nq bv|

msvvtB cke

- 1| AbKti wK?
- 2| AbKti wbgvtYi mgm`v wK?

i Pbvvgj K cke

- 1| AbKti wK? AbKti i cKvi tF`_tj v Avtj vPbv Ki`b|
- 2| AbKti i cixvvi`_tj v Avtj vPbv Ki`b|

Mtel Yv bKkv
Research Design

Mtel Yvi Dfi tk'i wfiEz Pj K,tjvi msAvqb, cwi gvc I c0qvRbterfa AbKí wbigZ nevi ci MtelKtK MtelYv bKkv Mvb KiZ nq, hv gj Zt MtelYv m=úmkZ KZ,tjv tgsuj K c0kæ mgravb t`q| thgb, MtelK Kv`i Dci MtelYv KiZeb? KZRtbi Dci KiZeb? wK chfeY KiZeb? Klb chfeY KiZeb? wKfvte DcvE msMh KiZeb? BZ`w` | Ab` K_vq, MtelYv bKkv ntjv MtelYv Kg`ev`evq`bi GKwJ cUweZ cwi Kí bv ev bxj -bKkv| MtelYv bKkv c0vbZt wZb aiYi ntq_vtK — AbjmÜvbgj K, eYDvgj K I e`vL`vgj K| GB MtelYv bKkv,tjvi wZbuJ tgsuj K c0tqvMK c×wZ itqtQ| tm,tjv ntjv tKm÷vW, Rwi c I cixY| AbjmÜvbgj K I eYDvgj K MtelYv bKkvq tKm÷vW I Rwi c tK e`envi Kiv nq Ges e`vL`vgj K MtelYv bKkvq Rwi c I cixY c×wZ tK e`envi Kiv nq| GB wZbuJ tgsuj K MtelYv bKkv mvgwRK weÁvtbi mKj aiYi mgm`vtK Aa`qtbi Rb` chfß bvl ntZ cvti | tm KviY mvgwRK weÁvbxiv Avtiv wKQz MtelYv bKkv D`m`eb KtiQb| tm,tjv tgsuj K MtelYv bKkv bq| Gi c0ZwUB tKvb bv tKvfvte tgsuj K MtelYv bKkv,tjvi wfbæaiY| MtelK tKvb aiYi MtelYv bKkv e`envi KiZeb Zv wbfP Kti mgm`vi c0kuz, MtelYvi Dfi k` I aiYmn A_`mgq, Rbej , BZ`w` i Dci |

GB BDwbU Avgiv th cv,tjv Aa`qb KiZev, tm,tjv ntjv:

- ◆ cv - 1 : msAv I cKvi t`
- ◆ cv - 2 : AbjmÜvbgj K I eYDvgj K MtelYv bKkv – tKm ÷vW I Rwi c
- ◆ cv - 3 : e`vL`vgj K MtelYv bKkv – Rwi c I cixY
- ◆ cv - 4 : Ab`vb` MtelYv bKkv

msAv I cKvi t f`
Definition and Types

GB cW tk t l hv Rv bv hv te —

- Mtel Yv bKkv wK
- GKwU DEg Mtel Yv bKkvi `enkó`
- Mtel Yv bKkvi Kvh@ej x
- Mtel Yv bKkvi Dcr`vb
- Mtel Yv bKkvi cKvi t f`

Mtel Yv bKkv wK (What is Research Design)?

mvgwRK weAvbxt` i Rb` Mtel Yvi eu wel q i tqtQ | th tKvb mvgwRK cwi tek, cwi cwkRZv ev wel qe` eAvwbK AbjmUv tbi m`te` t q t i n t Z cv t i | m v`c u Z K K v t j , e u `e i P t c Y m v g w R K m g m `v e v w e l q e ` m`u t K` A b j m U v b K v h`c w i P j b v K i v m t E j l m v g w R K w e A v t b i M t e l Y v G K a i t Y i M t e l Y v c w i K i b v i O v i v `e w k o` g u U Z | G B M t e l Y v c w i K i b v t K c u v M Z f v t e M t e l Y v b K k v e j A w f i n Z K i v n q | h L b M t e l Y v i D t i k` w b a t i Z n t q h v q , A b j k i t j v t K e v L`v K t i P j K t j v t K m s A w q Z K i v n t q h v q , Z L b M t e l K t h m g m`w U i m` s j x b n b Z v n t j v M t e l Y v b K k w U M V b K i v , h v i g v a` t g M t e l K Z v i A b j k i t j v t K c i x q v K i t e b | w K s` A b j k i c i x q v K i t Z w M t q M t e l K w K o z t g s j j K m g m`v i m` s j x b n b t h t j v i m g r a v b A e k` B c k i e v` e v q t b i c t e` n t Z n t e | t m B m g m`v t j v n t j v : A v g i v K v t` i D c i M t e l Y v c w i P j b v K i t e v ? w K c h e` q Y K i t e v ? K Z R t b i D c i K i t e v ? K L b c h e` q Y K i v n t e ? w K f v t e D c v E m s M o h K i v n t e ? B Z` w | M t e l Y v b K k v n t j v G g b G K w U b j - b K k v , h v M t e l K t K G B m g m` t j v m g r a v t b i c _ e v Z t j t` q | A _ f , M t e l Y v b K k v n t j v M t e l Y v K t g P G K w U c u w e Z K g m P x h v M t e l K t K D c v E m s M o h , w e t k t Y I e`v L`v G e s A b j m U v t b i A s f P P j K m t n i g t a` w e` g v b K v h` K v i Y m`u w K Z w m`v s` M o h t Y i w` K w b t` R b v c u v b K t i |

Mtel Yv bKkv n t j v Mtel Yv ev` evqtbi GKwU th s i r` K I m j n s e x c w i K i b v |

Mtel Yv bKkv n t j v Mtel Yv ev` evqtbi GKwU th s i r` K I m j n s e x c w i K i b v | A v t i v m n R K t i e j v h v q t h , M t e l Y v b K k v n t j v M t e l Y v e v` e v q t b i G K w U t h s i r` K I m j n s e x c w i K i b v | w e w f b e M t e l Y v c x w Z G e s w e A w b K Z E j I A v` t k P g a` t` t K M t e l Y v b K k v i R b f n q | c k Z c t q , G u U M t e l K t K M t e l Y v a b m g m`v i c h e` q Y I c Z` w q K i t Y i w b q g t K w b t` R K t i | M t e l Y v b K k v m v a v i Y x K i t Y i t q t i l w b a t i Y K t i | M t e l Y v q c u b e`v L`v e n E i R b t M v o x i t q t i c u q v R` n t e , b v w K w f b e c w i w` u z t Z c u h v R` n t e Z v w b a t i Y K i t Z m n v q Z v K t i | Z t e G K w U w e l q g t b i v L v c u q v R b t h , M t e l Y v b K k v G K w U i f c t i L v g v t G e s M t e l Y v e v` e v q t b i w e w f b e c h e` q G i c w i e Z B N U t Z c v t i | G K w U m p u o a v i v e w n K Z v A b j m i Y K t i M t e l Y v b K k v M V b K i v D i P r | A _ f , m g c i`u i v i a v i v e w n K Z v q h L b M t e l Y v i R b` w e l q e` w e b e P b I w e l q e` t K M t e l Y v t h w M` m g m`v q i f c v s t` K i v n q , M t e l Y v i D t i k` v e j x m p u o f v t e w b a t i Z n t q h v q , c Z` q t j v m w K f v t e m s A w q Z K i v n t q h v q G e s A b j k i t j v K v h R i f v t e w b u g Z n t q h v q , Z L b B t K e j g v t M t e l Y v b K k v M V b K i v D i P r |

tKvb c u t A i c h e` q Y G e s w e t k t Y i A v t M G u U t K b c h e` q Y I w e t k t Y K i v n t e Z v m j o v` O K i v t K M t e l Y v b K k v e j v h v q | t h g b , e v s j v t` t k i g v Z`...` t` t m e v m`u t K` M t e l Y v i

Rb` mefM0eŒS wbtZ nte wK tKvb weqwu m=utK@Mtel K RvbZ Pvb? gvZ...v` tmev ej tZ wZwb GB MtelYv wK tevSvtZ Pvb? tKvb eqmx gvvtq` i m=utK@RvbZ Pvb? gvZRxeŒbi tKvb mgŒqi c0Z wZwb tRvi w tZ Pvb? Mtel K tK GI wK Kti wbtZ nte th, Avmtj wZwb wK DŒt tK` MtelYv cwi Pvj bv Ki tQb | gvZ...v` tmev m=utK@GkuU mvavi Y avi Yv cvevi Rb`, bv wK gvZ...v` tmevi c0ZeÜKZvtK tevSvi Rb`, bv wK Gi tcQtb cŒve we`wi Kvix Dcv`vb,tjv wektKŒYi Rb`? MtelYv bKkv cŒvqŒbi gva`tg Avgiv G me c0k0B mgvavb LjR |

GkuU DEg Mtel Yv bKkvi `enk0` (Characteristics of a Good Research Design)

GkuU DEg Mtel Yv bKkvi KgctŒ Pviw „i“ZpY@enk0` _vKv c0qvRb | cŒg %enk0`w ntv e`wb0Zv | MtelYvi djvdŒji e`wb0Zv DcvE msM0ni c×wZ Ges DcvE msM0ni nwwZqvŒi mvt m=úwKŒ | GkuU DEg Mtel Yv bKkv cwi gvŒci e`wb0 nwwZqvŒi e`envi tK wv0Z Kti hvi gva`tg mwK DcvE msM0ni m=0e nq | wZxq `enk0`w ntv wbfŒthvM`Zv | Avgiv Rvb th, wbfŒthvM`Zv ntv c0ZwU cwi gvŒci tŒŒt ceŒci m0wZcY@djvdj c0BŒi wv0Z | A_Œ, DEi`vZv tKvb wektl`dvq cŒtg th DEi t`teb, cieZŒZ hZevi ZvtK tmB c0k0B wRÁvmv Kiv nte ZZevi Zvi KvQ t`tK GKB iKg DEi cvl qv hvte etj cŒ`vkv Kiv | AZGe, MtelK Zvi c0k0B `dv,tjvtK GgbfŒte mvRvteb hvZ Kti DEi`vZv tKej cŒ`wKZ DEiwUB w tZ cvŒb | Mtel Yv bKkvi ZZxq `enk0`w ntv h_v_Zv | Mtel Yv bKkv GgbfŒte MwZ nl qv DŒPr hvZ Kti wbfŒthvM` djvdŒji cvkvcwK h_v_Œ nŒZ nŒ | A_Œ, cwi Kí bvU Ggb nŒZ nŒe thb, DcvE msM0ni nwwZqvŒi w tŒ hv cwi gvc Ki tZ Pvl qv ntŒtQ wK ZvB cwi gvc Kiv hvq | thgb, tKyx KvwŒtv cwi gvŒci Rb` th mPK,tjv e`envi Kiv ntŒtQ tm,tjv thb tKyx KvwŒtvKb wevbgŒ Kti, Ab` wKQz bq | PZl`enk0`w ntv mvavi YxKi tYi thvM`Zv | GkuU mpcwi Kw Z Mtel Yv bKkv Ggb djvdj tK msM0ni Ki tZ mrvh` Ki te hv epEi Rb`Mv0xi c0Z mvavi YxKi tYi tŒŒt c0hrR` nŒ |

mswŒŒŒfŒte ejv hvq th, GkuU Mtel Yv bKkv ZLbB DEg etj cwi MwYZ nte hLb bKkvi AaxŒb wv0Z cwi gvŒci nwwZqvŒi e`wb0, wbfŒthvM` I h_v_@DcvŒEi RbŒ t`te; Mtel Yv mgM0kuU 0`ŒvbfŒte msÁwqZ nte; bgbv wbeŒŒbi h_vh_ tKŠkj e`envi Kti c0qvRbxq msL`K bgbv t`tK DcvE msM0ni nte; DcvE wektKŒYi Rb` h_vh_ cwi msL`bMZ tKŠkj e`eüZ nte; Ges cwi gvŒci áwš, bgbv áwš-ev Ab` tKvb Dcv`vŒbi 0viv `p bv ntŒ MtelYvi djvdj tK mvavi YxKi YthvM` Kti Zj te |

Mtel Yv bKkvi KvhŒej x (Functions of Research Design)

GKRb Mtel K th aiŒYi Mtel Yv bKkvB wbeŒb Ki`b bv tKb c0ZwU cwi Kí bvB GK ev GKwaK KvhŒej x m=úv`b Kti | GkuU Mtel Yv bKkv wK wK Kvh@m=úv`b Ki te, Zv c0v0Zt wbfŒ Kti Mtel Yv bKkvU ZUKZ cwi kmj Z Zvi Dci | Mtel Yv bKkvi msÁv I `enk0`tK cvhŒj vPbv Ki tŒ t`Lv hvq th, GuU wZbwU „i“ZpY@Kvh@m=úv`b Kti | cŒgZt, Mtel Yv bKkv Mtel K tK mgvwrK mgm`vej x MtelYvi Rb` GkuU bxj -bKkv c0vb Kti | GkuU bxj -bKkv Qrov thgb GkuU emv wbgŒŒ Kiv Kómva` nŒq cto, wK tZgvb GkuU ce`cwi Kí bv Qrov MtelYv `i` Ki tŒ Zv AŒbK mgm`vi RbŒ w tZ cvŒ | AZGe, Mtel Yv Kg`ev`evqb `i`i` cŒe`tek wKQzel tŒ „i“ZpY@m×vš-M0Y Ki tZ nq | thgb, Mtel YwU wK m=úwKŒ? Mtel Yv c0k0B mgvavb wK aiŒYi DcvE c0qvRb nte? c0qvRbxq DcvE tKv_vq cvl qv hvte? tKv_vq ev tKvb Gjvkvq Mtel YwU cwi Pwj Z nte? Mtel Yv cwi Pvj bvi mgqKij ZUKZ nte?

GkuU Mtel Yv bKkv wK wK Kvh@m=úv`b Ki te, Zv c0v0Zt wbfŒ Kti Mtel Yv bKkvU ZUKZ cwi kmj Z Zvi Dci |

c0qvRbxq DcvE msM0ni Rb` wK cwi gVY bgpV c0qvRb nte? bgpV wbePtpbi wfwEwU wK nte? DcvE msM0ni Rb` wK tKSkj e`envi Kiv nte? DcvE wetkhtYi Rb` wK tKSkj M0Y Kiv nte? BZ`w` |

w0ZxqZt, MtelYv bKkv MtelYv KtgP mxgvti Lv wbaP Y Kti MtelKtK Zvi mgM0kw3 GKwU mybow`0 w`tk Pwj Z KitZ mPqg Kti tZvtj | A`P, G tPttMtelYvi mybow`0 Dti`k`_tjv metPtq`_i`ZcYq` KviY, Dti`k`nxb MtelYv GKwU mgwBnxb Abkxj tb cwiYZ nq| GKwU MtelYv bKkvq my`u0 I mybow`0 Dti`k`tK wPwyZ Kivi gva`tg MtelK Zvi j`P` ARPbi ct`_mpfvtc GwMtq thtZ cvti b|

ZZxqZt, MtelYv bKkv MtelKtK Zvi MtelYv Kvh`ev`evqtb AtpK mgm`vtK cteB Abgyb KitZ mnvqZv Kti | GuU mae` nq h_vh_ MtelYv mwinZ` chPj vPbvi gva`tg| GB chPj vPbvq MtelK mgm`wUtK mgvavtbi wefbae`weKi ct`_i fwe`r` w`K wbt`Rbvnn MtelYvi e`q, cwi gvc mgm`v Ges we``gvb m`u` I Rbkw3 i c0qvRbxqZv m`u`K`avi Yv tctZ cvti b|

MtelYv bKkvi KZ`_tjv mpeav itqtQ| cAgZt, MtelYv bKkvi wfwE`Zt MtelYv cwi Pvj bv Kitj cL`wKZ djvdtj i wfwE`Zt ht`vchy3 Dcmsvti tctQ`Z mnR nq| w0ZxqZt, MtelYv bKkv avsi` cwi gVYtK nwm Kti AwakZi wbfP` dj tctZ mnvh` Kti | ZZxqZt, GuU MtelYvtK AwakZi KvhRi Kti tZvtj Ges AwakZi wbfP`thw`Zv c0vb Kti | PZ`_Zt, GuU mgq I A`_P AcPqtK KgtZ mnvh` Kti | cAgZt, MtelYv bKkv DcvE msM0 I Abki` cixPvi tPttMtelYv h_vh_ w`K wbt`Rbv c0vb Kti | I0Zt, MtelYv bKkv MtelYvtK mwK ct`_cwi Pvj bvi GKwU AZ`^`c0ix wmwte KvR Kti |

MtelYv bKkvi Dcv`vb (Components of Research Design)

GKwU MtelYv bKkvi KZ`_tjv`_i`ZcYq`Dcv`vb itqtQ| hw` I GB Dcv`vb`_tjvi AwakvskB MtelYv c0qvvi wefbae`chPqi mvt`_m`u`K`Z Ges GB M0Si wefbae`Astk tm`_tjv we`wii Zfvte Avtj vPbv Kiv ntqtQ, GKwU `*Z Dcw`Z aviYv cvevi Rb` G`_tjvtK mswPjBfvte wbtg0Avtj vPbv Kiv ntjv|

MtelYvi wktivbvg (Title of the Study): MtelK th wel`tg MtelYv KitZ Pvb tm wel`tqi Dci mybow`0 GKwU wktivbvg`_vKitZ nte| Zte wktivbvgwUtK hZUKy mae` mswPjB I mybow`0fvte m2` ntZ nte| wktivbvgti gta` MtelYv mgm`vi cwi w`tK ctZdij Z ntZ nte|

MtelYv mgm`vi eY0v (Statement of the Problem): GB chPq, MtelK Zvi mgm`wUtK my`u0fvte eY0v Kiteb| ejv ntq`_vtK th, GKwU mgm`vi h_vh_ eY0v KitZ cvitj mgm`wUi AfaR mgvavb ntq hvq| Zte gtb ivLv c0qvRb th, MtelYv mgm`v eY0vi mgq fvlv e`envti i`xwZtK`_u0, mnR I mswPjB ntZ nte|

MtelYv mwinZ`i chPj vPbv (Review of Research Literature): MtelYv mwinZ`i chPj vPbv ntjv MtelYv mgm`vi Dci cte`cwi Pwj Z MtelYvmgPni GKwU Rwi c| GB Rwi`ci Dti`k``ntjv we``gvb Avtbi gta` th kb`Zv itqtQ tm`_tjvtK wPwyZ Kiv| chPj vPbvU Ggbfvte Kiv DvPr hvZ Kti MtelYv mgvB nevi ci c0B djvdj MtelYvaxb wel`qe`i Dci tgsij K Ae`vb ivL`Z cvti Ges wPwyZ kb`Zv`_tjv ct`_Y mnvqZv Kti |

MtelYvi tñĀ I cwi vai weeiY (Delineation of Area and Scope of the Study): thñZcñZñU MtelYvB wefBogvĀ vq wfbentq _vtK | tñU nñZ cvñi tñšMwj K mxgvti Lvi w` K t_ñK, ev mgñqi w` K t_ñK, ev KvhRvixZvi w` K t_ñK | AZGe, GB chñq MtelYvñU Kvñ` i wñtq, tKv_vq, wK DñĀ ðk` Ges KZ mgq añi cwi Pwj Z nñe Zvi wek` eYñv KiñZ nñe |

MtelYvi DñĀ k` (Objectives of the Study): cñ weZ MtelYvi gva`ñg MtelK th mKj cñkñe mgvavb tLñRb tñB MtelYv cñkñej vB MtelYvi DñĀ k` ññmñte eñYñ nq | MtelYvi DñĀ k` ðk` mñ_úo I cñĀj fñte eYñv KiñZ nñe |

AbñĀi wbgñY (Formulation of Hypothesis): AbñĀi nñj v MtelYv mgn`vi cixñvñgñ K mgvavñbi cñ webv | AbñĀi wbgñYi tñĀĀ j`ñ` ivLñZ nñe th, AbñĀi _ñj v thb cñ`qñZ fñte `^Q, mñbw`ñ Ges AwfÁZvj ä fñte chñeñYññM` ev`eZvi mñ_ mñúñKñ nq | bw`-AbñĀi I weKĀi AbñĀi ðk` mññK fñte eYñv KiñZ nñe |

cñ`ñqi mñÁv (Definition of Concepts): GKRb MtelKñK Zvi MtelYvq e`eñZ cñZñU cñ` i A_ñK mñ_úo fñte RvñtñZ nñe | cñ`ñqi ZñMñZ mñÁvñtñbi gva`ñg tñ_ñj vñK ZñEñ I Ab`vñ` cñ`ñqi mñ_ mñññM` ñvcb KiñZ nñe | KvhRñi mñÁvñtñbi gva`ñg cñ`ñqi ev`eZvi mñ_ mñúñKñ KiñZ nñe hv MtelYv cwi Pwj bv I Dcvñ mñMñni nñwñZqvi wbgñY mñvññ` Kiñe |

cñwñZ (Methodology): GB chñq AbññÚvñbi cñwñZ wK nñe tñ mñ_úñKñ mñvññ-ñbñZ nñe | MtelYvñU wK cñ_wñK Dcvñ mñMñni gva`ñg AwfÁZvj ä chñeñYñ nñe, bv wK Ab`vñ` Drñm cñkñkñZ gva`ñg Dcvñ e`enñi Kñi weñkñYagn`ñte tñ mñ_úñKñ mñvññ-MñY KiñZ nñe | mgMñRbññvñx t_ñK Dcvñ mñMññ Kiv nñe, bv wK bgñvñqñbi gva`ñg mñMññZ nñe Zvi wñbññY KiñZ nñe |

bgñvñ bKñv (Sampling Design): mñgññRK MtelYvq AññKvñk tñĀĀĀ bgñvñq cñwñZ e`enñi Kñi AbññÚvñ Kvh`mñ_úñ`b Kiv nq | bgñvñq cñwñZñU wK mñ_ñebñvñgñ K nñe, bv wK wñtmñ_ñebñvñgñ K nñe tñ mñ_úñKñ mñvññ-MñññYi ci bgñvñq cñwñZi mñ_úo eYñv cñvb KiñZ nñe | G tñĀĀĀ wñZñU _i`ZcñYññelñqñK gñb ivLñZ nñe | cñ_gñZt, th mgñK t_ñK bgñvñq Kiv nñe tñB mgñKñK mññK fñte mñÁvñqñZ KiñZ nñe | wñZñqñZt, bgñvñi Avñvi Ges bgñvñ Pqñtñbi cñwñZi eYñv KiñZ nñe | ZñZñqñZt, bgñvñi cñZñvññZññj Zvi wñlññU thñv`ñK fñte Dc`ñcb KiñZ nñe |

Dcvñ mñMñni nñwñZqvi wbgñY (Constructing Data Collection Instrument): Dcvñ mñMñni nñwñZqññi aiññU tñKgb nñe Zv wñfñ` Kñi Dcvñ mñMñni cñwñZ I MtelYvi cñkñZi Dci | hñ` MtelYvñU GKñU mñbw`ñ KñvñtñgññññK nq, tñ tñĀĀĀ Dcvñ mñMñni nñwñZqññi cñkñZ GK iñKñ nñe, Aveñi hñ` Zv wññj Xñj vñfñte cwi Pwj Z nq Zñe Zv wñfbentñe | cñkñej vñ wK Dbññ` _vñKñe, bv wK eñ cñkñZi nñe, tñ mñ_úñKñ mñvññ-Mñññmñ cñkññvñtñb kñ Pqñ, cñkñe wñlñq wñeñPñb, cñkñe ñg, BZ`ñ` wñlñq _ñj vñ mñ_úñKñ mñ_úo mñvññ-Mñññ KiñZ nñe | cñkñej vñ wK DñE`ñZvi KvñQ WñKññvññM tñññi Zñe, bv wK mñññvññvññi MññYKñvññi gva`ñg gñLvgññL cñkñe wñRÁvññvññ Kñi Dcvñ mñMññ Kiv nñe G me wñlñq mñvññ-Mññññi ci GKñU h_vñ` Dcvñ mñMñni nñwñZqvi wbgñY KiñZ nñe |

Dcvñ mñMññ I gñv e`e`ñcbv (Data Collection and Field Management): Dcvñ mñMñni nñwñZqvi wbgñYi ci th KñvññU eññK _vñK tññU nñj v DñE`ñZvi KñQ t_ñK

mjngwšZfvte DcvĒ msMōh Kti wbtq Avmv| GB chĒq, DcvĒ msMōhKviĒi wbePb I cĕKŲY LpB „i“ZcYŲ gvV chĒq wKfvte DcvĒ msMōh Kiv nte Ges wKfvte Zvi ZĒyeavb Kiv nte G mKj wel tġ wK wK c`tŲc MōhY Kiv nte Zv Lp mZKZvi mvt_ Mtel Yv bKkqv weeZ _vKtZ nte|

DcvĒĒi wetkH I eĒLĒv (Analysis and Interpretation of Data): DcvĒ msMōhni ci DcvĒiwktK wetkHĒYi Rb` cŲZ Kivi jġŲ DcvĒĒi h_v_Zv hvPvB, mĒuĒ`bv I mwKZv wbaŲY KiġZ nte| DcvĒĒi cĕKwZi Dci wbfP Kti wK wK wetkHĒY cĒwZ I tKšKj MōhY Kiv nte Zv wbaŲY KiġZ nte| wK wK cwī msL`vbMZ cĒwZ e`envi Kiv nte Ges mvari YxKiġYi tKvb gvĒvq Dcmsnvi Uvbn nte Zvi mj`uó wbt`Rbv _vKtZ nte| wetkH-Z DcvĒĒi eĒL`vĲK ceĒZxMtel Yv, mvari YxKiġYi epĒi tŲĲĲ, Mtel Yvi DĲĲk, Ges bZb wKQZ Dcv`vb hv cĲe Mtel tKi Dcj wġZ aiv cto wb G me wel tġi mvt_ mĒuĒKZ KiġZ nte|

cĒZte`b Dc`vcb (Presentation of the Report): AbjmŲvbKvi x Mtel KĲK Aek`B Zvi Mtel Yvq cĒB dj vĲj tK GKwJ cĒZte`tb Dc`vcb KiġZ nte| GLvĲb i ay DcvĒĒi eYŲv I eĒL`vB hġó bq, cwī PwĲj Z Mtel Yvi mġvexZv I Ab`vb` Mtel tKi Rb` fweĲr wK wbt`Rbv I „i“ZcYŲ GKwJ cĒZte`tb wK wK wel q Ges wKfvte Dc`wcz nte Zvi mj`uó eYŲv _vKtZ nte|

mgq-mPx I evĲRU (Time-Schedule and Budget): cĲiv Mtel Yvi KgĲkl nġZ KZUKz mgġq cĒqvRb nte Zvi GKwJ wel` mgq-mPx Ĳwi KiġZ nte| cvkvcwK, Mtel Yv mĒúbe Kivi Rb` wK cwī gvY A`eĲq nte Zvi cYĲeeiY _vKtZ nte| evĲRU cĒvĲtbi tŲĲĲĲ gĲb i vĲĲZ nte th, Zv thb ev`emĲZ nq| Kvi Y, Mtel Yvi Rb` cĒqvRbxq AĲ_P ms`vb Kiv tek cĒZ`thwMZvcYŲ hw` evĲRU hw`mĲZ bv nq Zte cĒ`wKZ AĲ_P tRwMvb cvl qv AmĲe nġq coĲZ cvĲi |

Mtel Yv bKkvi cĕKvi tĲ` (Types of Research Design)

Mtel Yv bKkv cĒvbZt wZb aiĲYi nġq _vĲK — AbjmŲvbġj K, eYŲġj K I cixŲvġj K| GB wZb aiĲYi Mtel Yv bKkv mġvRK Mtel Yvi PviwJ cĒvb DĲĲk` mvab Kti | cĲġZt, GKwJ ARbv ev`Ĳ cwī wPZ cĒĀ mĒúĲKĲavi Yv cvl qv, A_ev tmB cĒĀwJ mĒúĲKĲGKwJ bZb Aš`Ĳ cvl qv| wĲZĲqZt, tKvb eĲwĲ, eĲ, AeĲv ev`tĲi `ewkó` ev`ewkó`mgĲĲK eYŲv Kiv Ges tKvb wKQyNUevi gvĒvĲK wbaŲY Kiv| ZZĲqZt, Pj KmgĲni gĲa` mĒúKĲĲR tei Kiv | PZĲ_Zt, `yJ Pj tKi gĲa` KvhKvi Y mĒúKĲĲb`RK AbĲĲ hvPvB Kiv| tKvb Mtel Yv bKkv GKwJ DĲĲĲk`i wĲĒĲZ wĲġZ nq, Avevi tKvb tKvb Mtel Yv GKwĲK DĲĲĲk`ĲK Aš`Ĳ Kti | Zte Mtel Yvi GB Pvi aiĲYi DĲĲĲk`ĲK memġqB mĲw`Ųfvte Avj v`v Kiv hvq bv| eis AĲbK Mtel YvqB AvĲj wPZ DĲĲĲk`Ĳj vi `yJ ev wZbWJ GKmvt_ wetep` nġZ cvĲi |

AbjmŲvbġj K Mtel Yv bKkv (Exploratory Research Design): mġvRK weĀvb_tj v weĀvb wnmvte tek Zi`Y Ges cĕKwZK weĀvĲbi Zj bvq G_tj vi gĲa` D`P gvĒvq Mtel Yv cĒwZi tZgb weKvk NĲwĲ| Ggb wK mġvRK weĀvĲbi ZĒj_tj v KLĲbv Lp mvari Y A_ev AvĲĀZĲj ä Mtel Yvi mj`uó w K wbt`Rbvi Rb` KLĲbv Lp tekx mĲw`Ų| mġvRK Mtel Yvi GB msKĲUi gĲL cĕKĲ cĒvĲtbi DĲĲĲk` cĒ_wġK avi Yv ARĲbi Rb` A_ev tKvb cĒĀ mĒúĲKĲ AvĲiv mĲw`Ųfvte Rbvvi Rb` AbjmŲvbġj K Mtel Yv KvhĲi fĲġKv cĲj b Kti _vĲK| AbjmŲvbġj K Mtel Yvi tŲĲĲĲ avi Yv Kiv nq th, AbjmŲvĲbi Aš`Ĳ cwī w`wZ ev mġm`v mĒúĲKĲMtel tKi tKvb avi Yv _vĲK bv, ev hrmġvb` avi Yv _vĲK| wetkI GKwJ tMōx ev tKvb

Mtel Yv mgm`vi mvt_ mvaviY cwi wPwZ Mtel KtK tmB mgm`vi Mfxti thtZ mrvh` Kti bv | AbjnÜvbgj K Mtel Yv ARvbn ev `f cwi wPZ cčĀtK we`wii Zfvte Rvbi Rb` cwi Pwj Z nq, hv cieZxřZ Avtiv cwi kxij Z Mtel Yv bKkv MVtb mrvh` Kti |

aiv hvK, GKRB Mtel K ersj vt` tk eq` gvbtli mvgwRK I A_řwZK wbi vcĒv cčvtbi Rb` eq`đ`i DcthvMx Kgřs`vb mxi mi Kvix I temi Kvix Dt` VM m`útK`Mtel Yv KitZ Pvb | wKŠ` t`Lv tMj th, Mtel tKi G m`útK`Zgb tKvb avi Yv tbB | G třtřĀ, GKRB Mtel K GB bZb Dt` VM m`útK`GKwU cčwgK avi Yv cvevi Rb`, wKsev cieZxřZ Gi Dci Avtiv mřbw` Mtel Yv cwi Pwj bvi j třĀ AwfÁZv ARřbi Rb` AbjnÜvbgj K Mtel Yv cwi Pwj bv KitZ cvtib | tmB Mtel Yvi gva`tg wZwb tRtb wbtZ cvtib th, Dt` VMwU tčřwcvU wK wQtj v? tKvb eqmx eq` tj vKt`i GB Kgřs`vb Dt` vtMi Avl Zvq Avbv ntqtQ? Kgřs`vtbi aiYwU tKgb? cčwgKfvte eq` RbtMvxi wK cwi gvY GB Dt` vtMi Ašřß Kiv ntqtQ? wKsev GB Dt` VM m`útK`mgvři gvbtli cčZwřv wK? G iKg bvbwea wRÁvmvi gva`tg wZwb G m`útK`GKwU avi Yv tčtZ cvtib hv ZvtK cieZxřMtel Yv cwi Pwj bvi bKkv wbařtY, wKsev cKř cřqtb mrvh` Kite | thLvtb tKvb Mtel K Mtel Yvi tKvb bZb w MŠ-Dt`řPb KitZ Pvb, tmLvtbB AbjnÜvbgj K Mtel Yvi cčqvRbxZv meřtř tekx | wKŠ` GB Mtel Yvi eo mgm`wU ntj v th, Mtel Yv cčřtj vi mřšH RbK Reve cčqB cvl qv hvq bv | Zte mřšH RbK ev m` Reve tLvRvi GKwU thvMmř AbjnÜvbgj K Mtel Yvi gva`tg cvl qv hvq |

eYřvgj K Mtel Yv bKkv (Descriptive Research Design): AbjnÜv Qvovl tKvb NUbv ev cčtĀi gta` weřbw`bugřE K m`úKřgřni eYřv Kiv mvgwRK Mtel Yv bKkvi Ab`Zg cčvb Dtřk` | Mtel K tKvb RbtMvř ev Zvi AštKi RwZMZ wřwĒ, Zvt`i kvixi K `ewkó`, wKřwMZ Ae`v, A_řwZK e`e`v, BZ`w` mn weřbw`wel tř Z` msMřb KitZ cvtib | wZwb tKvb m`cčvtqi mvgwRK msMvř tji vi KvVřgv I Kvřřřg eYřv KitZ cvtib | Avevi GKwU Pj tKi mvt_ Ab` Pj tKi m`útKř gvřv, m`útKř aiY, tKvb Pj tKi web`vm, NUbvi gvřv, BZ`w` wel qI wZwb Zvi eYřvg Zř AvbtZ cvtib | G aiřYi Mtel Yvq tKvb NUbv m`útK` Abgvb wřř Z`I cčvb Kiv nq | thgb, AvMvř wbeřtb KZRb řřgZvřb `j tK třvU t`řeb? wKsev AvMvř `ktKi iřtZ ersj vt`tki RbmsL`vi web`vm tKgb nře? wKsev ersj vt`tki A_řwZK cčřř AvMvř `ktK KZUKz eřř cřte, BZ`w` | mvgwRK weÁvtbi Awakřsk Mtel YvB eYřvgj K cKwZi ntř_vtK |

AbjnÜvbgj K Mtel Yvi Zj bvq eYřvgj K Mtel Yv bKkv Awakřzi mřbw`ř | GB Mtel Yv tji v Mtel Yv mgm`vi weřkl wel tqi cčZ ev tKvb cčtĀi `ewkó`, řvř Ges we`gvb m`úK`řtj v eYřvi cčZ `wó wbeř Kti | tKvb NUbv wKfvte msNwUZ nq tmB cčkč DEi tLvRvi Rb` eYřvgj K Mtel Yvi ři`Zi Acwi mřg | wKŠ` j řřYřq wel qwU ntj v th, eYřvgj K Mtel Yvq cčř djvdřti wřwĒř wřwř Mtel Yvi Rb` Abřři cčřxZ ntj | Mtel Yvi iřtZ tKvb Abřři wbgřř Kiv nq bv | A_ř, eYřvgj K Mtel Yvq tKvb KvřřviY m`útKř e`vL`v Kiv nq bv | thgb, wKřvi mvt_ Avřqi avřZř ev FYvZř m`úK`wYř Kiv tMj I wKřv AvřtK cřwřZ Kti, bv wK Avř wKřvtK cřwřZ Kti Zv wYř I e`vL`v Kiv hvq bv | GwU wYř KitiZ ntj e`vL`vgj K Mtel Yv bKkvi gva`tg Mtel Yv cwi Pwj bvi cčqvRb nq |

e`vL`vgj K Mtel Yv bKkv (Explanatory Research Design): mdj Zvi mvt_ Mtel Yv mřvř Kivi Rb` Mtel Yv mgm`vi mvt_ mřwZcřřmř úó Mtel Yvi Dtřk` Ges h_vh` Mtel Yv bKkv Mtel KtK GKwU mřeavRbK wřwĒ cčvb Kti | Mtel Yv Kg` m`úv`řbi Rb` AbjnÜvbgj K I eYřvgj K Mtel Yv bKkv e`vcKfvte e`eüZ ntř AvřtQ Ges wřwř tZi eü ři`ZcřřMtel Yv mgm`vi Rb` weřkl řřřKv cřj b KitiZ_vKte | AbjnÜvbgj K I eYřvgj K

AbjmÜvtbi gj Dfík'w ntv mWk Zt' i Afve itqt0 Ggb cčĀ, NUbv ev velq m'útK[©] AbjmÜvtbi gva'tg '0 aviYv c0vb Kiv| G_utjv tKvb velq m'útK[©]hZUKym'ē cyLvbcyL eY0v c0vtbi Dfík'k' cwi Pwj Z nq Ges KLtbr KLtbr cieZ[®] AbjmÜvtbi w' K wbt' Rbv I fvel' r MtelYvi velqe' mi eivtni j t'ŋ' cwi Pwj Z nq|

tKvb NUbvi AbjmÜvb I eY0vi ci Mtel tKi Rb' Avti Kiv KvR evKx t' tK hvq, Zv ntv MtelYvq AŠf[®] wbaŋi Z Pj K_utjvi gta' Kvh[®]KviY m'úK[©]wY0 I e'vL'v Kiv| e'vL'vgj K MtelYv m'úv` tbi gva'tg Mtel K GB Dfík' c'Y Ktib| e'vL'vgj K MtelYv bKkvi c0vb Dfík'B ntv GKw wbcšZ cwi w'wZtZ GK ev GKwaK Pj tKi (wbf[®]Pkj Pj K) Dci Aci GK ev GKwaK Pj tKi (v'axb Pj K) m'ē' c'fve ch'ŋY Kiv| G t'ŋ't, c'fve w'vi Kvi e'vL'vi m'Zv e'w' i j t'ŋ' Pj K tK wbcšY Kiv nq| t' t'Zi Awakusk mvgwRK Kvh'ej x Ges gibe AvPi tYi gta' e'únea Pj tKi cwi 'úwi K m'úK[©] eÜb itqt0, t' t'Zi e'vL'vi m'Zv e'w' i j t'ŋ' MtelYvq AŠf[®] bq Ggb Ac'w'zK Pj tKi (extraneous variables) c'fvetK wbcšYi gva'tg Mtel K c'w'zK Pj K_utjvi bU c'fvetK (net effects) wY0 Ktib| Mtel K Zvi MtelYvq hZ tekx Pj K tK wbcšY Ki tZ cvi'eb, wbf[®]Pkj Pj tKi Dci v'axb Pj tKi c'fve w'k'Y I e'vL'vi m'Zv ZZ tekx e'w' cvte|

e'vL'vgj K AbjmÜvb_utjv m'avi YxKi tYi Rb' t' q ev Kgc t'ŋ' m'avi YxKi tYi w' tK GwMtg tbq| G ai tYi MtelYvq Pj K_utjvi gta' m'úK[©]tjv m'úofvte emY[®] v'K, hvi dtj Zvt' i gta' Kvh[®]KviY Dcmsv'ii w'f'w'z' w'xvš-M0Y Kiv hvq| MtelYv cwi Pj bvi c'ŋB GB m'úK[©]tjv AbK'ii AvKv' Abgvb Ki tZ nq| Zte Gw gtb ivLv c'0qvRb th, fvtjv AbjmÜvb gj K I eY0vgj K AbjmÜvb Ovov fvtjv e'vL'vgj K MtelYv Kiv hvq bv| Ab' K_{vq}, GKw fvtjv e'vL'vgj K MtelYvi ce[®]kZ[®]ntjv GKw fvtjv eY0vgj K AbjmÜvb cwi Pj bv Kiv|

mvgwRK w'Av'tb w'g'v MtelYv bKkvi w'f'w'c'0'q'w'w'K c'w'Z_utjv GB wZb ai tYi AbjmÜvtbi gta' AŠf[®] | G c'nt'z, MtelYvi bKkvi wZbw tgšj K c'0'q'w'w'K c'w'Zi K_v D'j Kiv t'Z cvti :

1. tKm & ÷ wW (Case-Study),
2. Rwi c (Survey), Ges
3. cix'ŋY (Experiment)|

MtelYv m'wnt'Z' MtelYv bKkvi Ab'vb' th c'0'q'w'w'K c'w'Z_utjv j t'ŋ' Kiv hvq tm_utjv GB wZbw tgšj K c'w'Zi w'f'w'f'w'c'0'f'c' gv' | tKm ÷ wW c'0vb 'ewk'0'w ntv GKw NUbv, velq ev e' tK w'tq cyLvbcyL w'k'Y | A_ŋ, w'k'Yi GKK ntv GKw | tmiU GKRb e'w' n'Z cvti, GKw c'0'z0vb n'Z cvti, GKw t'w'ox n'Z cvti, GKw m'c'0'vq n'Z cvti, Ggb wK GKw RwiZi n'Z cvti | Rwi cgj K MtelYv bKkvq ZxeZvi gv' wU w'Q'v Kg v'K, wKŠ' Gw AtbK tekx MtelYv GK tKi m'v' m'ú³ | Ab'w' tK, cix'ŋY Mtel tKi 0viv w'f'w'c' Pj tKi wbcY I Dfík' gj K e'env'ii 0viv 'ewk'0'g'w'Z | AbjmÜvb gj K I eY0vgj K MtelYvi t'ŋ't tKm ÷ wW I Rwi c c'w'Z Ges e'vL'vgj K MtelYvi t'ŋ't Rwi c I cix'ŋY c'w'Zi w'f'w'c'KiY e'envi Kiv nq| cieZ[®] cv_utjv tZ MtelYv bKkvi GB c'w'Z_utjv m'úK[©] w'w' Zfvte Avtj vPbv Kiv nte|

mvisk

th tKvb KvR `ii" Kivi c`e`thgb GKwJ cwi Kí bvi c`qRb nq, mvgwRK Mtel Yvi t`t`I
ZvB Mtel Yv `ii" Kivi c`e`GKwJ cwi Kí bvi c`hvRb nq| GB cwi Kí bwUB n`jv Mtel Yv
bKkvq| GKwJ DĚg Mtel Yv bKkv tek wKQz `i"ZcY`Dcv`vb Ašfŷß `v`K| thgb, mgm`vi
aiY, Mtel Yvi t`t`I, D`i`k", c`wZ, mgqmPx, Mtel Yvi `vb, A`_P thvMvb, BZ`w` | Mtel Yv
bKkvi %enk`ó`i DciB wbfP Kti Mtel YwJ wKfite cwi Pwj Z nte| eZ`yb cvtV Mtel Yv
bKkvi `i"Zj l `enkó` `tjv Avtj vPbv Kiv n`q`Q| G Qvovl, Mtel Yv bKkvi Dcv`vb l
cKvi t`f` w`tq| eZ`yb cvtV Avtj vPbv Kiv n`q`Q| DĚg Mtel Yv bKkvB Mtel K`K h_vmg`q
Ges h_vh_fite Mtel Yv cwi Pwj bv Ki`Z mnvqZv Kti |

Ընթացիկ գրություն

Գրություն

Մեծագույնը (✓) ընտրե՛ք –

1) Մեղի բնույթը:

- K. Մեղի ընդհանուր հատկությունները
- L. Մեղի ընդհանուր հատկությունները
- M. Մեղի ընդհանուր հատկությունները
- N. Մեղի ընդհանուր հատկությունները

2) Գրված է մեղի բնույթը կազմող _____, ընդհանուր հատկությունները

- K. 2
- L. 4
- M. 6
- N. 8

3) Մեղի բնույթը ընդհանուր հատկությունները _____

- K. GK
- L. ընդհանուր հատկությունները
- M. ընդհանուր հատկությունները
- N. ընդհանուր հատկությունները

Գրություն

1) Մեղի բնույթը:

2) Մեղի բնույթը կազմող _____, ընդհանուր հատկությունները:

Գրություն

1) Մեղի բնույթը մեղի բնույթը ընդհանուր հատկությունները Ընդհանուր հատկությունները

2) Գրված է մեղի բնույթը ընդհանուր հատկությունները _____, ընդհանուր հատկությունները

AbjmÜvbgj K I eYÖvgj K Mtel Yv bKkiv – tKm- ÷ vW I Rwi c
Exploratory & Descriptive Research Design – Case Study & Survey

GB cvW tkłl hv Rvbn hvte —

- tKm- ÷ vW wK
- tKm- ÷ vW i mjeav I Amjeav
- Rwi c wK
- Rwi tci mjeav I Amjeav
- eYÖvgj K Rwi tci wefbaei Y

tKm ÷ vW wK (What is Case Study)?

Avgiv Rwb th, Mtel Yvi Dfłłk`i Dci wbfP Kti wefbaei Kg Mtel Yv bKkiv `Zwi nq | thgb, tKvb ARvbn cčĀ m`útk`cwi wPwZ jvf wKsev tmlU m`útk`bZb tKvb avi Yv cvl qv hw` Mtel Yvi Dfłłk` nq Zte Avgiv AbjmÜvbgj K Mtel Yv bKkiv Abjmi Y Kwi | Avevi tKvb e`w³, tKvb NUbv ev `tji `eukó` mWkfvte eYÖv Kivi Rb` Avgiv eYÖvgj K Mtel Yv cwi Pvj bv Kwi | A`ev tKvb NUbv KZevi NUtQ ev KZevi Ab` tKvb NUbvi mvt_ m`ú,³ nt`Q Zv eYÖv Kiv hw` Mtel Yvi Dfłłk` nq, Zte Avgiv eYÖvgj K Mtel Yv cwi Pvj bv Kwi | hw` wefbaei cčĀi gta` wefbaei m`útk`P KvH`Kvi Y e`vL`vi cčqvRb nq tm tŋłł Avgiv e`vL`vgj K Mtel Yv cwi Pvj bv Kwi | e`enwi K w` K t`tk Mtel Yv bKkivi Gme wefbaev Lp m² fvte wPwZ bq | Kvi Y, GKwU Mtel Yvi gta` wefbaei Mtel Yv bKkivi Dcv`vb _vKtZ crtł | AbjmÜvbgj K Mtel Yvq Mtel Yvxb cčĀ m`útk`Mfxi I cčwP avi Yv cvl qvi Rb`, wKsev tmlU tK Avtív mybw`Ö Mtel Yvi cł_ Gwłtq wbtZ tKm-óvW c`wZi e`enwi KvH`Rix djvdj w` tq _vtK |

mvgwRK Mtel Yvq tKm- ÷ vW GKwU Rbwčđ Mtel Yv bKkiv | mavi Yfvte, wekłłYi tKvb GKwU GKK ev GKwU NUbv m`útk`Mfxi AbjmÜvb ev wbeŋPZ wKQZ Zt`i Rb` cłmłzK AwfÁZvi cłiv ev AvsłkK cyLvbpyL eYÖv ntjv tKm ÷ vW | wekłłYi GB GKK ntZ crtł GKRB e`w³, GKwU cčZövb, GKwU mšMvb, GKwU tMvöx, ev GKwU RwiZ | mybw`Öfvte ejv hvq th, tKm- ÷ vW ntjv GKRB e`w³ ev cčZövtbi Dci GKwU e`vck Ges wbeo Mtel Yvi c`wZ, hv Mtel KtK tmb e`w³ ev cčZövb m`útk`hZtekr m`e Z`_ msMłni gva`tg tmb e`w³ ev cčZövb wKfvte mgvtRi GKwU GKK wnmvte KvR Kti Zv eštZ mrvh` Kti | tKm- ÷ vW bKkvq, GKwU welqtK ALÜ ifc meŋZK AbjmÜvtbi Rb` GKwU cčvm MłY Kiv nq, thLvtb Mtel K Zvi me`ŋZv, cčĀv Ges AwfÁZv cčqm Kti b | A`ŋ, GKwU mvgwRK GKłki cłiv Rxeb Płłi AbjmÜvb I wekłłYi c`wZ ntjv tKm- ÷ vW |

GKwU mvgwRK GKłki cłiv Rxeb Płłi AbjmÜvb I wekłłYi c`wZ ntjv tKm- ÷ vW |

GB c`wZ GKwU cłĒ mvgwRK Ae`vq wefbaei Dcv`vtbi GKwU meŋZK eYÖv I wekłłYi cčZwbaZ; Kti | thgb, m`cłvq Mtel Yvi tŋłł, Mtel K m`cłvtqi BwZnmłK Rvbtēb; Gi agv, ivR`wZK, A`wZK, tŋłł K Ges mvgwRK Kwvtgv I Mvb m`útk`Rvbtēb; wZvb mvgwRK tkYx Kwvtgvi gta` tKvb tKvb e`w³ cčavb` cvq, Kvi v ŋlgZvev Ges Kvi v mgvtRi tKvb `łi i tqtQb Zv Rvbi tPóv Ki tēb | mšŋłfvte ejv hvq th, Mtel K hZ`i m`e GKwU meŋZK eYÖv t`evi tPóv Ki tēb Ges Gi _i "ZcY`Dcv`vb _tj vi gta` GKwU thšw`K m`úK`

wbYqgi tPov Ki#eb| A_#r, #Km-÷vW mvaviYZt GKwU ev Lp Kg msL`K NUBvi g#a`
mwxgZ_vtK, msL`v I ai#Yi w`K t_#K e`vcK msL`K Pj #Ki Dci tK`#fZ_vtK, Ges
AvM#huU_vtK Mfxi I me#Z#K AbymUvtbi | mvgwRK MtelYvi Ab`vb` c#wZi mvt_ tKm-
÷vWvi ZdvruU ntjv th, thLv#b Awakvsk MtelYv mvavi YxKi#Yi j #`#` cwi Pwj Z nq, tmLv#b
tKm-÷vW GKwU NUBvtK Dcj wai tPov Kti gv# | Ab`vb` MtelYv bK#vq Mtel K Mtel Yvaxb
Pj #Ki msL`vtK mwxgZ ivLvi tPov Ktib, wK#` tKm-÷vW#Z Zv hZ tekx m#e ep# Kivi
tPov Ktib| MtelK hLb tKm-÷vW cwi Pwj bv Ktib ZLb wZvb GKwU NUBv m#u#K`GKwU
A#`#b cvl qvi tPov Ktib, hv GKwU NUBvi AwZwi # cwi w`wZ#Z mvavi YxKi#Yi Rb` c#qvm
Kiv nq| wK#` tKm ÷vWvi dj vdj w#r t_#K #Kvb mvavi YxKi#Yi Rb#w` #Z cv#i bv |

#Km ÷vW e`w# I #Mv#x Dfq t#`#` c#qvm Kiv ntq_vtK| e`w#i t#`#` th mKj tKm-÷vW
cwi Pwj Z nq tm_tjv mvaviYZt, wPukrmv weAvb, g#bweAvb, g#bwe#k#Y ev gb`we#K
MtelYvi mvt_ RwoZ| thgb, dtq#Wi g#bwe#k#Y#Z MtelYv| Zte mgvR Kg# AvBb,
A_#wZ, wK#`v I mgvRweAv#bi t#`#` I e`w#w#E`K tKm-÷vW cwi Pwj Z ntq_vtK| thgb,
`w#`#; AvZ#Z`v, weevn-we#`Q`, BZ`w` m#u#wK#Z MtelYv| tMv#xw#E`K MtelYv_tjv tekxi
f#M cwi Pwj Z ntq#Q` #`i` R#wZm#Y, Aw`emx, K.I.K m#cd`vq, M#g MtelYv, wK#kvi Aciva,
gv`Kvk#`#, k#gK m#u#K# BZ`w` vel q#K w#tq| #Km-÷vW MtelYv bK#vq we#f#eai #Yi
Dcv# msM#ni tK#kj Aej #b Kiv th#Z cv#i | GB tK#kj_tjvi cwi wa GZ we`Z th, Zv
ch#e#Y#Z AbymUvb t_#K gva`vqK Dcv#Ei we#k#Y ch#-ntZ cv#i | #Km ÷vWvi
Dcv`v#bi Drm ntZ cv#i e`w#MZ `w#j (wPW-cl, W#tqix, R#ebe#v#- BZ`w`),
AskM#Ygj K ch#e#Y#i weei Yx, A_ev Ab`#` i #v#v c#`ZKZ c#Zte`b, BZ`w` |

#Km ÷vWvi m#eav I Am#eav (Advantages and Disadvantages of Case Studies)

*#Km-÷vWvi me#Ptq eo
m#eawU ntjv, Dcv# msM#ni
tK#kj i t#`#` Gi bgb#q
b#wZgv v|*

#Km ÷vW GKRB Mtel K#K Zvi Aw#AZvi Ggb D`vni Y wbe#Pb Ki#Z m#hvM Kti t`q hvi
gva`g wZvb hv c#Zov Ki#Z Pvb Zvi c#`# Zv Kiv m#e nq| Ab` K_vq, GB MtelYv bK#v
c#wZi gva`g R#e#bi mKj ch#q#i wek` weei Y t`qv m#e nq| #Km-÷vWvi me#Ptq eo
m#eawU ntjv, Dcv# msM#ni tK#kj i t#`#` Gi bgb#q b#wZgv v| G#Z GKv#v#i e# tK#kj
c#qvm Kiv hvq| we#k# mvgwRK cwi w`wZi Mfxi we#k#Yi Rb` Abv#p#bK ch#e#Y t_#K
K#Vvi Kw#t#gw#E`K m#`#v#v#i-Gi gva`g Dcv# msM#n Kiv hvq| G#Z GKwU ev GKwaK
tK#kj e`env#i m#hvM i#q#Q| w#Zxq m#eawU ntjv th, tK#kj i bgb#qZv_vkvi d#j
MtelYvtK we#f#eagv#vq cwi Pwj bv Kiv m#e nq| ZZxq m#eawU ntjv th, GB MtelYv bK#v
e`env#i gva`g th tKvb mvgwRK cU#v#Z MtelYv cwi Pwj bv Kiv m#e nq| Zte MtelYvi
cU#v#g wbe#P#bi t#`#` MtelYv Dcv`v#bi mnRj f`Zv, mgq, R#ej I c#qvRbxq A_#c#b
we#k# c#ve td#j | #Km ÷vWvi PZL`m#eawU ntjv, hw` MtelK GKwU Zwi#K Kw#v#v#v wbg#Y
Ktib, Zte tmB Zwi#K Kw#v#v#v GKwU ev `#U w#tqi cix#v w#ix#v#i GKwU Zv#`#YK
m#hvM tKm ÷vWvi gva`g `Zwi Kiv m#e nq| Zte tmU Aek` w#f#P Kti AbymUvtbi gv#v
Ges Dcv# msM#ni tK#kj i Dci |

*tKm-÷vWvi me#Ptq eo
Am#eawU ntjv Gi
mvavi YxKi#Yi m#v#e#Zv|*

m#eavi cvkvcw#k, tKm-÷vWvi wKQz Am#eav i#q#Q| tKm-÷vWvi me#Ptq eo Am#eawU
ntjv Gi mvavi YxKi#Yi m#v#e#Zv| th#nZi we#k#Yi GKK ntjv GKwU (tmU e`w# ev
m#cd`vq hvB #nvK bv tKb), tm#nZi Mfxi AbymUvb m#E#l tKm-÷vWvi dj vdj mg#M#`ewk#`
wnm#te we#Pbv Kiv hvq bv| w#Zxq mgm`wU ntjv, th#nZi tKm ÷vW#Z GKwU MtelYv GK#Ki
Dci Mfxi we#k#Y Kiv nq, tm#nZi Mtel#Ki nv#Z c#`i mgq, R#ej I A_#vtK bv e#j
GKB w#tqi Dci GKwaK tKm ÷vW Kiv m#e nq bv| d#j, c#`w#kZ Dc#sv#i gj K

mvavi YxKiY Kiv mæ nq bv | ZZxq mgm`wU ntjv, thtnZi wefkH`Yi GKK GKU Ges tmB
wel`tqi AfbK Mfxti thZ nq, tmtnZi AvcvZt` wotZ tKm ÷vWtK `f e`qmæúbæMtel Yv
bKkv gtb ntj I Zv gj Zt tek e`qmvæ Ges mgqmvtc` | tKm ÷vW cwi Pvj bv KiZ wMtq
cZ` | AskMthYi gva`tg „i“ZcY`Z` msMh KiZ nq etj Mtel Yv mæúbæKiZ `xN`mgq
tj tm hvq | GB c`xwZtZ Mtel tKi e`w³MZ AvMh, Pwi w`K %æwkó, gj `tera I gtbvfe
Mtel Yvi djvdj tK c`fweZ Kti | `iagv` GKU NUbvtK wotq AbynÚvb Pvj vtbv nq etj
DEi`vZv hw` tKvb Kvi tY fj Z` c`vb Kti b Zte mæúY`Mtel YvUB A`fxb ntq cto |

Rwi c wK (What is Survey)?

AbynÚvbGj K I eY`vgj K Mtel Yv bKkvi cõtqwmK c`xwZi cKiY wnmvte tKm-÷vW tKvb
e`w³, NUbv ev tMvõx mæútk`Mfxi I c`Mvp AbynÚvtbi gva`tg GKU Aš`-ß c`vb Kti | GB
Aš`-ßGj K wefkH`Y GKU NUbv, e`w³, cõtZ`vb ev mæc`lvq mæútk`e`wii Z Ávb ARß mæ
ntj I tmB D`NwUJ wel qe`tk Ab` GKU NUbv, e`w³, cõtZ`vb, ev mæc`lvq t`q`t` cõtqwm
Kiv hvq bv | KviY, tKm-÷vWtZ wefkH`Yi GKK `vtK GKU | dtj GKU mgM`Ki Aaxb`
Dcv`vb `tjvi %æwkó`i gta` cwi `úwi K mæútk`P web`vm I `bvgv`EKZvi wefkH`Y Kiv hvq bv |
tm Rb` eY`vgj K Mtel Yv bKkvi Avti Kiu cKiY AbyniY Kiv cõtqvRb | tmiU ntjv Rwi c
Mtel Yv bKkv | Rwi c Mtel Yv mæZt mvgwRK weÁvfb metP`tg tekx e`eüZ GKU ch`e`qY
c`xwZ | KviY, miwmi ch`e`qYi gva`tg GKU enr Rb`Mvõx`K eY`vi j`q` c`úgK Dcv`E
msMh KiZ AvMh mvgwRK weÁvfb` i KvtQ Rwi c Mtel Yv GKU mtev`Kó c`xwZ wnmvte
we`fPZ ntq`Q |

ØRwi c` kãw wef`bæmg`tg wef`bæA`t`e`eüZ ntj I Gi cãvb `enkó`w ntjv c`k`gvjv,
e`w³MZ m`q`vrKvi ev tUvj t`dvb m`q`vrKvti i gva`tg tKvb w`w`ß Rb`Mvõx ev Zvi Ask t`tk
Z` msMh Kiv | Rwi c ntjv Mtel Yv bKkvi Ggb GKU wefk ai`tYi Avr`ÁZij ä cõtqwmK
c`xwZ, hvi gva`tg th tKvb mvgwRK cõt`Ái Dci bZb Aš`-ß cvl qvi Rb`, ev c`k`vmbK
KvtR wKQz mvavi Y Z` msM`ni Rb`, ev evRvi I gZvgZ Rwi tci Rb`, ev mvgwRK
cõt`Ámg`ni gta` we`g`vb mæútk`P eY`v I Kvh`KviY e`vL`vi Rb` Mtel Yv cwi Pvj bv Kiv
mæ nq | Rwi c Mtel Yv m`vntZ`i ch`ejvPbvq t`Lv hvq th, gibe AvPi`tYi Lp Kg welq
i`q`t`Q hv mvgwRK Rwi tci Aš`f`ß nqvb | dtj mvgwRK Rwi tci welq`i cwi wa GZ we`Z
th, Zvi c`jiv Zvuj Kv Dc`vcb Kiv G t`q`t` mæ bq | Zte tm `tjvtK KZ `tjv en`Ei `dvq
tk`Yex Kiv thZ cvti | thgb, GKU w`w`ß Rb`Mvõxi Rb`%ÁvmbK `enkó` (cwi ev`t`i MVb,
%æwinK gh`v, Rb`k`xj Zv, eqm, BZ`w`), Zv` i mvgwRK cwi tek (w`q`vMZ thvM`Zv, tckv,
Avq, mvgwRK m`thvM m`jeav, Rxeb hv`v, BZ`w`), wef`bæKg`vU (Aemi hvcb, ägt`Yi
Af`vm, e`tqi ifcmn wef`bæAvPiY), Ges gZvgZ I gtbvfe |

Rwi c ntjv Mtel Yv bKkvi
Ggb GKU wefk ai`tYi
Avr`ÁZij ä cõtqwmK
c`xwZ, hvi gva`tg th tKvb
mvgwRK cõt`Ái Dci bZb
Aš`-ß cvl qvi Rb`; ev
c`k`vmbK KvtR wKQz
mvavi Y Z` msM`ni Rb`,
ev evRvi I gZvgZ Rwi tci Rb`,
ev mvgwRK cõt`Ámg`ni gta`
we`g`vb mæútk`P eY`v I
Kvh`KviY e`vL`vi Rb`
Mtel Yv cwi Pvj bv Kiv mæ
nq |

eY`vgj K Rwi c Mtel Yv bKkv cõtqvMi wef`bæj`q` I D`f`k` `vktZ cvti | thgb, mi Kvi
Avg`vbx idZvbx bwiZgvjv c`v`q`t`bi Rb` RbmvariY wK wK ai`tYi t`f`vM`cY` e`envi KiZ
cO` Kti tm wel`tg Rvb`Z AvMh nZ cvti, A`ev GKU e`emv cõtZ`vb Zvi cY` evRvi RvZ
Kivi Rb` t`f`v`i cO`b` i ai`Yw Rvb`Z Pvg, A`ev GKU Mtel Yv cõtZ`vb t`tki ga`weE
gvb | we`g`vb w`q`v e`e`vi ms`vi mva`tb wK wK wel`tg „i“Zi c`vb KiZ Pvg tm wel`tg
Rvb`Z Pvb`Z cvti | GB D`vni Y `tjv t`tk t`Lv hvq th, Rwi c Mtel Yv m`úofvte KZ `tjv
eY`vgj K D`f`k`K Kvh`Ki Kti | mvgwRK Ae`v, mvgwRK mæúK`I AvPiY Mtel Yvq
GKRb mvgwRK weÁvxi KvtQ Rwi c bKkv eY`vi GKU wei`x nwiZqvi wnmvte cwi MwYZ nq |

Rwi c Mtel Yv bKkqv KtqKwU NUbv t_tK i i" Kti GKwU mgM0Ki me Dcv`vbtk wetkHtYi GKK wmwte AšfP Kiv thtZ cvti | hLb GKwU mgM0Ki cti wUtK Rwi tci AšfP Kiv nq, ZLb tmB Rwi cUtK cY9i gvi (complete enumeration) etj | cY9i gvi RvZxq Rwi tci AbmÜvtbi cKwZwU Lp mnR mij _vtK | Av`gi gvix ntj v G ai tYi GKwU Rwi c | wKŠ`hLb mgM0Ki GKwU Asktk wbtq Rwi c cwi Pvj bv Kiv nq, ZLb tmUtK bgbv Rwi c etj | GKwU Av`k°bgbv Rwi tci, Mtel K Mtel Yvi welqe`i mvt_ m=úwKZ mgMK t_tK GKwU bgbv wbePb Ktib Ges tmB wbePZ bgbvi Dci GKwU cKwvj v c0qM Kti DcvE msM0 Ktib | A_ŕ, Avgiv mgMK t_tK wewfbæw³tk bgbv wmwte wbePb Kwi Ges Zvi ci Mtel Yvi mjbw 0 welq msLwS-wewfbæcKæKti tm mKj bgbv t_tK Z_ msM0 Kwi | G ai tYi bgbv Rwi tci gva`tg Avgiv wewfbæRwZtMv0x, agtq tMv0x, tkYx, BZ`w` m=útk°eY0v c0vb Kitz cwi |

Rwi c cXwZtZ i aye`w³B th Mtel Yvi GKK wmwte wetePZ nq Zv bq, tKvb Gj vKv, `j, tMv0x, cwi evi, kni, iv0, RwiZ, Kve, mi Kvi x c0Z0vb, wKí Kvi Lvbv, ev msMVbl Mtel Yvi GKK ntZ cvti | AtbK mgq Avgiv bgbv GKK wmwte e`w³tk wetkHtYi bv Kti eis tKvb `j ev tMv0tk wetkHtYi Dt`wM M0Y Kwi | wewfbæmsMVtbi KwWtgv ev Kvh0ej x m=útk°Z_ msM0ni Rb` Avgiv msMVtbi tKvb GKRB e`w³ bq, eis wewfbæw³i KvQ t_tK Z_ msM0 Kti msMVbw m=útk°avi Yv tB | thgb, ersj vt`tk bMi weKvtki Dci Mtel Yv Kitz wMtq Mtel K t`tki wewfbækni tK bgbvi GKK wmwte wetePbv Ktib Ges bMi e`e`vcbv | Dbqtbi mvt_ msKæ-wewfbæw³i KvQ t_tK Z_ msM0 Kti Zj bvgj K wetkHtYi Ktib | GwU e`w³ | tMv0x Dfq tŕŕt c0hr` ntj | DEi`vZv ev Z_ c0vbKvi x wmwte e`w³ gvb) tK wbePb Kiv nq | GKwU NUbv (thgb, weevn wet`Q`) ev mvgwRK tMv0x ev m=c0vtqi (thgb, mi Kvi x | temKvi x wKŕv c0Z0vb, ev ŕŕ` RwiZ-tMv0x) Dci Rwi c cwi Pvj bv Kitz Pvb tJ weevn-wet`Q` ntqtQ Ggb e`w³, wbePZ tKvb wKŕv c0Z0vb ev Aw` evmx m=c0vq wetkHtYi GKK wmwte wetePZ ntj | Z_ c0vbKvi x wmwte th tKvb e`w³ gvb) tK wbePb Kitz nq |

bgbv Rwi c AtbK RwJ Zi GKwU eY0vgj K AbmÜvb ntZ cvti | AbmÜvtbi RwJ Zvi gvŕvi Dci wbfP Kite wetkHtYi GKK ev bgbvi msL`v wK nte Zv | AbmÜvbwU hw` AtbK tekx msL`K Pj K wbtq Mfxi Zi nq, Zte bgbv msL`v Kg nte, Ges hw` AwakZi Kg msL`K Pj Km=úbw0nq, Zte bgbv msL`v AtbK tekx ntZ cvti | weci xZfvte, hLb wetkHtYi GKK ev NUbvi msL`v tekx nq, ZLb `ŕfweKfvteB AbmÜvtbi Mfxi Zv nwm ciq Ges wetkHtYi thvM` Pj tKi msL`v Ktg hvq | `f msL`K bgbv wbtq c0vp Rwi c Mtel Yv tKvb wetqi Mfxi c0ek Kitz mŕŕg ntj | Mtel K Gi gva`tg epEi mavi Y wPŕwU Zvi `k`ctU aitZ e`°nb | thgb, GKRB Mtel K hw` cwi ewi K Rxe tbi wbu 0 wKQz welq wbtq Mtel Yv Kitz Pvb, tm tŕŕt wZvb Aŕ wKQz cwi ev tti gta` Zvi Mtel Yv mxgve x ivL tZ cvtib Ges c0vp | Mfxi AbmÜvb cwi Pvj bv Kitz cvtib | GB Mtel Yvi dj v dj t_tK nqtZv Mtel Yvaxb `f msL`K cwi evi m=útk°AtbK wKQz wek`fvte Rvb hvte, wKŠ` tmB dj v dj , t j v Ab`vb` cwi ev tti tŕŕt c0hr` nte wKbv Zv cKæmvtcŕŕ ntq cto | Kvi Y, nqtZv t`Lv hvte th, Ab`vb` AtbK cwi ev tti mavi Y `ewkó` , t j v Mtel Yvaxb cwi evi , t j vi `ewkó`i mvt_ wgtj bv | AZGe, Rwi c Mtel Yv bKk v cwi Pvj bvi tŕŕt Mtel Yvi Dt`k` | bgbvi AvKvtii welq wU LpB , i`ZcYŕ

Rwi tci c0vb mjeawU ntj v,
GwU gva`tg eU NUbvtK
wbtq AbmÜvbgj K,
eY0vgj K | e`vL`vgj K
Mtel Yv cwi Pvj bv Kiv hvq |

Rwi tci mjeav | Amjeav (Advantages and Disadvantages of Survey)

Rwi tci c0vb mjeawU ntj v, GwU gva`tg eU NUbvtK wbtq AbmÜvbgj K, eY0vgj K | e`vL`vgj K Mtel Yv cwi Pvj bv Kiv hvq | w0ZixZt, Mtel Yvaxb mgm`vi Dci DcvE msM0ni

Dřĩ k` wbgZ cĕgĵj vq cĕgĵj vq Ggbfvte i wPZ nq, hvZ Kti e`w³i KvQ t`ĵK Avni Z DĒi ĵj v bgbvq wbePZ me Dcv`vtbi tĵĵĵ cĕqvM Kiv hvq| ZZřqZt, bgbvi wbePb I mvĵvrKvi MĕhY GKŪ cĕZwbwZĵkj bgbvqb c`wZi wfvĒtZ ntq `vtK| PZřZt, cĕce wbePĵbi cĕµqvŪ mvavi YZt cĵcwiZZgĵß `vtK| cĀgZt, Rwi cĵK fvē ĵZ cbivevĒ Kiv hvq| IŕZt, Rwi ĵc DcvĒ msMĕni wēfbaĵKŠkj cĕqvM Kiv hvq|

Rwi c Mĵel Yvi (eYĕvgĵ K ev e`vL`vgĵ K hvB tnvK bv tKb) DcĵhwMzv wbtq gZ cv`R` iĵĵĵQ| AĵĵK gĵb Kĵib th, mvgwRK wēĀvbxiv Rwi c Mĵel Yvq AwZ AvMĕ cĕKvk Kĵi `vtKb| G aiĵYi mgĵĵ vPbv wĵQĵb Rwi ĵci wR`^c`wZMZ mxgve`xZv QvovI tek wKQz Kvi Y iĵĵĵQ| cĵgZt, AwēĵPbvĵhZ Rwi c cwi Pĵj bvi dĵ A`^o mēu` I mgĵĵi AcPq Ges AcĕqvRbxq DcvĒ msMĕni | wZřqZt, wēfbaĵRwĵj mvgwRK mgm`vi Mĵel Yvq (thLvĵb Ab` tKvb c`wZi e`envi h_vh_ ntZ cvĵi) Rwi c c`wZi AŪ Abĵi Y| ZZřqZt, Rwi c Mĵel Yvi cwi gvYMZ wēkĵĵi mnRvZ `ewkŕĵj vtK ĵYMZ Dcv`vtbi tĵĵĵ wbePvi cĕqvM| PZřZt, Rwi ĵci gva`ĵg cĕB DcvĒ mvi wY, ĵj LwPĪ Ges wēfbaĵcwi msL`vtbi gva`ĵg Dc`wĵZ I wēkĵĵ nq etj tm ĵj v cĕqkt epĒi ZmĒK KvVĵĵv t`ĵK wēw`Obwēĵĵ cĵo| cĀgZt, DcvĒ KZ ĵj v wēĵĵi mvi -msĵĵc wmwĵte Dc`wĵZ nq etj wēĵe`i AŠwĵhZ cĕµqv I cwi eZĕ ĵj v Dcĵ wai gĵa` Avĵm bv| IŕZt, DĒi `vZv cĕgĵj v cĕĵĵ thfvte tēvSb, tm ĵj v wZwb DĒi ĵ`evi mgq mwKfvte eĵS DĒi ĵ`b wKbv Zv cĕĵĵi tKvb mĵhwM `vtK bv| dĵj, DĒi i mZ`Zv I mwKZv mēuĵK`cĕĵĵĵK hvq|

Rwi c Mĵel Yvi (eYĕvgĵ K ev e`vL`vgĵ K hvB tnvK bv tKb) DcĵhwMzv wbtq gZ cv`R` iĵĵĵQ| AĵĵK gĵb Kĵib th, mvgwRK wēĀvbxiv Rwi c Mĵel Yvq AwZ AvMĕ cĕKvk Kĵi `vtKb| G aiĵYi mgĵĵ vPbv wĵQĵb Rwi ĵci wR`^c`wZMZ mxgve`xZv QvovI tek wKQz Kvi Y iĵĵĵQ| cĵgZt, AwēĵPbvĵhZ Rwi c cwi Pĵj bvi dĵ A`^o mēu` I mgĵĵi AcPq Ges AcĕqvRbxq DcvĒ msMĕni | wZřqZt, wēfbaĵRwĵj mvgwRK mgm`vi Mĵel Yvq (thLvĵb Ab` tKvb c`wZi e`envi h_vh_ ntZ cvĵi) Rwi c c`wZi AŪ Abĵi Y| ZZřqZt, Rwi c Mĵel Yvi cwi gvYMZ wēkĵĵi mnRvZ `ewkŕĵj vtK ĵYMZ Dcv`vtbi tĵĵĵ wbePvi cĕqvM| PZřZt, Rwi ĵci gva`ĵg cĕB DcvĒ mvi wY, ĵj LwPĪ Ges wēfbaĵcwi msL`vtbi gva`ĵg Dc`wĵZ I wēkĵĵ nq etj tm ĵj v cĕqkt epĒi ZmĒK KvVĵĵv t`ĵK wēw`Obwēĵĵ cĵo| cĀgZt, DcvĒ KZ ĵj v wēĵĵi mvi -msĵĵc wmwĵte Dc`wĵZ nq etj wēĵe`i AŠwĵhZ cĕµqv I cwi eZĕ ĵj v Dcĵ wai gĵa` Avĵm bv| IŕZt, DĒi `vZv cĕgĵj v cĕĵĵ thfvte tēvSb, tm ĵj v wZwb DĒi ĵ`evi mgq mwKfvte eĵS DĒi ĵ`b wKbv Zv cĕĵĵi tKvb mĵhwM `vtK bv| dĵj, DĒi i mZ`Zv I mwKZv mēuĵK`cĕĵĵĵK hvq|

eYĕvgĵ K Rwi c bKĵvi wēfbaĵi Y (Different Types of Descriptive Survey Design)

Rwi c Mĵel Yv bKĵvi wēfbaĵi Y iĵĵĵQ| GB Mĵel Yv bKĵvi ai Y ĵj v AbmŪvbgĵ K, eYĕvgĵ K I e`vL`vgĵ K wZbwĵ tĵĵĵB cĕqvM Kiv hvq| wKŠ` Avgiv Rwb th, GB wZb aiĵYi Mĵel Yv bKĵvi gĵa` ĵgŠĵj K cv`R` iĵĵĵQ| AbmŪvbgĵ K Mĵel Yvi tĵĵĵ, mvgwRK cĕĀ ĵj vi gĵa` mēuĵKĵ Aw`ZĵK Awē`vi Kiv nq, wKŠ` Mĵel Yvi dĵvdĵi wfvĒtZ tKvb Abĵi cĵqb Kiv nq bv| eYĕvgĵ K Mĵel Yvi tĵĵĵ, wēfbaĵĵ ĵKi mēuĵKĵj vtK eYĕv Kiv nq gvĪ, wKŠ` tm ĵj vi gĵa` wē`gvb mēuĵKĵ KvĕKvi Y e`vL`v Kiv nq bv| Zĵe, eYĕvgĵ K Rwi c bKĵvq, cĕB dĵvdĵi wfvĒtZ fvēl`r Mĵel Yvi Rb` Abĵi cĵqY Kiv nq| e`vL`vgĵ K Rwi ĵc Mĵel Yv KvĕĵgŪ `i` nq Abĵi cixĵvi Dřĩ k`ĵK tK`^a Kĵi | Rwi c Mĵel Yv bKĵvi e`vL`vgĵ K ai Y ĵj v cieZĕcvĵ Avĵj vPbv Kiv nĵe| GB cvĵv eYĕvgĵ K Mĵel Yvq e`ēuZ nq Ggb Rwi c bKĵv ĵj v Avĵj vPbv Kiv nĵe|

µm-tmKĵbj Rwi c (Cross-Sectional Survey): µm-tmKĵbj Rwi ĵc GKŪ enr RbĵMvŕi wēfbaĵewkŕĵj, gĵbvfvē I gZvgZ eYĕvi ĵĵĵĵ wbePZ bgbvi t`ĵK GKŪ wbw`ĕ mgĵĵ DcvĒ msMĕni Kiv nq Ges tmB DcvĒi wfvĒtZ mgMĵĵĵK eYĕv Kiv nq| GLvĵb ĵi`ZcY wēĵĵ ŵj v th, µm-tmKĵbj Rwi ĵc GKŪ wbw`ĕ mgĵĵ DcvĒ msMĕni Kiv nq| G aiĵYi Rwi ĵc mvavi YZt GKŪ enr AvKĵi i bgbvi wbePb Kiv nq Ges WwKĵhvĵM cĕgĵj v tĕŪY Kĵi ev e`w³MZ mvĵvrKvi ev tŪĵj tĕbv mvĵvrKĵi i gva`ĵĵ ĵmB bgbvi t`ĵK DcvĒ msMĕni Kiv nq| enr AvKĵi i bgbvi I GKŪ wbw`ĕ mgĵĵi e`envi G aiĵYi Rwi ĵc mvgwRK wēĀvbx`i Kĵĵ tek DcĵhwMx Kĵi Zĵĵo, wēkĵ Kĵi tKvb wēĵĵi Dci Zĵ bvgĵ Kfvte mwK I `^oZZvi mĵ_ DcvĒ msMĕni Rb`|

`xNĵv xB Rwi c (Longitudinal Survey): thĵZmgĵĵi mĵ_ th tKvb wēĵe` ev RbĵMvŕi wēkĵĵi cwi eZĕ NĵŪ `vtK, tmĵZi µm-tmKĵbj Rwi ĵci gva`ĵĵ cwi eZĕ mēuĵKĵtKvb

DcvE msMh Kiv mae nq bv| cwieZB ev tKvb cUqv meKvk mautK®RvbtZ ntj GtKi Awak mgta DcvE msMh Kiv cUqvRb| KLtbv `U mgta, Avevi KLtbv wZbwU ev PviwU mgta Rwi c wipvj bvi gva`tg DcvE msMh Kiv nq| G aitYi Rwi ctK `xNRvj xb Rwi c etj | `xNRvj xb Rwi c KtaKfvte cwipvj bv Kiv hvq| thgb,

1. aviv Mtel Yv (trend studies),
2. tKvU®Mtel Yv (cohort studies), Ges
3. c`vtbj Mtel Yv (panel studies)|

aviv Mtel Yvq, GKwU mvavi Y mgMK t_tK bgbv wbePb Kiv nq Ges wefwbemgtqi wfiEtZ Zvt`i KvQ t_tK Z_` msMh Kiv nq| hw`I Av`k`cw w`wZtZ GKB DEi`vZvi KvQ t_tK Z_` msMhni cU`vkv Kiv nq, wKs`cKZctq Zv cvlqv hvq bv| tm tqtT, wefwbemgtq DEi`vZv wefwbemgtq nZ cvtib, Zte Zvt`i tK Aek`B GKB mgMKi cUwvva nZ ntel G tqtT, GKwU welq gtb ivLv cUqvRb th, aviv Mtel Yvq `xNmgtaqi e`eavtb DcvE msMhni cUqvRb nq, hv AtbK mgq GKRb Mtel tKi ctq Kiv mae nq bv| tm tqtT, Mtel K Mtel Yvxb weltaqi Dci Ab` mgta Ab` Mtel K KZR cwipvj Z Mtel Yv cUzte`b t_tK Z_` msMh Kitz cvtib| aviv Mtel Yvi tqtT, cUg mgtaqi Mtel Yvq th e`w³ Z_` w`taqOb, wZxq mgtaqi Mtel Yvq wZvb RweZ bv| vKtZ cvtib| Avevi cUg Mtel Yvq hvi Rbfnqvb, wZxq Mtel Yvq wZvb bgbvq ASfP nZ cvtib|

tKvU®Mtel Yvq, GKB e`w³ ev e`w³etMP KvQ t_tK wefwbemgtq DcvE msMpxZ nq| tKvU® ej tZ tKvb GKwU mgta msMWZ tKvb Nubvi hviv Askx`vi Zvt`i tK tevSq| thgb, hviv 1971 mvj RbfnbtqtQ Zviv H eQtI RbMhYKvix RbtMvöxi tKvU® hviv 2000 mvj Gm Gm wv cvk KtitQ Zviv H eQtI Gm. Gm. wv cvk Kiv RbtMvöxi tKvU® tKvU®Mtel Yvq GiKg GKwU tKvU® t_tK wefwbemgtq DcvE msMh Kti wtkY Kiv nq| aviv Mtel Yvi mvf_ tKvU®Mtel Yvi GKwU tqtT wj iqtQ| tmU ntjv, aviv Mtel Yvi gZ tKvU®Mtel Yvq| tKvU® GKB RbtMvöxi KvQ t_tK Z_` Avni Y Kiv thZ cvti | A_®, `U wfbemgtq GKB tKvU® GKB e`w³ i KvQ t_tK Z_` msMh Kitz nte Zv bq, eis GKB tKvU® wfbemgtq e`w³ i KvQ t_tK Z_` msMh Kiv thZ cvti |

aviv Ges tKvU®Mtel Yv Dftqi B GKwU mvavi Y Amjeav iqtQ| thgb, aviv Mtel Yvq wbePbx cPvi YvKvj xb wefwbemgtq tfvUvi t`i AvPitYi Dci cwipvj Z Mtel Yvq Zvt`i cwieZBkxj AvPiY eYBv Kiv nq| wKs`c`teP tKvb DEi`vZv cieZtZ cwiewZ AvPiY cKvk KtitQb wK bv Zv aviv Mtel Yvq Rvb hvq bv| `xNRvj xb Mtel Yvq GB Amjeav `i Kivi Rb` c`vtbj Mtel Yv Kiv nq| GtZ wefwbemgtq GKB bgbv t_tK DcvE msMh Kiv nq| GB Mtel Yvq Mtel Yvxb bgbvK c`vtbj ejv nq| thgb, wbePbx cPvi YvKvj xb wefwbemgtq hw` GKB bgbvi GKB e`w³ i KvQ t_tK DcvE msMh Kiv nq, Zte tKvb e`w³ cUg t_tK cieZtmgta wfbemgtq DEi`w`Ob Zv wPvYZ Kiv mae nq| Zte aviv ev tKvU®Mtel Yvq thgb c`eAb` tKvb Mtel K KZR msMpxZ DcvEi gva`wK wtkY Kiv mae nq, c`vtbj Mtel Yvq Zv mae nq bv| c`vtbj Mtel Yv mvavi YZt A_® mgtaqi w`K t_tK tekx e`qeuj nta v`tK Ges wZxq `dvq bgbvq wbePZ DEi`vZvMY AtbK tqtT Mtel Yvq AskMhYi AvMh nwi taq tdtj b| G Qovl , c`vtbj Mtel Yvq msMpxZ DcvEi wtkY cxwZ tek wKQv RuUj nta v`tK|

mvisk

MtelYvi djvdij i gvb wbfP Kti h_vh_ MtelYv bKkvi Dci | GB cvtV MtelYv bKkvi
`mU i "Zcy°cKiY — tKm-÷wW I Rwi c — Avtj vPbv Kiv ntqtQ | tKm-÷wW wbfP
MtelYv bKkqv tKvb cĀ mautK°AbmÜvbgj K KgRvÜ cwi Pvj bv Kiv nq | Ab`w tK, eYDv
wbfP MtelYv bKkqv cĀ Amgñi gta` cvi `úwi K mautK° mavi Y ifc mautK° Avgiv RivtZ
cwi | Dfq tñtĀB, tKvb bKkvW h_vh_ dj w`te Zv wbfP Kti MtelYv mgm`vi cKwZi
Dci | MtelKtK MtelYv mgm`v mautK° fvj vfvte tRtb wbtq MtelYv bKkv cŕqtb
gtbwbték Ki tZ nq |

cvfVvEi gj`vqb

be⁹³K cke

mVVK DEti i cvfk WJK (v) wPy w`b -

1| GKRb e^{w3} ev cOZovtbi Dci wbeo Mtel YvtK:

- K. Rwi Mtel Yv etj
- L. ch^eY Mtel Yv etj
- M. tKm-÷vW etj
- N. Dcti i me|

2| tKm-÷vWi metPtq eo AmjeawU ntj v:

- K. Mtel Yv cwi Pvj brq A^eteK j vtM
- L. Mtel Yv wv^w O Gj vKvq mxgve^x _vtK
- M. Mtel Yvq mvavi YxKi tYi t^qt^t mxgve^x Zv _vtK
- N. Mtel Yvq AtbK tekx Pj K wbtq KvR Ki tZ nq|

3| tKvU⁹Mtel Yv:

- K. GKB e^{w3} ev e^{w3} etM^P KvQ t^tK wewfbwngtq DcvE msMpxZ nq
- L. GKB e^{w3} i KvQ t^tK GKwU wv^w O mgtq DcvE msMpxZ nq
- M. GKwU `tj i KvQ t^tK erm^t i GKwU wv^w O mgtq DcvE msMpxZ nq
- N. Dcti i me|

msv^qB cke

1| Rwi c wK?

2| tKm-÷vW wK?

iPbvj K cke

1| evsj vt`tki mgvR Mtel Yvq tKm-÷vWi „i“Z;D`vni Ymn Avtj vPbv Ki “b”?

2| evsj vt`tki i vR%wZK Kgx^e i Av^emgwRK cUfug Rvbi Rb^w cwi Pwv Z Mtel Yvq Avcwb tKvb tKSkj wJ AaxK h^{w3}h^{w3} etj gtb Kti b? DEti i `ct^q h^{w3} t`Lvb|

e`vL`vgj K Mtel Yv bKkv – Rwi c I cixŋY
Explanatory Research Design – Survey and Experiment

GB cW tkfI hv Rvbn hvte —

- e`vL`vgj K Rwi c bKkv wK
- e`vL`vgj K Rwi c bKkvi cKvi tf`
- cixŋY wK
- cixŋYi mjev I Amjev
- bgbv ubeP`bi cxwZ
- cixŋYi cKvi tf`
- cixŋYgj K bKkvi cKvi tf`

e`vL`vgj K Rwi c bKkv wK (What is Explanatory Survey Design)?

mvgwRK weAvbxiv AbmÜvbgj K I eYvvgj K Rwi c Mtel Yvi gva`tg eü mvgwRK cĉĀ I cĀZövbĉK eYv KtiĉQb| thgb, cwi evĉi i wefboai Y I Mvb cŋvj xi mvt_ mvgwRK ghP vi m`úK[©] wKŋvi mvt_ mvgwRK MvZkxj Zvi m`úK[©] BZ`w | Zte GwU gtb ivLv cĉqvRb th, Rwiĉci Dĉi k` memgq eYv Kiv bq| eü Rwi c cwi Pwvj Z ntqĉQ G mKj m`úK[©] e`vL`vi Dĉiĉk`| e`vL`vgj K Rwi c bKkvq mvaviYZt Abĉi cŋqĉbi gva`tg `ŋU PjĉKi gĉa` AbygZ m`úK[©] Aw`ZĉK e`vL`v Kiv nq| eYvvgj K Rwiĉc `ŋU PjĉKi gĉa` i agvĉ m`úK[©] eYv Kiv nq, A_P e`vL`vgj K Rwiĉc eYvi cĉkvcmk m`úK[©] Kvi Y LĉR ĉei Kiv nq| G aiĉYi Mtel Yv bKkvq mvaviYZt ĉKvb GKwU ev GKvĉK Pj KĉK wbfPĉkj Ges Aci tKvb GKwU ev GKvĉK Pj KĉK `vaxb Pj K wmvte wetePbv Kĉi Zvt` i gĉa`Kvi KvhRvi Y m`úK[©] wĉtkĉY Kiv nq| G mKj e`vL`v KLĉbv ZĉMZ ntq `vtK, Avevi KLĉbv e`enwi K I AvrfÁZvj ä ntq `vtK| AbmÜvb I eYvvgj K Rwi c bKkvq Mtel K `vaxb Pj KĉK Dĉi k`gĉ Kfvte e`vcK e`envi Kĉib bv, ev Mtel Yvaxb wĉlqĉK wĉqšYgj K cwi w`wZĉZ cĉqvM Kĉib bv| GKgvĉ e`vL`vgj K Rwi c bKkvq Zv Kiv nq Abĉi cixŋvi gva`tg| AZGe, msvŋBfvte ejv hvq th, mvgwRK cĉĀ, cĀZövb, NUbv, BZ`w i gĉa` we`gvb `bwgĉEK m`úKŋgĉni e`vL`vi Dĉiĉk` cwi Pwvj Z RwiĉĉK e`vL`vgj K Rwi c Mtel Yv bKkv etj |

*mvgwRK cĉĀ, cĀZövb,
NUbv, BZ`w i gĉa` we`gvb
`bwgĉEK m`úKŋgĉni
e`vL`vi Dĉiĉk` cwi Pwvj Z
RwiĉĉK e`vL`vgj K Rwi c
Mtel Yv bKkv etj |*

e`vL`vgj K Mtel Yv bKkv ev`evqĉbi cĉe`Mtel Yvi wĉlqĉ`i mvt_ msvkĉ-ZwĉĉK KvVtĉvi wfvĉĉZ GKRb Mtel K Abĉi cŋqb Kĉib th, GKwU `vaxb Pj K GKwU wbfPĉkj PjĉKi gĉa` cwi eZĉbi Rb` Kvi Y wmvte KvR Kĉi | Abĉi cixŋvi Rb` Mtel K wbePZ bgbv ĉĉK Z` msvMh Kĉib Ges cĉB Zĉ`i wfvĉĉZ wbfPĉkj PjĉKi Dci `vaxb PjĉKi cĉ`wĉKZ cŋvĉei dĉj mĉ cwi eZĉ chĉŋŋYi tPöv Kĉib| wKš` cĉkĉDVĉZ cvĉi th, wbfPĉkj PjĉKi gĉa` cwi eZĉbi wĉQĉb `vaxb Pj K wK GKgvĉ Kvi Y wmvte KvR Kĉi? hĉ wbfPĉkj Pj KĉK Avi Ab` tKvb Pj K cŋwĉZ bv Kĉi `vtK ZLbB tĉej ejv hvq th, tmB `vaxb Pj K wbfPĉkj PjĉKi gĉa` chĉŋŋYKZ cwi eZĉbi GKgvĉ Kvi Y ntZ cvĉi | wKš` Ggb ntZ cvĉi th, `vaxb Pj K wU nqĉZv wbfPĉkj Pj K wU i mvt_ tKvbfvteB m`úK[©] bq| m`eZt, `vaxb Pj K wU tĉej gvĉ AvsikK cwi eZĉ NwUqtĉQ Ges Aenĉó cwi eZĉ NtUĉQ Ab`vb` PjĉKi KviĉY (hv tKvbfvte wĉqšY Kiv nq wĉ) |

GB m³ebv₃tjvi gta³ tKvbW m³WK Zv wba³Y Ki³Z ntj tKvb bv tKvbfvte Ab³vb³ Ac³mw³/2K, AbvKw³Y³Z Ges Ac³QvRbxq Pj³tKi c³fve₃tjvtK w³qšY Ki³Z nte| GB w³qšYi³ ³U Dcvq i³tqtQ| c³g³U ntjv, c³msL³vbMZ tKškj c³QvtMi gva³tg| thgb, e³uav w³f³Y w³tk³Yi (multiple regression analysis) gva³tg Ab³vb³ Pj³tKi c³fvetK w³qšY K³i w³ ³axb Pj³tKi bx³U c³fve w³Y³Q Kiv th³Z cv³i| w³Zxq³U ntjv, m³uY³ b³g³vtK cix³Y I w³qšZ³ ³tj w³f³ K³i cix³Y ³tj i Dci ³axb Pj K³U³tK c³QvM Kivi ci ³ ³tj i gta³Kvi cv³_R³tK ch³fe³Yi gva³tg| GB Av³tj vPbv t³_{tK} G³U ³úo ntq D³tV³tQ th, w³rfb³ePj³tKi gta³ w³ ³g³v m³u³tK³ c³KZ e³vL³vi t³q³t³ ÚbqšY³0-Gi w³el³q³U ³i³“Zc³Y³ AZGe, Av³tj vPbvi M³f³xi h³vl qvi c³fe³ÚbqšY³0 k³u³U A³“Ab³veb Kiv D³Pr|

m³vgw³RK M³tel Yvq ÚbqšY³0 k³u³U e³úea Ašw³h³Z A³“i³tqtQ| GK A³_t³“ÚbqšY³0-Gi A³“ ntj v w³KQz Pj K³tK w³fb³zv c³Q k³bi ³axbZv c³Q vb K³i GK ev GKwaK Dcv³ vb³tK w³“i ivL³v| thgb, h³w³ g³tb Kiv nq th, GK³U cix³Y³vgj K c³iw³ w³Z³tZ Új 1/2 GK³U Lp³B ³i“Zc³Y³“Dcv³ vb, tm t³q³t³, Új 1/2 Pj K³U³tK w³qšY K³i GK³U cix³Y³vgj K D³xc³tKi (stimulus) Dci b³ix I c³j³“t³i c³QZ³u³qvMZ w³fb³zv ch³fe³Y Kiv nq| ³mb D³xcK Pj K³U nt³Z cv³i tKvb J³l³ai gv³t³v, ev GK³U m³vgw³RK Ae³“v, ev w³k³Y³vi gv³t³v, BZ³w³ | GK³B³fvte, eqm³t³KI GK³U w³qšZ³ Pj K etj MY³ Kiv th³Z cv³i | Ab³“ A³_t³“ÚbqšY³0 k³u³U³tK GK³U m³vgw³RK t³M³ox ev e³w³“i t³q³t³ c³QvM Kiv th³Z cv³i, hv cix³Y³Yi Rb³“ Db³Y³ ³vtK bv| thgb, h³w³ Avgiv GK³U ³tj i Dci GK³U J³l³ai c³QZ³u³qv Rvb³tZ P³vB Ges Ab³“ GK³U ³tj i Dci ³mb J³l³a c³QvM Ki³Z bv P³vB, Z³te th ³j³U³tK J³l³a t³“qv nt³“Q ³mb ³j³U³tK cix³Y ³j Ges th ³j³U³tK J³l³a t³“qv nt³“Q bv ³mb ³j³U³tK w³qšZ³ ³j etj MY³ Kiv nq| KL³bl KL³bl GKR³b e³w³“ w³bt³RB w³bt³Ri w³qšK³ w³mvte K³vR K³i ³vtK³ | Gg³w³U nq w³tk³l K³i Úc³fe³“Ges c³t³i³ ai³Yi M³tel Yv bK³kvi t³q³t³ | thgb, GKR³b e³w³“ GK³U w³ ³mg³tq GK³U D³xcK M³h³Yi c³fe³“Zvi Av³Pi³Y³tK c³iw³gvc Kiv nq Ges w³KQz mg³tqi e³“eav³tb ³mb e³w³“i GKB Av³Pi³Y³i w³Zxq c³iw³gvc M³h³Y Kiv nq| D³xcK³U³i c³f³veti gv³t³v w³ba³Y³Yi Rb³“ GB ³ ³mg³tqi Av³Pi³Y³tK Z³j bv Kiv nq| c³Q c³iw³gvc t³_{tK} w³Zxq c³iw³gvtci e³“eav³ KZU³Kz nte t³mw³U w³f³ K³i M³tel³tKi j³“³, M³tel³Yvi D³“k³“ I cix³Y³Yi ai³Yi Dci |

e³vL³vgj K Rwi c bK³kvi c³K³vi t³“ (Types of Explanatory Survey Design)

Av³g³iv B³tZvg³ta³B tR³t³bw³Q th, e³vL³vgj K M³tel Yv bK³kvi ³U c³áv³ kZ³“ntjv Ab³K³i cix³Y Ges cix³Y I w³qšY| e³vL³vgj K Rwi³tci w³eb³vm I Kv³h³et³gi ai³Y³U A³tb³KU³v e³Y³vgj K bK³kvi g³tZv, Z³te D³“t³“i w³fb³zvi K³vi³Y e³vL³vgj K Rwi c bK³k³v c³Y³q³t³bi “i³“tZ c³QgZt, GK³U Z³w³Et³K K³v³vt³gvi w³fw³Et³Z w³KQz Ab³K³i cix³Y³vi c³“vebv Ki³Z nq, Ges w³ZxqZt, c³“qvRb³te³ta b³g³vtK cix³Y I w³qšZ³ ³tj w³f³ K³i³Z nq| c³QvRb³te³ta ejv nt³qtQ G K³vi³Y th, tKvb tKvb Rwi c bK³k³vq Ab³K³i cix³Y³ Kiv ntj I b³g³vtK cix³Y I w³qšY ³tj w³f³ Kiv nq bv| e³vL³vgj K Rwi³tci m³vaviYZt, ³“ai³Yi bK³k³v e³“e³UZ ntq ³vtK — e³vL³vgj K ³um-³tm³K³k³bj Rwi c I ³um-³tm³vmvBUj Rwi c bK³k³v|

e³vL³vgj K ³um-³tm³K³k³bj Rwi c bK³k³v (Explanatory Cross-Sectional Survey Design): m³vgw³RK w³Á³vtb e³vL³vgj K M³tel Yvq m³“eZt me³t³q³ tekx e³“e³UZ c³“w³ZU³ ntj v e³vL³vgj K ³um-³tm³K³k³bj Rwi c | G³U³tK Ú³w³Zk³j ³j Z³j bv³ (static group comparison) bK³k³vl ejv ntq ³vtK| aiv hvK, tKvb tKvb w³k³Y³ c³QZ³vtb ³“ai³Yi c³V³ vb c³“w³Z Ab³Y³Y Kiv nq| GK³U Av³Y³tbK c³V³ vb c³“w³Z, thL³vtb n³vtZ K³j³g Ges Ab³“U MZ³v³Y³MZ³K mbvZb c³“w³Z, thL³vtb e³“Zvi gva³tg c³V³ vb Kiv nq| GB ³“ai³Yi c³V³ vb c³“w³Zi Kv³h³R³wi Zv w³btq

GKRb MtelK GKwU MtelYv KitZ Pvb| GB MtelYvq wZwb th AbKí wU cixŋv Kitēb tmwU ntjv, ōth me Qvĭ-Qvĭxt`K cv` vtbi Rb` AvaybK c×wZ e`envi Kiv nq tm me Qvĭ-Qvĭxt` i cixŋvi djvdj , th me Qvĭ-Qvĭxt` i MZvbMwZK c×wZtZ covtbn nq Zvt` i djvdjtj i tPtq fvtjv nteŋ|

GB AbKí cixŋvi Rb` AvaybK c×wZ e`envtii dtj Qvĭ-Qvĭxiv MZvbMwZK tKŠktj wŋvčŌB Qvĭ-Qvĭxt` i tPtq fvtjv djvdj KtiŋŌ wK bv, ev KZUKz fvtjv KtiŋŌ Zv AvaybK c×wZ ii`i cteŋ I cieZx`cixŋvi djvdjtj cv`R` chŋŋY Kitj Rvbv hvte| hw` cv`R`wU ZvrchEYŋvte tekx nq, Zte cv` vtbi AvaybK c×wZ e`envtii KvhRix cŋve m×útK`MtelK GKwU BwZevPK Dcmsnvi UvbŋZ cvtib| G tŋŋŋŋ, MtelK AvaybK wŋv c×wZ AbmiY Kti Ggb wKQz we`vj qŋK cixŋY `j Ges MZvbMwZK c×wZtZ wŋv cŋvb Kti Ggb wKQz we`vj qŋK wqwsZ `tj i bgbv wnmvte wbeŋb KitZ cvtib| Zvici, GB `ŋaitYi we`vj qŋi Qvĭ-Qvĭxt` i cixŋvi djvdj chŋj vPbv Kti MtelK AvaybK cv` vb c×wZi KvhRwvi Zv wŋtq Dcmsnvi UvbŋZ cvtib|

wKŠ`G aitYi tKŠkj Aeŋ×tbi tŋŋŋŋ, hw` cixŋY I wqwsZ `j `ŋwU Mvb Kivi mgq we`vj qŋtjv `ŋePqŋbi gva`tg wbeŋb Kiv bv nq, Zte cv` vb c×wZi AwfAZvi cte`Qvĭ-Qvĭxt` i Ab`vb` mKj `enkŋ` mgifc wŋtjv wK bv Zv ejv hvq bv| mgifcZv cwi gvtci GB AfvewŋtK cwtq tbevi Rb` MtelKtK MtelYvi cti mgKŋZvi gvb`ŌtK cŋŋYi jŋŋ` bgbvi tRvov wgvj tŋ wŋtZ nq| cixŋŋYi Zj bvq e`vL`vgj K ŋm-ŋmKkbyj Rwiŋci wKŌwv mvgve×v `vKtj I Gi wKQz mŋeav itŋtŌ| e`vL`vgj K bKkqv bgbvi wfwŋtZ `j wbeŋtbi tŋŋŋŋ Awak cŋZwbwaZŋj bgbv cvevi m×vebv tekx `vtK| dtj, GB MtelYvi gva`tg cŌB djvdjtj i wfwŋtZ MtelK e`vcKZi mgMŋ m×útK`Dcmsnvi UvbŋZ cvtib| GwU GKwU ev`e cwiŋtŋk AbŋŋZ nq etj MtelYvq AskMŋYKvixt` i `ZtūZŋv AŋbK tekx `vtK Ges MtelYvq cŌB djvdj w`tq cKZ Rixŋbi Ae`v m×útK`MtelK AŋbK tekx Mfxi AŠ`ŋŋ tŋtZ cvtib|

ŋm-ŋmvmvBUvj Rwi c bKkŋ (Cross-Societal Survey Design): ŋm-ŋmvmvBUvj Rwiŋc mvariYZt Kgcŋŋŋ `ŋwU mgvtRi gŋa` GKwU Zj bvgj K weŋkŋY Kiv nq| cKwZi w`K t`ŋK GwU GKwU e`vL`vgj K Rwi c bKkŋ| KviY, G MtelYvq AšwŋŋZfvte tnvK ev cKvŋk` tnvK, bybZg `ŋwU PjŋKi gŋa` Kvh`KviY m×úK`cŋZŌv Kiv nq| G aitYi MtelYv bKkŋ mvariYZt `ŋaitYi m×úK`weŋkŋŋYi mvt` m×úwKŋ nq| cŋgZt, Ggb m×úK`hLvtb AbŋŋZ Kvh`KviYgŋ K Dcv` vbuU MtelYvxb mgvtRi B GKwU `enkŋ` wnmvte we`g vb `vtK| wŋZxqZt, Ggb m×úK`hv MtelK Ab` mgvtRi tŋŋŋŋ nq cpiveŋŋEi gva`tg Avŋi Kevi weŋkŋY KitZ Pvb, bZev mvariYxKiY KitZ Pvb|

cŋg aitYi MtelYvq wewfbrmgvR t`ŋK wbeŋPZ bgbvi gŋa` Zj bv Kiv nq| ŋŋŋZiMtelYv ev`evqŋbi mgq bgbvi aiY I Dcv`E msMŋni nwwZqvi GKB aitYi ntŋ `vtK, ŋŋŋZi GB c×wZwU Zj bvgj Kfvte AwakZi wbfŋŋhvM` I h`v`Zvm×úbeDcv`Ei Rbŋ t`q| Zte G aitYi MtelYvq MtelK fvlwMz wfbzvi KviŋY wRÁvm` cŋkŋe Aŋ`ŋ mgZv wbfŋctY mgm`vi m×ŋxb nb| hLb MtelK Dcv`Ei Dci G aitYi wqŋŋY ivLŋtZ Amg`nb, ZLb wZwb mvariYZt MtelYvq Ašfŋ cŋZwU mgvtRi Dci cte` cwi Pwŋj Z Ab`vb` Rwi c ev Av`gigviŋtK Dcv`Ei Dcm wnmvte wetePbv Ktib| GwU ZLb wŋZxq aitYi ŋm-ŋmvmvBUvj MtelYvi ifc ŋbq| G tŋŋŋŋ, Avgiv GKwU mgvtR BŋZvgŋa`B cŋZwŋZ m×úK`ŋK MŋY Kwi Ges Zv Ab` GKwU mgvtRi m×úK`weŋkŋŋYi tŋŋŋŋ cŋqvtMi tPŋv Kwi| ŋm-ŋmvmvBUvj MtelYvi `ŋwU cŋvb KvR ntjv, cpiveŋŋE I mvariYxKiY| cŋg KvRwU gva`tg tKvb mgvtRi

c0B m3uK3tj v GKB ai4Yi Ab" Av4i Kiu mgv4R cvl qv hvq wk bv Zv t` Lv nq| w0ZxquUi
gva4tg tKvb mgv4Ri ciXm4Z m3uK3Ab" mgvR3tj vi t44t4I mZ" nte WK bv Zv hvPvB Kiv
nq|

ciX4Y WK (What is Experiment)?

Avgiv c0Z`wnK Rxe4b memgg tKvb bv tKvbfv4e ciX4Y4K e`envi K4i _wk| gybe
BvZnv4mi i i" t4KB gvbj Rxe4bi gvb Db4b Ges c0Zw`4bi mgm`v mgv4v4bi j444" me4k0
Dcvq D44e4bi Rb" we4rb4e4v4e we4rb4e4K4Kj ciX4Y4v w4ix4Y4v K4i Avm4Q| thgb, A_4w4ZK
Db444bi Rb" b4w4Z w4av4P44`i we4rb4e4K4v44g ev`evqb, `v3uZ" Rxe4bi m4_ m34x e44xi j444"
`4gx-`4xi g4a" thvMv4hvM c0Z0vi we4rb4e4c44qv4i c0qvM, wki `4`" i 44vq we4rb4e4`4`" wk4Y4v
K4v44g M44Y, Qv4- Qv444`i mv4_ Db4Z thvMv4hvM c0Z0vi j444" wk4444K4i we4rb4e4cv`vb
c4w4Zi Ab4miY, m4`4` L4vi `Zwi i Rb" iv4pxi we4rb4e4Dcv`v4bi w4k4Y, t4Zv4`i gb Rq
Kivi Rb" e`emv4xi we4vc4b e`envi, BZ`w` | KL4bv G3tjv n444Q Avb4w4bK M4elYvi
gva4tg, Avevi KL4bv n444Q Avb4w4bK Ab4k4j4bi gva4tg| Z4e, Gi me wKQ4K ciX4Y4
etj we4eP4vi t4444 we4v4v4v G4K4Z bb|

Zvn4j , ciX4Y4 ej4Z c4K4Zc444 WK tev4vq? mv4vi Y4v4e, ciX4Y4 GK ai4Yi M4elYv bK4vi
mv4_ m4w4e, thLv4b `4axb Pj K I M4elYvi we4q4K we4rb4e4c4w`w4Z4Z c0qv44Mi t4444
M4el44Ki w4bq444`_v4K| GK4w m4w4Z`K4i Av`k4ciX4Y4 n444v GK4w w4bq444Z M4elYvMv4i
cwi Pw4j Z Ab4v4v4b c4w4Z, thLv4b `4axb Pj44Ki c44v4e4K gj`w4qZ Kiv nq Ges Ab`vb"
m44e` Ac04w44K, ew4v`K I we4w444g4 K c44v4e4K `4 Kiv nq| ciX4Y4 `4w4 Pj44Ki g4a" K4v4
K4iY m4444K44 Dcv`w4Z, Gi aiY I gv4444K w4i4c44Yi Rb" e`e4Z nq| w4bq4 Ab4v4q, ciX4Y4
wKQ4 gv44vq n444 I cwi cwi44Zv4K D444k`gj44v4e e`envi K4i Ges Av4PiY, g4bv4v4e, m44K4
BZ`w`i Dci GB D444k`gj44K e`env44i c44v4e4K gj`vqb K4i| th Dcv`vb3tj44K
D444k`gj44K4v4e e`envi Kiv nq tmB Dcv`vb3tj44v Qvov Ab`vb" me Dcv`vb44K w4bq444 Kivi
w4v4E4Z cwi4444K D444k`gj44v4e e`env44i we4q4w4 L4e w4bq4e44v4e K4v44i Kiv nq| GB
tK4444j i w4Q4b h444w4 n444v th, h444 GK4w Pj K A4444 Kivi c4i Av4Pi44Yi g4a" tKvb
cwi eZ4 N4U, Z4e e444Z n4e th, Zv N4U4Q H Pj44Ki K4i44Y| `4axb I w4b444K4j Pj44Ki
g4a" K4v4K4iY m4444K44 Dci m4w4444 e3e" Dc`vc44bi Rb" ciX4Y444K G4w w4v40Z Ki4Z
n4e th, `4axb Pj K Qvov Ab" tKvb Dcv`vb thb w4b444K4j Pj K44K c44w4Z bv K4i| m44e" th
mK4j Ac04w44K Dcv`vb ciX4Y44Yi Dci c44v4e44j44Z c44i Zvi me3tj44v4K w4bq444 Ki4Z
n4e| th t4444 G ai44Yi Dcv`vb3tj44v4K w4bq444 Kiv m44e nq bv, tm t4444, ciX4Y444K tm
mK4j Dcv`v4bi c44v4e44 gj`vqb Ges dj44dj e`vL`vi t4444 tmB 4w4444tj44v4K we4eP4v4v Av44Z
m444g n444 n4e|

mv4w4RK we4v4b ciX4Y4 tZgb e`vc44v4e e`e4Z nq bv| K4iY, Gi Ab4b4q K4v44w4w4
mv4w4RK we4v4bi M4elYvq c0qvM Kiv K0Ki Ges tKvb tKvb t4444 Zv G4Kev4iB
c0qvM44hvM" nq bv| G cwi w`w4Z4Z, th c44w4 Av4v4`i mv44b G4m Dcv`Z nq tm4w4 n444v,
Zvn4j tKb Av4v4 mv4w4RK we4v4b ciX4Y4 w44q Av44v4v4v K4i? Gi `4w4 K4iY i444Q|
c44gZt, a4c`x ciX4Y44j44K M4elYv bK44v Av4v4`i Ab`vb" mK4j M4elYv bK44v4K h44444K
e444Z mv4v4" K4i| G4w GK4w Av`k44v4i we4c444Z Av4v4 Ab`vb" M4elYv bK44v4K gj`vqb
Ki4Z cwi| w0Zx4Zt, ciX4Y44Yi Z4rch4w4 n444v th, G4w M4el44K K4v44K4iY44j44K Dc4ms4v4
U4v4Z Ges `4axb Pj K w4b444K4j Pj44Ki g4a" tKvb cwi eZ4 Av4b wKbv Zv Z4j bvg4j K4v4e
`4 cwi k44g ch44e444Yi K4v4w444K m44e K4i t444j| Ab`vb" M4elYv bK44v4 gva4tg Zv

mnRfite wbaŕY Kiv mæe nq bv| A_ŕ, hLb Avgiv a`c`x cixŕYygj K bKkvi hv³w eštZ mŕlg ntev, ZLb Avgiv Ab`vb` Mtel Yv bKkvi mŕgve×ZvtKI eštZ mŕlg ntev|

hw` Mtel K ev`e cwitetki Dci ht_ó wqšŕY AvbtZ cvtib, Zte cixŕYvMvti i evBti ev`e RMtZI cixŕY cwipj bv Kiv mæe nq| HwZn`MZfite, a`c`x cixŕYygj K Mtel Yv bKkvi cŕKwZK weÁvtbi Mtel Yvq weKwZ ntqQ etj Avgiv cixŕYtK mŕgwrK Mtel Yvi cwietZ` cŕKwZK weÁvtbi Mtel Yvi mv_ mæuwKZ Kti _vK| wKŠ` mŕgwrK weÁvtbi wKQz wKQz tŕŕt cixŕYygj K bKkvi e`eüZ ntq _vtK| thgb, mŕgwrK gtbweÁvtb cixŕY GKw çäv Mtel Yv bKkvi wmvte wetePZ nq| G Qvovl, bwx wekH I gj`vqb Mtel Yvq cixŕY Mtel Yv bKkvi axi axi wKQlv DcthvMx ntq DtvQ| hw` I Ab`vb` mŕgwrK weÁvtbi Zj bvq gtbweÁvtb cixŕY tekx e`eüZ nq, wKŠ` eZŕvtb wefbcMtel K GwJtK wefbcfite wefbc Mtel Yvq e`envi Kti AvmtQb|

cixŕYtYi mŕeav I Amŕeav (Advantages and Disadvantages of Experiments)

wefbcPjtKi gta` KvhKviY mæuK`vctbi Rb` cixŕY mæeZt th tKvb Mtel Yv bKkvi tPtq AwKZi tkb bKkvi| cixŕYygj K bKkvi KZ_tjv mŕeav itqtQ| *cŕgZt*, GLvtb Mtel Yvi çäv Pj K ev Pj Kmgñi Dci Mtel tKi wqšŕY _vtK| *wZxqZt*, Av`k` cwiv`wZtZ, GB bKkvi e`envti i gva`tg Mtel K `vaxb Pj tKi mL`v mŕgZ Ki tZ cvtib Ges tm_tj vtK cŕQvRb gZv Dti k`gj Kfite e`envti i gva`tg wbfPkj Pj tKi gta` tm_tj wK cwieZb NUvq Zv chŕŕY Ki tZ cvtib| *ZZxqZt*, wZwb Ggbfite cixŕYwU cwipj bv Ki tZ tPov Ktib thb wbfPkj Pj tKi Dci `vaxb Pj K ev Pj Kmgñi gta` wfbZwU meŕaK nq| *PZt*, th mKj mæuwKZ Pj K Abkt i gta` Ašfß _vtK Mtel K wbfPkj Pj tKi Dci tm_tjvi cfve KgrZ ev `t Ki tZ cvtib| *cAgZt*, Mtel K ewivMZ ev AcŕmwZK (extraneous) Pj tK wqšŕY Ki tZ cvtib| *lôZt*, Mtel K GKB Abjüvb GKB tçŕvctU cpiveEi gva`tg cixŕYv Kivi gZv Ae`v`Zwi Kti wbtZ cvtib|

Zte, cixŕYtYi wKQz Amŕeav I itqtQ| metPtq eo AmŕeavU ntjv th, cixŕYtYi cwicwKŕZwU ntjv Kwŕg, hvi dtj mŕgwrK cŕpŕqvi ev`eZwU tmLvtb Abçw`Z _vtK| cŕKwZK cwitetk hv NtU Zv Kwŕg cwitetk cpiveEi Kiv hvq bv| dtj, cixŕYtYi gva`tg cKZ mŕgwrK cŕh_tj vtK wekH Kiv `jfn ntq çto| Ab` AmŕeavU ntjv th, AwKvsk cixŕY Ggb me bgbv i Dci cwipj bv Kiv nq, hv AwKvsk tŕŕt mgMŕKi cŕZvwaZkx nq bv| dtj, cixŕYtYi gva`tg cŕB dj vdj mvavi YxKi tYi AbçthvMx ntq çto|

bgbv wbePti CxwZ (Methods of Sample Selection)

Ab`vb` Mtel Yvi gZ cixŕYygj K Mtel Yv GKBfite cwipwz Z ntj I Mtel Yvq Ašfß bgbvi wbePwU Kiv nq mæevbgj K bgbvq cwxzi gva`tg| cixŕYtY Ašfß bgbvi KZ_tjv `i`ZçY`ewkó` _vKtZ nte| *cŕgZt*, GwU `ŕU Dc-bgbv `j wbtq MwZ — cixŕY `j I wqšŕZ `j | wbfPkj Pj tKi Dci `vaxb Pj tKi cfve wYŕqi j tŕŕ` cwipwz th tKvb Mtel Yvq G `ŕU `tj i Dcw`wZ _vKte etj cZ`vkv Kiv nq| *wZxqZt*, GB `ŕU `tj i gta` tKvb wqgex cv`ŕ` itqtQ wKbv Zv Aek`B cixŕYv Kti t`LtZ nte| hw` tKvb Zdv _vtK, Zte Zv Aek`B tKvb `ŕe KvitiYi wfŕtZ e`vL`vthM` ntZ nte| *ZZxqZt*, cixŕY `j I wqšŕZ `tj i m`m`ti Aek`B wefbc`ewkto`i wfŕtZ GKB iKg ntZ nte| thgb, eqm, wKŕv, evm`vb, BZ`w | KviY, `ŕU `tj i gta` tKvb Zdv _vKtj `vaxb Pj tKi cfveU

weáwšgjk nte| PZz Žt, bgbv ubePb ōbgbvqb cŕcvcZgy³0 nŕZ nte| m³vebvgyK bgbvqb c³wZ AbjmiY Kti cŕZwbwZkxj bgbv ubeP³bi gra'tg GB cŕcvcZgy³ wbowDZ Kiv m³e nq|

*%Ōe Pqb³K wbowDZ Kiv nq
Ōe mSL'vi mviwY, ev
e'w³MZ BPOv³K cktq t'q
bv Ggb th tKvb c³wZ
e'env³i i gra'tg|*

cixŕŕY `ŕw c³wZtZ cŕcvcZgy³ mgjfc bgbv ubeP³b³K wbowDZ Kiv nq — %Ōe Pqb (random selection) l mgKŕZv wbaŕY (matching) | GKw bgbv KvVtgv t³ŕK Ōe Pqb cŕcvcZ AbjmiYi gra'tg bgbv ubeP³b Kti `ŕw `tj wef³ Kiv nq | Gi th tKvb GKw³K cixŕŕY `j Ges Ab³w³tK wqwsz `j etj wPvYZ Kiv nq | %Ōe Pqb³K wbowDZ Kiv nq Ōe mSL'vi mviwY, ev e'w³MZ BPOv³K cktq t'q bv Ggb th tKvb c³wZ e'env³i i gra'tg | thgb, GKw g³vi gv_v l tj R eiv³ Kti wef³b³e'w³tK `ŕw `tj wef³ Kiv hvq | th c³wZB e'env³i Kiv tnvK bv tKb, G tŕŕt³ cŕZw e'w³i bgbvq Ašf³ nevi mgvb m³vebv _vtK | Zte, Gw gtb ivLv cŕcvcZ th, gybe mgM³K G ait³Yi Ōe Pqb w³bfcY Kiv memgq ev³em³šZ nq bv | thgb, `ŕ' Kgx³ i Ōefvte cixŕŕY l wqwsz `tj wef³ Kiv m³e — h_v³vtg, hviv GKw cŕcvcZ MŕY Ki³Q Ges Ab³w³ Ki³Q bv | wKš' gv³vtK Ōefvte tKvb agx³ tMvŕtZ ev %eew³K gh³v³fy³ tMvŕtZ wef³ Kiv hvq bv | Zey h_v³m³e mgKŕZv wbaŕYi cŕcvcZi Zj bvq ŌePqb³K AMŕwKvi cŕv³ Kiv DvPr | wKš' tKvb³fvteB hw' Ōe Pqb m³e bv nq tm tŕŕt³ mgKŕZv ev mgjfcZv wbaŕYi gv³ Ōw GKgv³ weK³i wnmvte Avgv³ i mvgtb we³gv³vtK |

*mgKŕZv wbaŕY ej tZ
bgbvq Ašf³ e'w³i GKB
i Kg `enk³ŕ i wŕw³tZ tRvov
wgj vt³vtK ešvq, hvZ Kti
tRvov³ `ŕw e'w³i %enk³ŕ
GKB i Kg nq|*

mgKŕZv wbaŕY ej tZ bgbvq Ašf³ e'w³i GKB i Kg `enk³ŕ i wŕw³tZ tRvov wgj vt³vtK ešvq, hvZ Kti tRvov³ `ŕw e'w³i %enk³ŕ GKB i Kg nq | GKB `enk³ŕ i wŕw³tZ tRvov wgj vt³vtK ci GKRb³K cixŕŕY `j Ges Ab³Rb³K wqwsz `tj Ašf³ Kiv nq | thgb, hw' cixŕŕY `tj i GKRb e'w³ kn³i `ŕ c³j l emew³Kvix cwi ev³i 30 eQi eq³ c³j l e'w³ nq, Zte wqwsz `tj i Ašf³ tRvovi Ab³ e'w³w³tK l GKB `enk³ŕ m³ub³entZ nte | G tŕŕt³ ej v hvq th, eqm, ev³v³, wj ½ Ges kn³i emew³mi mgqKv³-Gi cŕvteK wqwsz Kiv ntqtQ | cixŕŕY `tj Ašf³ cŕZw bgbv³ mgKŕ bgbv wqwsz `tj l _vKtZ nte | ubeP³bi GB cŕcvcZ Pj tZ _vKte hZŕY bv cŕcvcZbxq mSL³K bgbv ubeP³Z nq | mgKŕZv wbaŕY ev mgjfcZv w³bfcYi cŕcvcZw Ōe Pq³bi tP³q Kv³ŕi bgbv ubeP³b c³wZ | KviY, GB c³wZw Ab³v³ c³wZi Zj bvq D³P gv³vq mgjfcZv³K wbowDZ Kti | Ōe Pqb bgbv³ cŕZwbwZkxj Zv³K wbowDZ Kti l mgKŕZv ev m³ k³tK w³bfcY Ki³tZ cv³i bv | mgKŕZv w³bfcY Dcv³E msMŕni cŕe³Ges c³i `ŕ mg³vtqB Kiv hvq | wKš' hw' mgKŕZv w³bfcY Kiv m³e bv nq, Zte e³w³ŕZv l cŕZwbwZkxj Zvi KviY Ōe Pqb³K Aw³KZi w³bfc³h³w³ c³wZ wnmvte we³tePbv Kiv th³tZ cv³i |

cixŕŕYi cKvi³f` (Types of Experiment)

cixŕŕY MtelYv bKkv th ait³YiB tnvK bv tKb, cixŕŕY wef³b³eifc cKw³KZ nq | Gi wKQ gtbwe³Ávxt³ i Ōv³ e'eüZ nq Ges Ab³ t³gv mgvRwe³Ávxt³mn Ab³v³ mvgw³RK we³Ávxt³ i Ōv³ e'eüZ nq | mvgw³RK we³Áv³ cixŕŕYi th ifc³ t³gv mvariYfvte e'eüZ nq tm³ t³v n³tj v, MtelYvMvi cixŕŕY (laboratory experiments), gv cixŕŕY (field experiments) l cŕk³ cixŕŕY (demonstration experiments) | MtelYvMvi cixŕŕY n³tj v mbvZb ait³Yi cixŕŕY | hLb tKd cixŕŕY k³w³ Ai³ e'vL³ Qvov D³tj K³ib ev Gi m³ú³tK³Av³tj vPbv K³ib, ZLb wZw GB mbvZbx cixŕŕYtK³ w³t³ R Kti _vtKb | G ait³Yi cixŕŕYi c³v³ `enk³ŕw³ n³tj v, G³ t³gv MtelYvMv³i cwi Pw³j Z nq, thLv³ me Acŕw³½K ev ew³n³K Dcv³vt³K wqwsz Kiv nq | Ab³w³tK, gv cixŕŕY MtelYvMv³i cwi Pw³j Z bv ntq tKvb kni, Mŕg,

tKxKq, mki, KviLvov, BZ`w`i gZ ev`e cwiw`wZtZ cwiPwj Z nq| c0k0 cixqY MtelYvMvi ev gvV th tKvb `v`tbB cwiPwj Z nZ cvti | Zte, Zv`iagvI cixqY `tj i mvt_ mswk0_`v`K| G ai`Yi cixqY gube AvPi`Yi mekl w`K ev avivi e`vL`v, c0Zdj b, ev c0k0 Ki`Z mnvh` Kti | G_`tj v muZ`Kvi At`_cixqY bq| KviY, GB cixqY`Yi tKvb w`bqwsZ `j _`v`K bv etj Zj bv Kiv m`e nq bv, G_`tj v `0efvte bgbv w`bePb Kti bv, Ges cixqYmZ c0qv`Mi Rb` tKvb m`y`u0 mgq w`baP`Y Kti bv|

cixqYgk K bKkvi cKvi`f` (Types of Experimental Design)

w`vfb0Pj`tki gta` m`u`K`_`vctbi Rb` gtbw`eAvbx I mvgw`RK w`eAvbxiv w`vfb0eai`Yi cixqYgk K bKkv e`envi Kti _`v`Kb| GB bKkv_`tj vi cv`R` w`bwnZ _`v`K c0vbZt c0ZwU cixqY`Yi gta` cixqYgk I w`bqwsZ `tj i msL`v, ce`cixqYv (pre-tests) Ges `v`axb Pj K w`Kfvte e`envi Kiv nq Zvi Dci | cixqY`tki j`q` _`v`K `v`axb Pj K Qov Ab`vb` Pj`tki c`fve`K w`bqsy` Kiv | Mtel Kt` i 0vivi euj e`eüZ w`K0zbKkvi D`j`_Kiv th`Z cvti |

c`e0I cti cixqY bKkv (Before and After Expreimental Design): cixqYgk K bKkvi meP`tq mnR, mij I m`v`gv`v cKiywU`Z` i`ayGkwU cixqY `j`tk e`envi Kiv nq Ges tKvb w`bqwsZ `j e`envi Kiv nq bv | tm Rb` GwU`K 0w`bqwsZ `j Qov c`e0I cti cixqY bKkv0 etj | cixqYv-ce`0I cixqYv-cieZr`gvtbi gta` th cv`R` cvl`qv hvq tmB cv`R`wU w`b`P`kxj Pj`tki Dci `v`axb Pj`tki m`e`e` c`fve`K w`b`R` Kti | th`tnZi GB bKkvq tKvb w`bqwsZ `j _`v`K bv, tm`tnZi w`b`P`kxj Pj`tki Dci Ac0mw`ZK Pj`tki c`fve`K cwi gvc Kiv hvq bv | AZGe, GwU GKgvI ZLbB e`envi Kiv th`Z cvti, hLb Mtel K Abgvb Ki`Z cvit0b th, w`b`P`kxj Pj`tki Dci Ac0mw`ZK Pj`tki c`fve`K tbB ej`tj B P`tj | A_`f`r, aiv`tbqv nq th, w`b`P`kxj Pj`tki Dci cixqYv-ce`0I cixqYv-cieZr`cwi eZ0_`tj v NtU`q cixqYvgj K D`i`xc`tki Kvi`Y | h`w` cixqY`tki Abgvb fj` nq Ges Ac0mw`ZK Pj`tki c`fve`K cixqYv-ce`0I cixqYv-cieZr`gvtbi gta` cwi eZ0 NUvq, Zte Gi KZUKz cixqYvgj K D`i`xc`tki Kvi`Y Ges KZUKz w`bqwsZ Ac0mw`ZK Pj`tki Kvi`Y n`q`0 Zv w`Zw`b RvbtZ cvtib bv | GKwU w`bqwsZ `j h`p` Kti Ges tKvb KviYgk K D`i`xc`K e`envi bv Kti cixqYwU cpivq cwiPwj Z Kivi gva`tg GB c`fve`_`tj v`K Avj`v`v Kiv hvq |

a`c`x cixqYgk K bKkv (Classical Experimental Design): GB bKkvq cixqY I w`bqwsZ `j `wU`K e`envi Kiv nq | h`w` I `wU `j`tkB cixqY`Yi Rb` h_`vh`_`fvte c0Z Kiv nq, w`Ks` w`bqwsZ `j `v`axb Pj`tki c0Z Db`p`_`v`K bv | `f` mg`tqi Rb` cwiPwj Z cixqY`Y w`bqwsZ `j Ac0qvRbxq etj w`tePbv Kiv th`Z cvti, h`w` cixqY`Y AskM0YKvi`x`K cixqYvMvi Z`vM Ki`Z t`qv bv nq | w`Ks` A`tbK mgq cixqY `xN`mg`tqi Rb` cwiPj bv Kiv nq | KviY, h`w` ce`cixqYv, cixqYvgj K D`i`xc`K I cieZr`cixqYv `f` mg`tqi gta` cwiPwj Z nq, Zte cixqYvq AskM0YKvi`x`v mnt`RB cixqY`Yi D`i`k` m`u`tk`RvbtZ cvtib etj MtelYvi dj`vdj c`q`cvZ`p` nZ cvti | tm R`tb`, A`tbK t`q`t` cixqY`Yi D`i`k` m`u`tk` AskM0YKvi`x` i RvbtZ t`qv nq bv | w`Ks` G ai`Yi Ab`kxj b`bwZKZv w`e`v`ax | Avevi h`w` cixqY `xN`mg`tqi Rb` cwiPwj Z nq, tm t`q`t` AskM0YKvi`x` i Dci A`tbK Ac0mw`ZK Pj`tki c`fve`K c0Z cvti | G ai`Yi Ac0mw`ZK c`fve`K t`q`t`, w`baP`K ev cixqYv Pj`tki c`fve`K mvt_` w`bqwsZ Ac0mw`ZK Pj`tki c`fve`_`tj v h`p` n`q` hvq | Avgiv Rwb th, GKwU w`bqwsZ `j Qov tKvb`fvteB ejv hvq bv th, tgvU c`fve`K KZUKz c`KZ KviY Ges KZUKz Ac0mw`ZK Dcv`v`bi c`fve`K | h`w` cixqY `tj i mvt_` GKwU w`bqwsZ `j`tk A`š`f`p` Kiv hvq, Zte c`fve`K tgvU th gvbU cvl`qv hvq Zv t`_`tk L`p` mnt`RB Ac0mw`ZK Pj`tki gvbU ev` w`tq cixqYgk K cixqYv Pj`tki ev D`i`xc`tki c`fve`K w`bY0 Kiv hvq | h`w` w`b`P`kxj Pj`tki

h`w` w`b`P`kxj Pj`tki Dci cixqYv Pj`tki tKvb c`fve`K bv _`v`K, Zte w`bqwsZ `tj i gta` cixqYv-ce`0I cixqYv-cieZr`gvtbi cv`R` cixqYv `tj i gta` c0B cv`R` i mgvb nte |

Dci cixŋlv Pj tKi tKvb cŋve bv _vŋK, Zte wbuŋŋZ `tji gta` cixŋlv-ce cixŋlv- cieZŋgvtbi cv_ŋ` cixŋlv `tji gta` cŋB cv_ŋK`i mgvb nte| Gw cZŋvk Kiv nq th, wbuŋŋZ `tji cv_ŋK`i gvb cixŋlv `tji cv_ŋK`i gvtbi tPtq tekx nte bv| hw` cixŋlv `tji cv_ŋK`w wbuŋŋZ `tji cv_ŋK`i tPtq Kg nq, Zte Zv wbfŋkxj Pj tKi Dci wbaŋK ev cixŋlv Pj tKi FYVZŋK cŋvetK wbt` R Kite|

GKgvŋ-cieZŋ cixŋlv bKkv (Only-After Experimental Design): cixŋlv Yi GB bKkvw a`c`x cixŋlv Ygj K bKkvi gZB| Zte cv_ŋK`w ntjv, cixŋlv `j ev wbuŋŋZ `tji tKvbw tKB ce`cixŋlv Kiv nq bv| GKgvŋ-cieZŋ cixŋlv bKkv cŋqvtMi gva`tg Mŋel K cixŋlv `tji Dci GKw cixŋlv Pj K cŋqvm Kti cixŋlv `tji mvt_ wbuŋŋZ `tji Zj bv Ktib| GLvtb „Zcy`welqwu ntjv th, GB bKkvq`i agvŋ GKw `tji Dci cixŋlv Pj Kw tK cŋqvm Kiv nq Ges tKvb ce`cixŋlv Kiv nq bv| wbfŋkxj Pj tKi Dci `vaxb ev cixŋlv Pj tKi cŋvetK cixŋlv-cieZŋ cwi gvtci gva`tg Zj bv Kiv nq| cixŋlv-ce`cwi gvc e`envi bv Kivi dtj mŋ mij Zvi Kvi ŋY GB bKkvw m`eZt metPtq tekx e`eüZ cixŋlv bKkv| Gw wK th, hw` bgbvi AvKv w enr nq Ges bgbvtK `ŋefvte Pqb Kiv nq, ŋm tŋtŋ ce`cixŋlv cŋqRb nq bv| wKŋ` G ai ŋYi Mŋel Yvq cixŋlv-ce`cwi w`wZtZ cixŋlv `j l wbuŋŋZ `tji cwi gvtci gvb wK wQ tjv, ev cixŋlv-cieZŋ cwi w`wZtZ cixŋlv Pj K Qvov Ab` tKvb Dcv`vtbi cŋve cŋB cwi gvtci Dci cŋtŋQ wKbv Zv Rvbv hvq bv|

mtj vtgvb Pvi-`j bKkv (Solomon Four-Group Design): GKw cixŋlv Ygj K bKkvq ce`cixŋlv thgb mŋeav itŋtQ tZgvb Amŋeav itŋtQ| ce`cixŋlv mgŋtŋi ŋgci`uivq gj`vq tbi mŋhwm Ges Zj bvi wŋE cŋvb Kiti| Zv djv dtj Dci gviwZKfvte cŋZwŋvq gj K cŋve tŋtZ cvti | thgb, tKvb wŋtkl KgRvU ev`evq tbi j tŋ` cwi Pw j Z cixŋlv Y bgbvq Aŋfŋ RbtMvŋx tK mste`bkxj Kti tZvjvi cŋqRb cŋt| wKŋ` GB cŋuqvq, ev`evq tbi cŋe`KgRvU w m`uŋtK`RbMŋYi gtbvfvtei cwi gvc MŋY Kiti GKw ce`cixŋlv RbMŋY tK mtPZb Kti Zj tZ cvti Ges ce`cixŋlv Kiv nq wv Ggb RbMŋYi Zj bvq wŋbœcŋZwŋvq e`3 KitiZ cvti | G ai ŋYi mgm`v tgvKvte jvi Rb` ŋmtj vtgvb Pvi-`j bKkv cŋqvm Kiv tŋtZ cvti | GB bKkvq Pvi w `j e`envi Kiv nq| a`c`x cixŋlv bKkvi gZ Gw tZ GKw cixŋlv `j l GKw wbuŋŋZ `tji cvkvcwK Avŋv AwZwi`3 GKw Kti cixŋlv l wbuŋŋZ `j _vŋK, hvi Dci ce`cixŋlv cwi Pvj bv Kiv nq bv| AZGe, `ŋw cixŋlv l wbuŋŋZ `tji gta` Zj bvi gva`tg ce`cixŋlv dtj mŋ cŋZwŋvq gj K cŋvetK mivmwi cwi gvc Kiv m`e nq Ges ce`cixŋlv gva`tg hv`i mste`bkxj Kiv nq wv Zv`i Dci cixŋlv Pj tKi `vaxb cŋve itŋtQ wK bv, Zv GB Zj bv`tjvi gva`tg Rvbv m`e nq| Zte, cŋtŋwK Rw j Zvi Kvi ŋY cixŋlv Ygj K Mŋel Yvq GB bKkv Kg e`eüZ ntq _vŋK|

gv cixŋlv (Field Experiment): Avgiv Rwb th, gv cixŋlv Ab`vb` cixŋlv t`tK Avj v`v| Kvi Y, ŋm`tjv Mŋel YvMŋti cwi Pw j Z bv ntq ev`e cwi w`wZtZ cwi Pw j Z nq| Mŋel YvMŋti GKw Kwŋ g e`e`vq AvKv`ŋZ gvŋvq `vŋwKZi cvlqv m`e nq bv| Avevi KLtŋv Mŋel Yvi cŋ`Aw Ggb Rw j ntZ cvti th, ZvŋK GKw Mŋel YvMŋti i wŋv`vŋm Dc`vcb Kiv m`e nq bv| G ai ŋYi cwi w`wZtZ Mŋel Yvi Rb` gv chŋq cixŋlv c`wZ Aej`b Kiv nq| G tŋtŋ, mvavi YZt mvgwRK `j, tMvŋx, m`cŋvq wKsev tKvb GjvKvi RbMŋY tK Mŋel Yvi GKK wmvte tbqv nq| GB cixŋlv Y, cixŋlv Yi me Dcv`vb`tj vŋK i ŋlv Kiv nq| thgb, cixŋlv l wbuŋŋZ `tji e`envi, `ŋe Pq tbi gva`tg bgbv wŋeŋb, cwi tŋtki Dci wbuŋŋZ l cixŋlv Yi mŋw`ŋZv wbaŋY, ce`cixŋlv, cieZŋ cixŋlv, BZ`w` | GB cixŋlv Yi cKwZ, mvgwRK ev`eZvi mvt_ Gi mshy`3 Ges cŋB djv dtj Rb` D`PZi mvavi YKvi Y cŋvb Kti etj gv cixŋlv mvgwRK w`Avbxt`i KvŋQ GKw AwKZi DcŋwMx cixŋlv bKkv

etj weferPZ ntqtQ| Zte gtb ivLv c0qvRb th, gvV MtelYv Ges gvV cixŋY `ŋUB ev`e
cwi tetk cwi Pwj Z ntj I gvV cixŋY I gvV MtelYv GK bq| ev`e cwi tetk cwi Pwj Z mKj
MtelYvB (thgb, tKm ÷vW, μm-†mKkbvj Rwi c, `xNŋvj xb Rwi c, BZ`w)` gvV MtelYv,
wKŠ`mKj gvV MtelYvB gvV cixŋY bq|

gvV MtelYv Ges gvV cixŋY
`ŋUB ev`e cwi tetk
cwi Pwj Z ntj I gvV cixŋY
I gvV MtelYv GK bq|
ev`e cwi tetk cwi Pwj Z
mKj MtelYvB gvV MtelYv,
wKŠ`mKj gvV MtelYvB gvV
cixŋY bq|

wKŠ`gvV cixŋY†Yi wKQzmxgve×Zv itqtQ| cŋgZt, ev`e cwiv`wZ†Z GKB iKg e`w³ ev`j
L†R cvl qv KóKi Ges KL†bv KL†bv Zv Amæe ntq cto| wZxqZt, A†BK mgq, Zj bvt†hM`
ev`e cwi tetki wbePb `jfn ntq cto Ges Gi dtj GB cixŋY c×wZi e`envi I
Dc†hMxZv nwm cvq| ZZxqZt, gvV cixŋY A†BK tekx mgqmtcŋ I e`qeúj c×wZ| Zte
cŋc†Zvj v th†Z cv†i th, GKRb MtelK cixŋY†Yi cŋqvt†K KZUKwqbšY Ki†eb, hvi dtj
GKw†K cixŋY†Yi me kZ†K c†Y Ki†eb Ges Ab`w†K ev`e cwi tetki `†fweKZv eRvq
ivL†eb? GB fvi mvg`Zv eRvq ivLvi Rb` we†fbae`e`v M†hY Kiv th†Z cv†i | wKŠ`mgm`vW
ntjv th, gvV cixŋY hLb MtelYvMvi cixŋY†Y cwiYZ nq, ZLb Zv Avi cŋZ MtelYvMvi
cixŋY ††K w†fbae`v†K bv|

mvi vsk

GB cv†V Avgiv e`vL`vgj K MtelYvi `ŋUB bKkv — Rwi c I cixŋY — w†q Av†j vPbv
K†i wQ| Av†j vPbvq e`vL`vgj K Rwi c bKkv, cixŋY I G†`i cŋKvi†††`i Dci „i“Zi†`qv
ntqtQ| e`Zt, MtelYv cwi Pwj bvi †ŋ†† MtelYv bKkvi „i“Zi Ges m†bw`†f†e Rwi c I
cixŋY†Yi f†gKvB G †ŋ†† c†avb`†c†qtQ| i`ayMtelYv bKkvi „i“Z† bq, G†`i g†a`
cv`R`I Av†j vPbv Kiv ntqtQ| GB cv† tk†† Avgiv †R†b†Q th, mgm`vi cŋwZ, MtelYvi
D††k` I ai†Yi Dci MtelYv bKkv A†bKv††Kb w†fP K†i | MtelYv mgm`v wba†Y Ges
MtelYv cwi Pwj bvi Rb` bKkv c†y†bi †ŋ†† MtelK GB w†l q„†j v†K w††Pbvq w†q AM†ni
ntj h_vh_ dj cvl qvi m††ebv tekx_vK†e|

cvfVvEi gj`vqb

`be⁹³K cke

mWVK DEti i cvfk WJK (v) WPy w`b -

1| e`vL`vgj K Rwi tc mvari YZt

K. GK ai`Yi bKkv e`euZ nq

L. `jai`Yi bKkv e`euZ nq

M. wZb ai`Yi bKkv e`euZ nq

N. Dcti i me|

2| cix`Yi metPtq eo AmjeawU ntj v:

K. cix`Y A_`q nq tekx

L. cix`Yi cwii cwikKZv ntj v Kw`g

M. cix`Yi bgbv-msL`v tekx c`qvRb nq

N. cix`Y GKUv wbw` 0 mg`q Ki`Z nq|

3| mvgwRK weAvtb cix`Y tZgb e`vcKf`te e`euZ nq bv| Kvi Y,

K. Gi Abgbxq KwVtgv

L. cix`Y A_`tekx e`q nq

M. mgq tekx j vtM

N. ZEMZf`te RvUj |

msv`B cke

1| cix`Yi mjeav`_tj v wK?

2| μm-`mvmvBUvj Rwi c bKkv Kv`K etj ?

iPbvj K cke

1| mgvR Mtel Yvq cix`Yi c`qvRbxqZv D`vni Ymn Avtj vPbv Ki`b?

2| cix`Y wK? cix`Yi cKvi`f` Avtj vPbv Ki`b|

Ab`vb` Mtel Yv bKkv
Other Research Designs

GB cW tk`l hv Rvbn hvte —

- msnZ `j Avtj vPbv
- `*Z MŃgxY gj `vqb
- AskMhYgj K MŃgxY gj `vqb
- gj `vqb Mtel Yv

ce@ZPcW, tj vtZ Avgiv tRtbnQ th, mgm`vi cKwZ, Mtel Yvi Df`k` I ai`Yi Dci Mtel Yv bKkv AfbKvstkb wbfP Kti | tkvb cč`A ev NUbvi AbymÜvb, eYDv wKsev e`vL`vi Df`k` wZbnU c`vb Mtel Yv bKkv itqtQ | thgb, tkm ÷vwW, Rwi c, I cix`Y | wKs` GB wZbnU Mtel Yv bKkvq e`eüZ Mtel Yv c`wZ, tj v mvgwRK we`Avtbi mKj ai`Yi mgm`vtK Aa`qtbi Rb` chfß bvl ntZ cvt | wewfboemxgve`Zvi Kvi`Y Ges cŃqvRtbi tm, tj vtK cŃqM Kiv hvq bv | ZvB mvgwRK we`Avbxi v Avtj v wKQz Mtel Yv bKkv D`Meb Kti`Qt | thgb, msnZ `j Avtj vPbv (focus groups discussion), `*Z MŃgxY gj `vqb (rapid rural assessment), AskMhYgj K MŃgxY gj `vqb (participatory rural assessment), gj `vqb Mtel Yv (evaluation research), BZ`w | Zte gtb ivLv cŃqvRb th, GB Mtel Yv bKkv, tj v tkvb tgsj K Mtel Yv bKkv bq | cŃZwB tkvb bv tkvbfvte tgsj K Mtel Yv bKkv, tj v wfbœai Y | GB cvtV „i`ZcY`KtqKuU c`wZtk Avtj vPbv Kiv nte |

msnZ `j Avtj vPbv (Focus Groups Discussion)

AvRKij eü mvgwRK Mtel K mvgwRK Dbq`bi wewfboet`f`f` (thgb, wK`Y, `f`", cwi evi cwi K`i bv, MŃg Dbq`b, BZ`w) msnZ `j Avtj vPbv c`wZtk e`vcKfvte e`envi Kti`Qb Ges Gi e`envi mŃgMZ ep`x cvt`Q | Kv`f`f`f`f`, GwU Gd wR wW bvtgB tekx cwi wPZ | 1936 mvtj gwKß h`j`i`v` Kurt Lewin me`cŃg GB c`wZwU e`envi Ktib Ges gZvgZ I gtbvfe Mtel Yvi Rb` 1950-Gi `k`K Frankfurt Institute of Social Research e`vcKfvte GB c`wZi e`envi Kti | wewfboet`f`f`f` tmev MŃxZv`i AvPiY I gtbvfe Rvbi Rb` 70-Gi `k`K Dbq`b we`kl`Áiv temi Kvix Dbq`b cŃZövtb GB msnZ `j Avtj vPbv c`wZi e`envi `i` Ktib | Rwi c, gj `vqb ev bZwE`K c`wZi gtbv e`qeüj I mgqmtc`Y c`wZi cwi etZ` Awak Kv`Rix Mtel Yv c`wZ wnmvte msnZ `j Avtj vPbv`K e`envi Kiv nq | gj Zt, tkvb wbn`Ń Df`k`k`K mvgtb ti`L GKwU Kg`mP m`ú`K`bqgZwš`K cŃq`vq mgag`m`m`i` ga` t`K we`kl cŃq`vq vbe`PZ GKwU `j`i`K m`bq`wš`Z Avtj vPbv m`th`M w`tq Zv`i `w`f`w, gtbvfe Ges cŃq`vq m`ú`K`Rvbi c`wZtk msnZ `j Avtj vPbv etj |

Kurt Lewin me`cŃg Gd wR wW e`envi Ktib |

msnZ `j Avtj vPbv c`wZwU cŃtg tMvŃx cŃq`vq Aa`qtbi we`tq tK`f`Z `vKtj I cieZ`PZ GwU Avtj vPbv we`q`tk Aa`qtbi Rb` e`eüZ ntq AvmtQ | Gi c`vb Df`k`wU `j`K we`k`Y Kiv bq, eis GwU c`vbZt `tji m`m`i` ga` t`K `f` mgtqi gta` Z` Avni`Yi Df`k`k` e`eüZ GKwU tKš`j | msnZ `j Avtj vPbv c`wZwU, YMZ Mtel Yvi t`f`f`B Awak e`eüZ nq | GB c`wZi Aš`b`f`Z gj cZ`vkwU ntjv th, GKwU `tji cwi tek `tji m`m`i` cwi `w`i K D`xcvbi gva`tg wba`wi Z we`tqi Dci Avtj vPbv`K Drmw`nZ Ki`te,

mvgwRK I Rulj mgmv mgvatbi Rb AskMhYKvix i AvMhK ew Kite, cwitekK Dik'gj Kfvte e'envti i gva'tg Avtj vPbvq tbZZj vbKvix e'w³tK Avtj vPbvi MwZ cKwZtK GKwU wv³ w tK cwi Pwj Z KitZ m'lg Kite, Ges cKZ AvteM, AbfwZ I ZuzZvi mvf_ gZvgZ Dc vcbtK mthvM cl vb Kite |

msnZ `j Avtj vPbvi Dik' (Purposes of Focus Groups Discussion): msnZ `j Avtj vPbv c^wZtK KLtbr tKvb cwi gvYMZ MtelYvi wfwE iPbvi ct_ugK MtelYv c^wZ wnmvte, KLtbr GKwU wbfP I c^wvb MtelYv c^wZ wnmvte, A_ev GKwU msLvZwEjK MtelYvi yMZ m^utK wnmvte, Avevi KLtbr eu-c^wZm^ub^uMtelYvi Ask wnmvte e'envi Kiv nq | Kiv'qZ mvdj j vtfi Rb msnZ `j Avtj vPbvq ce'wba^wi Z GKwU j q' vKtZ nte | GB j q' wba^wYi Rb w^u welq wetePbvq ivLv c^wqRb | thgb, msnZ `j Avtj vPbvU hw Ab' tKvb c^wZi m^utK wnmvte e'euZ nq, Gi Dik' GK iKg nte | Avi hw GuU m^uY^oGKK wbfP c^wZ wnmvte e'euZ nq, Zvntj Dik' wvfb^wiKg nte | Dik'tk'i mvf_ m^uK^oti tL Avtj vPbvK m^wK w K I welqgi Dci cwi Pjv bvi Rb cteB GKwU Zwj Kv Zwi Kiv thtZ cvti | msnZ `j Avtj vPbvi Rb `j MVtbi welquU Lp_ i'ZcY^o `j MVtbi t'q^t Aek'B j q' ivL^tZ nte th, Zviv thb mg`j fy³ nq Ges bgbvq^tbi gva'tg j q' `j ev tmev MhZvi ga' t^tKB wbe^wPZ nb | Avtj vPbv Ab^ov^tbi Rb cte^ot^tKB GKwU wv ev mgq wba^wY KiZ nte Ges Avtj vPbvq AskMhYi Rb wbe^wPZ e'w³t^t i^tK cteB Avtj vPbvi mgq I wv m^utK^oAewN KiZ nte |

mvgwRK MtelYvi tcl'vc^tU, msnZ `j Avtj vPbv KZ_tjv m^w w³ Dik' mvab Kti | cl'gZt, MtelYv-ce^oc^wZ wnmvte GuU MtelYvi Dik' I mPK_tjvK h_vh_ msAvqb Ges m^wte' aw^s-m^utK^och^w Z_ mieiv^tni gva'tg gj MtelYvi c^wZ Mh^tY m^wnh' Kti | w^oZxqZt, MtelYv-cieZ^oc^wZ wnmvte GuU DEi`vZv^t i gZvg^tZi wfwE^tZ wewfb^wec^o:A ev NUbvi aviv, wfb^wZv, h^w I KivYtK e'vL^v KiZ cvti | ZZxqZt, c^wvb MtelYv c^wZ wnmvte GuU `tj i cl'wqv, Z^tuz^oAbfwZ, g^tbv^wve I AvPi^tYi h^w I e'vL^v m^utK^oAb'v^o c^wZi gZ ch^w Z_ mieivⁿ KiZ cvti | PZ^oZt, GKfvte, GuU Avtj vPbvi c^wMv^oZvi dtj `tj i I `tj i m'm^t i g^ta' cwi eZ^o NUv^tZ cvti Ges Ab'fvte, msnZ `j Avtj vPbv `j cl'wqv, g^tbv^wve^t cwi eZ^o, `tj i m'm^t i g^tbv^wve I gZvgZ, wv³ c^wZi Kvh^wvi xZv, BZ^w m^utK^ogj evb Z_ tctZ m^wnh' Kti |

Avtj vPbv cl'wqv (Discussion Process): msnZ `j Avtj vPbvq wewfb^wew^tq Z_ msMh, mgmv mgvatbi Rb w^owi Z Avtj vPbv, Pj tPiv w^tK^w I bwZ wba^wYi j t'q' mgv^tR w^tkl gh^wv, Awf^oZv ev AvMh^w m^ub^ue'w³eM^wK m^u,³ Kiv nq | G MtelYv c^wZtZ Avtj vPbvi gva'tg Z_ msMh^oni Rb Qq t^tK evi R^tbi GKwU q^o `j MVb Kiv nq hv^t i GK^rtbi t^bZ^tZi Avtj vPbv Ab^oZ nq | AskMhYKvix `tj MtelK Dc^wZ v^tKb | A^tb^oiv t^kD c^oZte`K, t^kD ga'`ZvKvix, t^kD Avtj vPK ev AskMhYKvix wnmvte w^wqZi cvj b Kti b | MtelK mvavi YZt Avtj vPbv cwi Pjv bvq m^wnh' Kti b | c^oZte`K (mvavi YZt, Gd wR w^w tZ `qRb c^oZte`K v^tKb) Avtj vPZ c^oZwU welq ch^wY I wj wce^x Kti b | Avtj vPbv cwi Pjv bvi Rb GKwU ce'wba^wi Z w^t Rbv e'envi Kiv nq |

msnZ `j Avtj vPbvK wewfb^wMtelK wewfb^wfvte cwi Pjv bv Kivi c^wgk^o w^tq v^tKb | Zte msnZ `j Avtj vPbvi KZ_tjv mvavi Y avc itq^tQ hv me MtelKB Ab^oni Y Kti v^tKb | tm_tjv ntj v: DEi`vZv wbe^wPb, j q' wbfP Avtj vPbvi mPbv NUv^tbv, Avtj vPbvK w^oq^sY, Z_ wj wce^xKiY Ges DcvE w^tK^w | h_vh_ bgbvq^b c^wZ Ab^oni Yi gva'tg w^oePwqZfvte wbe^wPZ DEi`vZv^t i w^tq GKwU `j MVb Kiv nq | `j wbe^wP^tbi ci `j t^bZv Mtel^tKi Øiv

wbaŋi Z ckw` t q GKŋ j ŋ wbfP Avtj vPbvi mŋcvZ Kti b | `j tbZv GLvtb mg` qKvixi
fwgKv cvj b Kti _vtKb | Avtj vPbvK DrmwN Z Kiv Ges Avtj vPbvi cwi tektK wbošY Kivi
j tŋ Avtj vPbvK tKvb MwZtZ cēwinZ Ki tZ nte Zvi tKŠkj wbaŋi Yi `wqZi _vtK cēvbZt
Mtetki nvtZ | wKŠ Avtj vPbv Pj vKvj xb mg t q tm tKŠkj tK KvRi fvt e cŋqm Kiv ntj v
`j tbZvi `wqZi | wK ai t Yi DcvE Ges wK c xwZtZ Zv wj wce x Kiv nte tmUj wbfP Ki te wK
ai t Yi DcvE msMŋ Kiv nte Ges wK Dŋ t k Zv Kiv nte tmUj Dci | DcvE tK wef b ŋ fte
wj wce x Kiv th tZ cvti | hwŠK c xwZtZ wj wce x Ki Y tek x wbfP th vM` ntj l Gi mxgve x Zv
i t q t Q | Kvi Y, hš e` envti i dtj ` tj i m` m` iv `Zt ūZ Zv nwi t q t d j t Z cvti b | tm Kvi t Y
nvtZ nvtZ wj wce x Ki Y c xwZ A t b K tek x KvRi x n t q _vtK | Gi c ti , msMŋ x DcvE t K
g j ` v q b K ti h _v h _ f v t e w e t k i Y K iv n q |

msnZ `j Avtj vPbvi mxgve x Zv (Limitations of Focus Group Discussion): msnZ `j
Avtj vPbvi gra` t q th cwi tek `Zwi n q ZvtZ Kti gv b | g j b g t b Zvt ` i g Z v g Z c k v t k i
`v x b Z v t f v M K i t Z c v t i b G e s A b ` v b ` i m v t _ w b t R t ` i c w i w Z t K Z j b v K t i
m g m ` v t j v t K A b p e v K i t Z c v t i b | w K Š G B g j b c w i t e t k i m j e a v K L t b v K L t b v w e f b e
A m j e a v i m u o K t i | h w ` g v b j g t b K t i t h , Z v t ` i g j b g t b i c k v k w b t R i t c k v , K g f ŋ t l
e` w s M Z R x e t b i D c i t K v b c f v e t d j t Z c v t i , Z t e ` t j i c w i t e t k A s k M ŋ Y K v i x i v m w Z ` K v i
g Z v g Z t K c k v k b v l K i t Z c v t i b | A w a K u s k t ŋ t ŋ t , A v t j v P b v q g r o t g q w K o z e ` w s i c ŋ a v b `
_v K v i K v i t Y A v t j v P b v i M w Z - c k v Z l d j v d j c Z ` w k Z b v l n t Z c v t i | G g b w K , A t b K
A s k M ŋ Y K v i x A v t j v P b v q A s k b v l w b t Z c v t i b | ` t j i t b Z v t K m s o i v L v e v w e t i v a x Z v K i v i
c ŋ Y Z v t t K m s n Z ` j A v t j v P b v i D c i h v M x Z v A t b K e o m x g v e x Z v q i f c w b t Z c v t i | G B
c ŋ Y Z v w j w e f b e K v i t Y R b t w b t Z c v t i | t h g b , A s k M ŋ Y K v i x i v A v t j v P b v t K Z v o v Z v w o m g v b
K i t Z P v B t j t b Z v i m e e s e t K t g t b w b t q A v t j v P b v m s ŋ ŋ B K i t Z c v t i b ; t K v b w e l t q
t b Z v i ` p A e ` v b _v K t j A v t j v P b v q A s k M ŋ Y K v i x i v t m w e l q t K B m g _ b K t i w b t R t ` i
g Z v g Z t K t m v b i v L t Z c v t i b ; A _ e v A v t j v P ` w e l t q i g t a ` h w ` t b Z v i e ` w s M Z e v i v R % o w Z K
w e k t m i c ŋ a v b ` _v t K , t m t ŋ t ŋ t ` t j i m ` m ` i v w e f s n t q w t q G K ` j m g _ b l A b ` j
w e t i v a x Z v e v w b i e t t K A v t j v P b v i D ŋ t k t K e ` v n Z K i t Z c v t i b | G B c x w Z i m d j Z v w b f P
K i t e ` t j i t b Z v l ` t j i ` w e k t o ` i _ Y M Z g v t b i D c i | h w ` A s k M ŋ Y K v i x t ` i g t a ` h t _ o
A v M ŋ l D i x c b v ` Z w i K i v b v h v q , Z t e A v t j v P b v t K m s n Z i v L v e v m w K w ` t K c w i P w j Z K i v
t e k K o K i n t q c t o | G c x w Z t Z c ŋ B d j v d j t j v m v a v i Y Z t c ŋ Z w o v a Z k x j n q b v | G m e
m x g v e x Z v i K v i t Y m v g w R K w e A v t b m s n Z ` j A v t j v P b v i c x w Z u l G K u l ` v a x b l ` w b f P
M t e l Y v b K k v w n m v t e e ` e u Z b v n t q e i s g j M t e l Y v t K m g x K i v i R b ` G u l A w a K u s k t ŋ t ŋ t
G K u l A b j n ū v b g j K n w Z q v i w n m v t e e ` e u Z n q |

`Z MŋgxY g j `vqb (Rapid Rural Assessment)

Kŋl -A_ b ŋ z l m v g w R K M t e l Y v i w K o z w K o z t ŋ t ŋ t c p w j Z K v W t g v e x M t e l Y v c x w Z t Z D c v E
m s M ŋ A w a K Z i m g q l e ` q m v t c ŋ l G e s R w l j l A b g b x q n t q c t o | c p w j Z c x w Z t j v i
g r a ` t q G K u l w b w ` g v t v q c w i m s L ` v b M Z w b f P t h v M ` Z v A R f b i R b ` G K a i t Y i A w Z g v t v q
m e Z v A R f b i t P o v K i v n q e t j l A t b K D b a b M t e l K g t b K t i b | m e Z v i g v t v t K A ŋ t Y e
t i t L ` Z Z v i m v t _ e v e m s Z Z _ m s M ŋ n i R b ` G K u l w e K i c x w Z i c ŋ q v R b t t K B ` Z
M ŋ g x Y g j ` v q b c x w Z i w e K v k N t U t Q | ` Z M ŋ g x Y g j ` v q b c x w Z i c ŋ v b % w k o _ t j v n t j v G i
b g b x q Z v , D ` m ` e b x t K Š k j , m n R m v a ` Z v , m g t q v c t h v M x Z v , ` f m g t q i g t a ` M t e l Y v m e u v ` b ,
e ū - w e t k l Á m g a t q M t e l Y v ` j M V b G e s M ŋ g x Y R b t M v o x i K v O t t K m i v m i D b a b i a v i Y v
A R b | m j b w ` f v t e e j v h v q t h , ` Z M ŋ g x Y g j ` v q b n t j v M ŋ g x Y D b a b i D c i ` Z Z v i m v t _

`Z MŋgxY g j `vqb ntj v
MŋgxY Dba b i Dci `ZZvi
m v t _ b Z b Z _ m s M ŋ G e s
A b K i w b g ŋ Y i R b ` e ū -
w e A v b x m g s t q M w Z G K u l
w e t k l Á ` t j i ŋ v i v g v
c h ŋ q c w i P w j Z G K u l
A v a r - K i W t g v e x M t e l Y v
K g R u t ū i D ŋ ` w l

bZb Z_ msMh Ges AbKí wbgfi Yi Rb" eú-weÁvbx mgštq MwZ GKwU weŧkl Á `tj i Ōvi
gv chfi q cwi Pwj Z GKwU Avav-KvVtgvex Mŧel Yv KgRvtŌi Dŧ`m|

GKwU gv chfi q i KŠkj wmwte `°Z MŌgxY gj`vqŧbi KZ,tjv weŧkl mŧeav iŧqŌ|
cŌgZt, `°Z MŌgxY gj`vqb c×wZ Mŧel Yv I Dbqŧ m×úmkŠ cŧh½ wPwýZKiY I AbŧmŪvŧbi
Rb" GKwU DcŧhvMx c×wZ wmwte KvR Kŧi | wŌZiqZt, G c×wZi gva`tg GKwU mŧmvi
Aa`qb, AbKí cixŧv Ges Mŧel Yv KgŧPxi mwŧeR Dŧí k" Abŧhvqŧ weŧfbaecŧh½i AvŧcŧŧK
i"ZŧK gj`vqb Kiv hvq| ZZiqZt, `°Z MŌgxY gj`vqb c×wZ AvbŧwŧK Rwi c Mŧel Yv
c×wZi wbeŧPb I wbeŧo AbŧmŪv cwi Kí bvi j ŧŧ` `°Z Z_ msMŌni Rb" mŧvqZv Kŧi |
PZl Št, GKwU `°Z MŌgxY gj`vqŧbi Abkxj b GwU bŧbv Rwiŧci Rb" cŧkŧv j v`Zwi, bŧbv
Gj vKv wPwýZKiY, Avše³K thvMŧhM cŌZŌv, DcvÉ msMŌ, cŌKí wbgfi, ev`evqŧ, gj`vqb
I Z`vi KŧZ DcŧhvMx ŧKŠkj wmwte KvR Kŧi | cÁgZt, bZb D^mŧeb I Kŧ.ŧKŠkŧj i weKv, k,
n`ŧš, e`envi I MŌYŧhvM" Kŧi ŧZvj vi j ŧŧ` MŌgxY RbŧMvŧŧK mŧPZb I DŌx Kivi KŧR
`°Z MŌgxY gj`vqb ŧKŠkj k mŧPv iŧŧc e`envi Kiv hvq| lŌZt, Ri"ix cwi w`wZŧZ h_v_Ō
bwiZgvj v cŌqŧ, `°ZZvi mŧ` m×vš-MŌY I ev`evqŧbi Rb" `°Z MŌgxY gj`vqb gj`evb
DcvÉ mieivŧni gva`tg Kvŧŧi fŧgKv cvj b Kŧi |

`°Z MŌgxY gj`vqb maviY Ávŧbi `wŧf w½ MŌŧYi gva`tg Dbqŧ Abkxj bKvixŧ`i GKwU
ev`emšZ Ae`vb MŌŧY mŧvqZv Kŧi | `°Z MŌgxY gj`vqb c×wZ ev`emšZ AwfÁZvi
wŧvÉŧZ MŌgxY RbMY I weŧkl Áŧ`i gŧa" eŪb `vcŧbi GKwU mŧgvnx b mŧhvM `Zwi Kŧi, hv
MŌgxY Dbqŧbi Rb" cwi Kí bwe` I m×vš-MŌYKvixŧ`i Rb" h_vh_ I mŧŧvPZ Z_ msMŌ
AŧbK mnRZi nq| Zŧe GwU gŧb ivLv cŌqvRb th, `°Z MŌgxY gj`vqb ŧKvb cwi wZ c×wZ
bq, ev ŧgšj K Mŧel Yv bKkvi ŧKvb cŌZ`vcK weKí I bq| GwU th ŧKvb ŧgšj K Mŧel Yv
bKkvi m×újK wmwte PgrKvi djvdj cŌvb Kŧi | `°Z MŌgxY gj`vqŧbi cÁvb P`vŧj ÁwU
nŧjv DcvÉi cŌZwŧvZkxj Zv I mŧwKZv ARŌ Kiv| KviY, `°Z MŌgxY gj`vqb c×wZŧZ
GKwU ŧŌvU bŧbv e`envi Kiv nq Ges ŧŌvU bŧbv AvKvi cwi mL`vbMZ Av`vi cŌqvRbq
gŧvŧK ARŌ KiŧZ cvŧi bv etj GB c×wZŧZ msMŧxZ DcvÉi mŧwKZvi gŧv Kŧg hvl qvi
m×ŧebv `ŧK|

`°Z MŌgxY gj`vqŧbi ŧgšj K bwiZgvj v (Fundamentals of Rapid Rural Appraisal):
`°Z MŌgxY gj`vqb c×wZ cvPwU cÁvb bwiZgvj vŧK Abŧni Y Kŧi | tm,tjv nŧjv wŧ gŧxKiY,
cpi vŧEKiY, `vbqŧ Ávŧbi e`envi, eú-weŧkl Á mgštq Mŧel Yv `j MVb I bŧbvqZv|
DcvÉi mŧwKZvi gŧv evx`i Rb" Dŧí k"cyŧvŧe wZbW wŧbŧgvŧv e`envŧi i gva`tg `°Z MŌgxY
gj`vqY c×wZŧZ wŧ gŧxKiY bwiZgvj v cŌqvM Kiv nq| wŧ gŧxKiY c×wZ nŧjv wŧbqge`fvŧe
weŧfbaec×wZ, Gj vKv I bŧbv mŧvŧkY | `°Z MŌgxY gj`vqb cwi Pwj bvi mgq Mŧel Yv `j
MVb, chfi fi Yi GKK wbeŧPb Ges Mŧel Yv c×wZ wbaŧŧ Y G wZbW ŧŧŧŧB wŧ gŧxKiY bwiZ
cŌqvM Kiv nq| `j MVŧbi wŧ gŧxKiY ej ŧZ DcvÉ msMŌni Dŧí k" eú-weŧkl Á mgštq
MwZ GKwU Mŧel Yv `j MVŧbi `wŧf w½ŧK ŧevSvq| chfi fi GKŧKi Rb" weŧfbaevb`ŧŌi
wŧvÉŧZ wŧbŧwŧvŧe`w³i KvŌ ŧ`ŧK DcvÉ msMŌni Dŧí k" `ŧwqZ bŧbvqŧŧK ŧevSvq|
Mŧel Yv c×wZi wŧ gŧxKiY nŧjv DcvÉi wŧfŧkxj Zv evx`i Rb" weŧfbaevŧŧi i"ŧZi Dci
wŧfŧ Kŧi weŧfbaec×wZ, ŧKŠkj I nŧwZqvŧi mŧvšj Z e`envi |

`°Z MŌgxY gj`vqb cŌuqvq Z_ msMŌ, tm,tjvi h_v_Šv cixŧv Ges cwi i xKiŧYi Rb"
cpi vŧEKiY bwiZgvj v e`envi Kiv nq| GwU KiŧZ wŧŧq GKwU Avav-KvVtgvex mŧŧvKvi
ŧKŠkj cŌqvM Kiv nq| GB Avav-KvVtgvex mŧŧvKvi ŧKŠkj Mŧel ŧŧK cŧkŧwRÁmv Kiv
Ges AbKí wbgfi Y hŧ_ó bŧbvqZv cŌvb Kŧi | cpi vŧEKiY cŌuqvi gva`tg Mŧel K aŧc

avtc mgm`vi cKwZ m`útkRvbtZ cvtib, hv ZvtK mgm`vi h_vh_ mgvavb I KgŕPx cŕqtb mnvqZv Kti | cŕj Z MtelYv c`wZtZ e`eüZ Klvvtgve`x mvŕŕvrKvi AbjnPxi cwi etZ` `Z MŕgxY gj`vqb c`wZtZ MtelK `j mgm`vi cKZ cŕh½_tj vtK Dcj wä Kti ev`em`šZ mgvavb wPwYZ Kivi Rb` mivmwi Zt`i Drtmi KvŕQ thtZ cvtib | GB c`wZtZ `vbxq AvfÁZv, HvZn`evnx Kr.tKŠkj, Ávb Klvvtgv I ŕŕgZvi Abjxj tbi Dci tekx tRvi t`qv ntq `vtK etj `Z MŕgxY gj`vqb cwi Pvj bv mwZ`Kvi fvte bxp t`tk Dcti Dbqtb cŕŕqvtk Kvhŕi Kti tZvtj |

GKwU mdj `Z MŕgxY gj`vqb m`úv` tbi Rb` wefwbewel tq AvfÁZvm`úbæe`w³i mg`ftq MwZ wekIÁ `j ŕviv cwi Pwj Z ntq `vtK | GKbmv`_, `tj i m`m`t`i gta` GKwU Nwbó m`úK`Ges cŕŕvp wq_w`ŕv msNwUZ nq etj G c`wZi gva`tg mgm`vi wefwbægv`vtK tevSv AtbK mnR ntq Dtv | `Z MŕgxY gj`vqb c`wZi Ab`Zg c`avb %enkó`wU ntjv bgbxqZv | bgbxqZv ejtZ wefwbæc`wZMZ c0`, tKŠkj I nwwZqvi wbevPb, cwi eZŕ, mstkvab ev mivšj b NUvtbvi ŕŕgZvtK tevSvtbv ntqtQ | G tŕŕt` mgqmPx, ágY I Kg`cwi Kí bvi mstkvab Kivi ŕŕgZv Ges gvV chŕŕqi cwi w`wZi Dci wbfP Kti cŕŕqvRbxq mstkvab I mgštqi mthvM MtelYv `tj i nvZ `vtK |

`Z MŕgxY gj`vqb cwi Pvj bv (Conducting a Rapid Rural Appraisal): `Z MŕgxY gj`vqb cwi Pvj bvi c`avb PviwU avc itqtQ | tm_tjv ntjv: cŕwZ MŕhY, DcvÉ msmŕh, DcvÉ mstkvab I wekIÁ Ges cŕZte`b cŕŕqb | Ab`vb` me MtelYv c`wZi gZ `Z MŕgxY gj`vqb cwi Pvj bvi tŕŕt`I MtelYv mwmZ` chŕŕj vPbvi gva`tg MtelYv Gj vKv, c`wZi weKvk, DcvÉ msmŕhni tKŠkj I nwwZqvi, AbKí wbgvP Ges MtelYv `j MVtbi Dci cŕŕqvRbxq cUf`wgjK Z` msmŕh Ki tZ nq | G mKj Zt`i Dci wfvÉ Kti MtelYv `j MtelYvi Gj vKv wbaŕY, MtelYv Gj vKvi bKkv g`vc cŕŕqb, Gj vKv ágY Kti m`vebv I msktUi GKwU Zvjv Kv wbgŕY Ktib | th mKj wettqi Dci MtelYv Kiv nte tm mKj wettqK wKfvte Abjwvnb Kiv nte Zvi Dci wfvÉ Kti GKwU wettqfvÉK wbt`ŕKv `Zwi Kiv nq | GB wbt`ŕKwUB cieZŕPZ gvV chŕŕq Avav-Klvvtgve`x mvŕŕvrKvi wbt`ŕKv wmvte KivR Kti |

gvV MtelYv m`úbæKtZ KZUKz mg`ftqi cŕŕqvRb nte, wK wK cŕh½ wbtq MtelYv Kiv nte, KZ_tjv Mŕg wbtq KivR Kiv nte, MtelYv Gj vKv KZ `ŕi nte, BZ`w` wettq cŕwZi mg`ftqB wmvš`MŕhY KtZ nte | GKwU `Z MŕgxY gj`vqb cwi Pvj bv KtZ mvavi YZt 3 t`tk 20 w`b mgq tj tM hvq | Zte GKwU mdj `Z MŕgxY gj`vqb cwi Pvj bvi Rb` GK mšvn mgq ht_ó etj MtelKMY gtb Ktib | G chŕŕq, MtelYv `tj wK wK aitYi wekIÁ `vKteb Ges KZRb `vKteb Zvl wbaŕY Kti wbtZ nte | Zte gtb ivLtZ nte th, `ß t`tk wZb Rtbi `j Lp tQvU ntq hvq Ges 10 Rtbi tekx ntj AtbK eo ntq hvq | wekIÁ, mKj KgŕvtUi GKwU AbjnPx cŕŕqb KtZ nte, hvZ Kti GKwU tK, cŕZwU KgŕvUtK ht_ó mgq t`qv hvq Ges Ab`w` tK, ctiv cŕŕqvU thb j wVgnxb ntq bv cto |

DcvÉ msmŕhni Rb` th mKj DÈi`vZvtK wbevPb Kiv nq Zvt`itK mweŕfvte `vbxq cwi w`wZi cwi t`cŕŕtZ cŕZwbaZxj ntZ nte, Zvt`i mnRMg` ntZ nte, wettq` m`útk` Ávbm`úbæntZ nte Ges mvŕŕvrKvi cŕv`b AvMŕh ntZ nte | th mKj e`w³ mgm`vi wefwbæ`K m`útk`tefx I qwKenvj G iKg `i`ZcY`Z` cŕv`bKvix DÈi`vZvtK wPwYZ KtZ nte | G mKj `i`ZcY`Z` c`v`bKvix ntZ cvti `vbxq KgŕZP, agŕŕ tbZe, `vbxq tbZe, `g wKŕŕK Ges QvI-QvIx | G c`wZtZ e`w³MZ mvŕŕvrKviti Zj bvq `j xq mvŕŕvrKvitiK cŕavb` t`qv nq | KiviY, `j xq mvŕŕvrKvi AwakZi AskMŕhYgjK ntq `vtK | GtZ GKmv`_ AtbK tekx Z` cvl qv hvq Ges mv`_ mv`_ Zt`i h_v`Zvl hvPvB Kiv ntq hvq | Zte AtbK mgq

`j xq mv¶vrKvi mgm¶vl m¶ó Kti | thgb, AþK Z_ c0 vbKvi x Ab`ti i m¶óL „i“ZcY“Z_”
c0 vb KiþZ w0awišZ _vtKb| tKb bv, tmB Z_ c0 vti dtj DEi`vZv`i gta` weþivagj K
m¶úK“Zwi Kti, hv cieZxþZ Zvi Rb` e`w3MZ mgm¶v m¶ó KiþZ cvti | tm t¶¶t¶, Mtel Yv
`j þK e`w3MZ mv¶vrKvi c×wZ e`envi KiþZ nq|

Z_ msM0ni ci Zv weþkHþYi Rb` Mtel Yv `j DcvEþK msMwZ Ktib| GuU KiþZ wMtq
Zviv Z_ ,tj vtK ch½wrfwEK c0avb` w`tq mwmRtq tdtj b| GuU Mtel Yv `tj i m`m` Ges
AskM0YKvix`i gta` HKgtZ`i wfwEþZ Kiv ntq _vtK| Zte thþnZi c0avb` wbaþþYi
welqW GKwU wbgqZwšK c×wZ AbjmiY Kti Kiv nq, tmþnZi tm mKj c×wZ I gvb`U
c0wZcþB Mtel Yv `j þK wbaþþY Kti wþtZ nq| G mKj c×wZ I gvb`t0i wfwEþZ Mtel Yv
`tj i m`m`iv Gj vKvevmx I „i“ZcY“Z_” c0 vbKvix`i m¶vqZvq hvPvB evQvB Kti KZ_ ,tj v
ch½þK GKwU fi hþ µgavivq mwmRtq tm ,tj vtK weþkHþ Ktib| `Z M0gxY gj`vqþbi
mdj Zv wbfP Kti GKwU A_0n c0Zte`b c0vqþbi Dci | c0Zte`b c0vqþb hv I Mtel Yv
`tj i mKþB Ae`vb ivtLb, wKš` cþiv c0Zte`b wU tj Lvi `wqZi GKRbtKB t`qv nq|
c0Zte`þbi c0g LmowU ch0j vPbvi Rb` `tj i mKj m`tm`i KvþQ weZiY Kiv nq Ges
KþqK `dv Avþj vPbvi ci LmowU P0vš-Kiv nq|

AskM0Ygj K M0gxY gj`vqb (Participatory Rural Assessment)

RbMYþK mv¶_ wbtq RbMþYi
KvQ t`þK wKQzRvbi tP0vB
nt`Q AskM0Ygj K M0gxY
gj`vqb|

hLb tKvb welþq `xN¶ b aþi Z_ msM0ni mþhvM _vtK bv A_P Ri`ix wfwEþZ Zt`i c0qvRb
ntq cto, ZLb mvqwmRK Mtel Yvq AskM0Ygj K M0gxY gj`vqb c×wZ e`envi Kiv nq| GuU
mvqwmRK Mtel Yvi GKwU msw¶þB c×wZ wmwte cw¶PZ| 800i `kþKi c0g w`K t`þK
AskM0Ygj K M0gxY gj`vqb c×wZ cw_exi wewfbet`þk e`eüZ ntq AvmtQ| msw¶þBfvte,
RbMYþK mv¶_ wbtq RbMþYi KvQ t`þK wKQzRvbi tP0vB nt`Q AskM0Ygj K M0gxY gj`vqb|
G c0uqvq Mtel K th`i ay AbjmiYvb, weþkHþ ev gj`vqþbi gva`tg mgm¶v m¶úþK`eþtZ I
RvþtZ cvti b ZvB bq, wZwb RbMY I eü welþq wþtRI mþPZb ntq DVtZ cvti b| bvg`i þb
gþb ntZ cvti th, G c×wZtZ teva nq`i agv¶ M0gxY tcv¶vctUB Mtel Yv Kiv nq| c0KZcþ¶,
welqW Zv bq| kúþi cw¶wZtZ Mtel Yvi Rb`I GB c×wZi e`envi ntZ cvti | þ tKvb
`vbxq Ae`v Ges `vbxq RbþMv0xi `w0f½ hvPvþtqi Rb` GuU weþkl fvte m¶vqK GKwU
_YMZ c×wZ|

GB Mtel Yv cw¶Pj bvi Rb` Mtel þKi weþkl c0k¶¶Y I `¶¶Zvi c0qvRb nq| mdj
AskM0Ygj K M0gxY gj`vqb cw¶Pj bvi Rb` KþqKwU welq weþePbvq ivLv Avek`K| thgb,

- Mtel Yvi Rb` wbe¶PZ Gj vKvq emeivmKvix mKþj i KvþRix AskM0Y wbu0Z Kiv;
- RbMþYi c0Z Av`v ivLv;
- RbMþYi c0Z kšv tcvLY Kiv;
- RbMY mgm¶wU m¶úK¶v Rvþbb, textSb, etj b, t`Lv, I Kþi b Zv Rvbi AvM0 _vKv;
- wþtR Kg etj RbMþYi K_v gþbvþhvM w`tq tKvbv;
- RbMþYi gZvqZ Rvbi Rb` weþkl webq c0 k0 Kiv; Ges mþe0wi,
- Ggb þKškj Aeþþ Kiv hv RbMYþK wþtRþ`i a`vb-avi Yv, Avþbi c0Kv I Z_ weþkHþ Abc0wZ Kti |

AskMñYgj K MògxY gj`vqtbì `enkó` (Characteristics of Participatory Rural Assessment): AskMñYgj K MògxY gj`vqb c×wZi wKQz `i`ZcY`enkó` itqtQ hv G c×wZi KvñRvi xZvtK còvY Kti | G c×wZtZ MtelYv Gj vKvq tZgb tKvb tñšv`eY`máúK` %Zwi bv KtiB mivmwi tmLvtb wMtg Z` msMñ Kiv hvq| mvaviYZt, thLvtb AskMñYgj K ch`e`ñtYi gtvZ `xñf`gqv`x MtelYvi mgq I mñhvM Kg, tmLvtb GB c×wZ tek Dc`thvMx| còvbZt, Kw I `v`welqK MtelYvq GB c×wZi e`envi mefPtg tekx nq| G c×wZtZ mKj c`wZ (thgb, Gj vKv wbañY, MtelYvq AskMñYKvix ev mrvñ`Kvix e`w`e` i wbeñPb, tPKwjo`Zwi, BZ`w`) m`úbr`Kti MtelYv Gj vKvq hv qv nq| RbMñYi mrvñ` wbtq Mòtgi `k`gvb `enkó`vejx m`útk`Rt`b tbqv Ges MtelYv Gj vKvq GKwU gvbnP` `Zwi Kiv AskMñYgj K MògxY gj`vqbKvixi GKwU `i`ZcY`KvR| còvb Mtel K Mògevmx` i wbtq `j xq Avtj vPbvi AvtqvRb Ktib Ges Mòtgi BwZnvñmi còvb còvb welq `tj v D`j EceR` tmB Mòtgi kw` I `e`Zv m`ñj Z GKwU cUfñg `Zwi i Rb` AskMñYKvix` i DrmvinZ Ktib| wZwb tkYwñw`EK weñfb`eLvbn (household) wPwYZ Ktib| AskMñYgj K MògxY gj`vqb MtelYvi weñfb`echñq e`w`MZ mrvñ`Kvix, `j MZ Avtj vPbvi I wbeñPZ `j Avtj vPbvi gva`tg Z` msMñ Kiv nq|

AskMñYgj K MògxY gj`vqtbì mvgv`xZv (Limitations of Participatory Rural Assessment): Zte AskMñYgj K MògxY gj`vqtbì wKQz mvgv`xZv itqtQ| G c×wZtZ Mtel K `f mgtqi gta` AbñUvb Pvj vb etj RbMñYi mvgm`vi cKZ ifc m`útk`ñt`ó Z` msMñ Kiv m`e nq bv| dtj , Zv A`bK mgq Am`úY`MtelYvq cwi YZ nq| `j MZ Avtj vPbvi tejvq, RbMñYi gta` mgm`vi AMñwKvix wYñq i`ñt` A`bK mgq HKgtZ` t`c`Qv`bv tek KwVb e`vcvi ntq `wvq| Kvix, G`KKwU `j G`KKwU welqtK tekx AMñwKvix w`tZ Pvb| G ai`Yi MtelYv `vbxq `GKwU Mòg, evRvi ev BDñbqb chñq cwi Pvj bv Kiv nq etj G MtelYvi gva`tg còB djvdj w`tq mweR w`v`ts`-t`c`Qv`bvi mñhvM `vtK Kg| A`bK mgq G c×wZtZ Gj vKvix cñvekvjx e`w`t`i còvb` t`Lv hvq| `j xq Avtj vPbvZ I Gj vKvix cñvekvjx e`w`t`i còvb AskMñY MtelYvi gj` D`ñk`ñk e`vñZ Ktib| dtj , G c×wZtZ ñj` ev `e`ñ tkYxi gZvgZ còqB D`c`ññZ nq| AskMñYgj K MògxY gj`vqtb RbMñYi gZvgtZi Dci `i`Z`ñ`qv ntj I Ges RbMñYi KvQ t`ñk Z` msMñ Kiv ntj I còZte`b `Zwi mgq MtelñKi wR`^`w`f`w` I we`k`Y còqv`Mi cèYZvi dtj m`cwii kmgñni gta` RbMY A`c`ñv MtelñKi gj`vqb ev gZvgtZi còZdj b N`ñU tekx| tm Kvix, A`bK mgvñj vPK AskMñYgj K MògxY gj`vqtbì gva`tg c`ZKZ còZte`b RbMñYi gZvgZ m`ñj Z còZte`b etj `ñKvix Ki`Z Pvb bv|

gj`vqb MtelYv (Evaluation Research)

gj`vqb MtelYv Ggb GK ai`Yi MtelYv bKkv, hv ga`eZx`KgñPxi (intervention programme) cwi Kíbv, bZb I we`gvb KgñPxi ev`evqb I Gi KvñRi KiYtK Z`vi Kx Kiv Ges wKfñte GKwU KgñPxi KvñRi fñte Zvi j`ñ` ARB Kti Zv wbañY Kivi KvñR e`eüZ nq| hw` I gj`vqb MtelYv eü eQi a`ñ PPñntq AvmñQ wKŠ` mvgwñRK Dbqbgj K KgñPñtZ mi Kvix I temi Kvix Drm t`ñk cPñ cwi gvtY A`ñqtbì dtj Gi còvb` t`c`Z`i` Ktib` t`Kej m`v`còZKkvñj | hviv A`ñq Ktib Zvix t`L`Z Pvb th, MñxZ KgñPxi `tj v Zvt` i j`ñ` ARB Ktib` wK bv, KZUKz KvñRi fñte Zv Ktib` Ges tm `tj v tKvb AbvKw`ññZ djvdñj i Rbñ w`ñQ wK bv| A`ñ, gj`vqb MtelYv ntj v G mKj cññ` m`útk`h`v`e` w`f`ñhvM` còvY msMñ I mieivñni GKwU Dcvq| thgb mgvñR Kj`vY Awa` Bi RvñtZ PivtZ cvñi th, eq` gvññt` i Rb` eq` fvZv còv`bì cvkv`cw`k tmev còvbKvix wbtqv`Mi còqv`Rb

gj`vqb MtelYv Ggb GK ai`Yi MtelYv bKkv, hv ga`eZx`KgñPxi cwi Kíbv, bZb I we`gvb KgñPxi ev`evqb I Gi KvñRi KiYtK Z`vi Kx Kiv Ges wKfñte GKwU KgñPxi KvñRi fñte Zvi j`ñ` ARB Kti Zv wbañY Kivi KvñR e`eüZ nq|

itqtQ wK bv| gj`vqtb i ci hw` G aiYi KgPxi MhY Kiv nq ZLb cixqV Kti t`Lvi c0qvRb nq th, eq` gvbYt`i KvU KvRi fite tmB tmev tcfvQ`O wK bv| GKU Av`k` gj`vqb MtelYvq mvYvKvi c0gYv, chfey, we`gvb DcvEi wtkH Ges cixqYtK mgwSZfvte c0qvM Kiv hvq|

mbw`0fvte ejv hvq th, gj`vqb MtelYv c0vbZt wZbU Kvity cwiPvj Z ntq _vtK| c0gZt, c0vmubK Df`tk`| thgb, `vZv ms`vi kZ`c`Yi Rb`, tmev MhZv`i tmev c0vtbi gvb Dbq`bi Rb`, A_ev tmev c`vbgj K KgPxi `qZv I KvRixZv ev`xi Rb`| G t`f`f` gj` j`q`wU ntjv, GKU KgPxi cwiPvj bvi `q` I KvRi Dcvq tei Kiv| wZxqZt, c0ve gj`vqtb i Df`tk`| thgb, GKU KgPxi wK c0ve tdj tQ Zv t`Lvi Rb` gj`vqb Kivi c0qvRb ntq cto| G t`f`f`, KgPxi j`q`_tjv wPvyZ Kiv _vtK Ges tm mKj j`q`i weciXZ KgPxiK cwi gvc Kti t`Lv nq th, tm j`q`_tjv h_vh_fvte AwRZ ntqtQ wK bv| gj`vqtb i djvdj i wfvE`Z KgPxiK c0vi, cwieZB ev`wMZ Kivi c0qvRb itqtQ wK bv tm m`utK`bXZgYv `Zvi nq| ZZxqZt, AbK`i cixqV ev`c0tqwmK `w0fw/mg`ni gj`vqtb i Df`tk`| G aiYi gj`vqb GKU wtkl c0tqwmK KgPxi m`utK`i agv` Z`B c0vb Kti bv, mvgwRK %AwbK Av`bi fvUvi tK m`x`l Kti, hv bZb KgPxi c0vqtb DcthwMx ntZ cvti |

gj`vqb MtelYvi aiY (Types of Evaluation Research): MtelYvi Df`tk`i wfvE`Z gj`vqb MtelYvtK `0U fvM fM Kiv hvq — MVbvZK gj`vqb MtelYv (formative evaluation research) I mgw0gj K gj`vqb MtelYv (summative evaluation research)| MVbvZK gj`vqb MtelYv GKU mbw`0 KgPxi cwiK`i bv, weKvk Ges ev`evqbtK wbt`Rbvi j`q` Z` mieiv`ni Dci tK`xfZ _vtK| Gu c0vbZt, GKU KgPxiK mYmgw`Z I mPvi`ifc cwiPvj bvi mv`_ m`umKZ| Ab`w`tk, mgw0gj K gj`vqb MtelYv KgPxi c0vtei mv`_ m`umKZ| G t`f`f`, Df`k`wU tK`xfZ _vtK KgPxi KvRixZvi gj`vqb Ges c0k`i i djvdj Ab`v` tcfv`v`U wK gv`vq mvavi YxKiY Kiv hvq Zvi Dci| MVbvZK gj`vqb MtelYv mgw0gj K gj`vqb MtelYvi Zj bvq Kg`w0 AvkPY Ki tZ m`qg ntj I G `0U c0kiY GKU Av`i KuU i mv`_ m`umKZ| MVbvZK gj`vqb mZKZvi mv`_ cwiPvj bv bv Kitj mgw0gj K gj`vqb cwiPvj bv Ges Gi dtj gvbm`ub`dj vdj cvl qv KuWb ntq cto|

gj`vqb MtelYvi mxgve`Zv (Limitations of Evaluation Research): Avgiv tR`bU th, gj`vqb MtelYv bXZ wba`Y c0p`qv, tmev c0vtbi Dbq`b, ZE`i cixqV I c0tqwmK `w0fw/i cixqV cwiPvj bvq mnvqZv Kti| Gi A`sbw`Z aviYwU ntjv th, G aiYi MtelYvi djvdj tK we`gvb cwiw`wZi cwieZ`bi KvR e`envi Kiv| wKs` wfvb`emxgve`Zvi Kvity KvRZt memgq Zv NtU bv| c0gZt, avS`bKkv ev`wUcY`ev`evq`bi Kvity gj`vqtb i `wU NtU _vtK Ges Gi dtj c0`wKZ djvdj cvl qv hvq bv| wZxqZt, gj`vqtki `p` thwMv`thwM c0Z0vi gva`tg gj`vqtb i djvdj i c0qvM tZgb KvRix nq bv| ZZxqZt, MtelYvi djvdj c0qvM i t`f`f` gj`vqb Mtel`ki e`_Zv Kw`qZ dj j`vf c0ZeUKZv mw0 Kti| PZ`Zt, c0Zw0Z e`e`vi cwieZ`bi c0Z wtkl gntj i evav c0vb gj`vqb MtelYvq c0B djvdj e`envi tK Am`e Kti tZvtj | G mKj mxgve`ZvtK AwZ`ug Kivi tKSkj wmwte gj`vqb MtelYvi djvdj tK hZ tekx weZiY I c0vi Kiv m`e Zv KitZ nte Ges djvdj tK hZ tekx m`e e`envi i Rb` Rbmg`q` Db`p` KitZ nte, hvZ Kti tmev MhZvivi djvdj m`utK`teKx Kti AwvZ ntZ cvti b|

mvi vsk

MZ wZbwU cvřV Awak cPwj Z MřelYv bKkv wbtq Avřj vPbv Kiv nřqřQ| eZřvb cvřV cPwj Z MřelYv bKkvi evBři th me bKkv e`eüZ nq Zv wbtq Avřj vPbv Kiv nřqřQ| cPwj Z MřelYv bKkvi evBři th me MřelYv bKkv tekx e`eüZ nq řm řjv nřjv řmsnZ `j Avřj vPbv, ř` řZ MřgxY gj `vqbř, řAskMřYgj K MřgxY gj `vqbř Ges řgj `vqb MřelYv | gj `vqb MřelYv Qvov Ab`vb` MřelYv řYMZ Zř`i mřvvi `řřK tekx| mřaviYZt, řKvb welq ev mřm`v Aa`qřb cPwj Z řKřkj řjv hw` chřß Z` mi ei řřn h_vh_ bv nq, ZLb Dcwij wřZ řKřkj řjv mřvqK dj etq Avřb| e`Zt, MřelKřK mřvřř-wbřZ nq řKvb ai řři řKřkj h_vh_ dj w` řel řm wel řq Ges řmB Avřj vřK MřelK MřelYv bKkv `Zwi Křib| GKwU řřřjv MřelYv bKkvB řřřjv MřelYv dj Rbřw` řZ mřvqZv Kři |

cvfVvEi gj`vqb

`be⁹³K cke

mWVK DEti i cvfk WJK (v) wPy w`b -

1| Gd wR wW cUg e`envi Kti b:

- K. E. Bogardus
- L. L. Guttman
- M. Kurt Lewin
- N. R. Likert|

2| Gd wR wWoi cAvb Dfi k` ntj v:

- K. `j tk wtkY Kiv
- L. `tj i m`m`i ga` t`tk `f mgtqi gta` Z` msMh Kiv
- M. `tj i mvt_`tj i Zt`i wfvEtZ Zj bv Kiv
- N. `j MVtb mnvqZv Kiv|

3| th wZbw Kvi tY gj`vqb Mtel Yv cwi Pwj Z ntq _vtK tm ,tj v ntj v:

- K. ckvmbK Dfi k` mdj Kivi Rb`/cfve gj`vqbi Dfi tk`/AbKí cixQvi Dfi tk`
- L. ckvmbK Dfi k` mdj Kivi Rb`/cfve gj`vqbi Dfi tk`/A`mvtqi Dfi tk`
- M. ckvmbK Dfi k` mdj Kivi Rb`/mgq evPvbi Dfi tk`/cfve gj`vqbi Dfi tk`
- N. cfve gj`vqbi Dfi tk`/mgq evPvbi Dfi tk`/ AbKí cixQvi Dfi tk`|

mswB cke

1| msnZ `j Avtj vPbv wK?

2| gj`vqb Mtel Yv tkb Kiv nq?

i Pbvqj K cke

1| evsj vt`tki MAg Mtel Yvq OnsnZ `j Avtj vPbvoi fwgKv D`vni Ymn Avtj vPbv Ki`b|

2| AskMhYgj K MAgY gj`vqb wK? Gi `ewkó` ,tj v Avtj vPbv Ki`b|

DcvĚ msMĚni nwiZqvi wbgŲ
Designing Data Collection Instrument

th me Dcv`vġbi Dci GKŲ MġelYvi mdj Zv wbfŲ Kġi Zvi gġa` DcvĚ msMĚni nwiZqvi wbgŲ LġB „i“ZcYŲ thġnZi mwK I wbfŲthvM` DcvĚ nġjv MġelYvi cŲYkŲ³, ġmġnZi MġelYv mgm`vq Dġ mcZ cġġġjvġK AwfĀZvj × AbymŲvġbi Dġġġk` e`eŲZ mwK I wbfŲthvM` DcvĚ msMĚni KvġRi nwiZqviwġġK Lġ hġZġ mġ_ wbgŲ KiġZ nq| GŲŲ KiġZ wMġq MġelKġK tek wKQz wġlġq „i“ZcYŲm×vš-wġZ nq| thgb, cġġġ wġlġe`; KvVġġv I aiY ġKgb nġe? cġġġ kġwġb`vm, Abġug I AwġġK ġKgb nġe? cġġġv ev mġŲŲvrKvi AbymPxi mġaviY AwġġK I AvKvi wK nġe? DĚi`vZv I mġŲŲvrKvi MġYKvixi Rb` wK wK wġġ`Rvejx _vKġe? G cġġġjvi DĚi LġRġZ wMġq MġelKġK gġb ivLġZ nġe th, DcvĚ msMĚni nwiZqvi wbgŲ ġKej `Ų-Gi mġ_ `Ų thvM Kġi Pvi wġj vġbv bq, eis GŲŲ GKŲŲ wġġ wbgŲŲYi wġlġq|

GB BDwġġŲ Avgiv th cŲw_ġjv Aa`qb Kiġev, tm_ġjv nġjv:

- ◆ cŲw - 1 : DcvĚ msMĚni nwiZqvi MVġbi tgŲŲj K bŲwZġvj v
- ◆ cŲw - 2 : cġġġ wġlġe`; KvVġġv I aiY
- ◆ cŲw - 3 : cġġġ kġwġb`vm, Abġug I AwġġK
- ◆ cŲw - 4 : cġġġv ev mġŲŲvrKvi AbymPxi mġaviY AwġġK

DcvĒ msMĀni nwiZqvi MVtbi tgšuj K bwiZgvj v
Basic Principles in Constructing Data Collection Instrument

GB cV tkłl hv Rvbr hvte —

- DcvĒ msMĀni nwiZqvi wbgŕYi hv³
- DcvĒ msMĀni nwiZqvti i aiY
- cłgvj v l mvŕvrKvi AbymPxi gta` Zj bv
- DcvĒ msMĀni nwiZqvi wbgŕY cłŕqv
- cłgvj v/mvŕvrKvi AbymPx wbgŕY wKQz „i”ZcYŕm×vš-

DcvĒ msMĀni nwiZqvi wbgŕYi hv³ (Logic of Constructing a Data Collection Instrument)

th tKvb MtelYvi mvdj`
wbfP Kti DEi`vZv`i th
mKj cłwRÁvmv Kiv nq tm
mKj cłŕcłkĕ welqe`;
cłkĕ Kivŕtgv, cłkĕ kĕ
wbePŕbi aiY, cłkĕ
ŕgweb`vm, Dc`vcbr l
m³4v, BZ`w`i lci|

th tKvb MtelYvi GKw AwZ „i”ZcYŕwelq ntjv Z` msMĀni nwiZqvi wbgŕY Kiv| GKw Kvhŕi DcvĒ msMĀni nwiZqvi Qvov tKvb MtelYvB mdj ntZ cvti bv| tKbbv, th tKvb MtelYvi mvdj` wbfP Kti DEi`vZv`i th mKj cłwRÁvmv Kiv nq tm mKj cłŕcłkĕ welqe`; cłkĕ Kivŕtgv, cłkĕ kĕ wbePŕbi aiY, cłkĕ ŕgweb`vm, Dc`vcbr l m³4v, BZ`w`i lci| MtelŕKi Rb` P`vtj Áw ntjv wKfvte tmB me cłkĕk wbePŕb Kiv hvq, hvi gva`tg metPŕq gj`evb Ges cłwŕK Z` msMĀni Kiv mŕe| bgvv Pqb hZB Kvhŕi, A`ev wŕtkĕY hZB m² tnvK bv tKb, cłgvj vq ŕ`ŕ ev A`úo cłkĕ_vKŕj Zv tKej A`úo l cŕŕcwZZgj K Revtei w`tKb tvtj t`te| AZGe, MtelYv cwi Kí bvi cłg chŕq t`tKb DcvĒ msMĀni nwiZqvi wbtq Avtj vPbv`i` Kiv DŕPr|

mvgwRK MtelYv ntjv
tMvtq`v AbymŪvb KvthP
gZ|

mvgwRK MtelYv ntjv tMvtq`v AbymŪvb KvthP gZ| GKRB tMvtq`v thgb tKvb wbr`ŕ AcivaxĕK LŕR ŕei Kivi tPov Ktib, tZgvb GKRB mvgwRK MtelKI Acivaxi mvgwRK, A`wZK, l gb`wZK`enkó`mn Acivŕai KviY`tjv LŕR ŕei Kivi tPov Ktib| Zŕe mvgwRK MtelYvq AbymŪvtbi hv³ „tjv AŕbK`i chŕ`we`Z mvgwRK Rŕŕbi mKj w`KŕK AšŕŕP Kti| aiv hvK, GKRB MtelK mvgwRK`elg` wbtq MtelYv KiŕZ Pvb| MtelYv Kvh` cwi Pvj bv KiŕZ wŕtq MtelKŕK KZ`tjv „i”ZcYŕcłkĕDl vcb KiŕZ nq| thgb,`elg` ej tZ wK tevSvq? wK wK Dcv`vb`elgti`Rbŕt`q?`elgti`wKkvi nq tK?`elg` tKv`vq msNwJZ nq? GwJ wK mŕwbr`ŕ tKvb`vŕb NŕU, bv wK meŕ weivRgvb`vŕK?`elg` Klb NŕU? KZUKz wbgwZ NŕU? KZUKz`xN`mgŕqi Rb` NŕU? GwJ wK e`w³i wZ`Rŕŕbi GKwJ eo Ask Rŕo NŕU`vŕK? wKfvte NŕU? tKb NŕU? BZ`w`| G me cłkĕ DEi cvevi Rb` MtelKŕK`elgti`wKkvi ntZ cvti Ggb wbr`ŕ e`w³ ev tMvŕxi KvQ t`tK DcvĒ msMĀni gva`tg`elg`gj K AvPiŕYi gvŕv l KviY`tjv cwi gvŕci Dŕ`vM MŕY KiŕZ nte| cwi gvŕci GB nwiZqvi wbtq DcvĒ msMĀni nwiZqvi etj AwŕwZ Kiv nq| Ab`K_vq, DcvĒ msMĀni nwiZqvi wbgŕYi Dŕŕ`k` ntjv GKwJ RbŕMvŕx`mŕúŕKŕQz Rvbi Rb` tmB RbŕMvŕx t`tK wKQz mS`K e`w³tK evQvB Kti Zv`i tKvb`enkó` ev gZvgZŕK cwi gvc Kiv|

DcvĒ msMĀni nwiZqvi
wbgŕYi Dŕŕ`k` ntjv GKwJ
RbŕMvŕx`mŕúŕKŕQz Rvbi
Rb` tmB RbŕMvŕx t`tK wKQz
mS`K e`w³tK evQvB Kti
Zv`i tKvb`enkó` ev
gZvgZŕK cwi gvc Kiv|

GKwJ DcvĒ msMĀni nwiZqvi wbgŕY KiŕZ wŕtq j`ŕl`ivLŕZ nte th, tmwJ thb wbr`ŕfvte DEi`vZv`i cłwZ l MtelYvi Dŕŕ`k`i mŕŕ`gvbvmb nq| GwJŕK`úo,`ŕ`Q Ges meŕ

GKBFvte KvhRi ntZ nte| Gi cwi Kí bv Ggb nI qv DvPr thb Zv DEi`vZv, mv¶vrKvi MhYKvix Ges mstKZ cðvbKvixt`i mæe` ãwšßK meßogögvi vq Kugtq AvbtZ cvti | thtnZi DEi`vZviv MtelYvq t`^Ovq AskMhY Ktib, tmtnZi GKwU DcvE msMhni nwiZqvi thb Zvt`i gta` AvMh RwmItq Zj tZ, mnthvMxZv Ki tZ Drmvnx Kti Zj tZ Ges mtZ`i hZUv KvQvKwQ mæe DEi cðvb Ki tZ mrvnh` Kti | GwU gtb ivL tZ nte th, DcvE msMhni nwiZqvi tKvb MtelYv bKkv bq, ev wekHtYi cxwZ bq, ev MtelYvi Dfí k`I bq, eis tm,tjv gvbl tK Zvt`i gtbv fve, AvPiY, BwZnm, eZgub cwi w`wZ, ev fivel`r cwi Kí bv mæúwKZ Zt`i Askx`wv tZj KvhEYvj x| DcvE msMhni nwiZqvi wbgfY weÁvb bq, eis wkí Kj vi gZ GKwU mel q|

DcvE msMhni nwiZqvi wbgvY cwi Kí bvi cðg avcU ntv th, th mgm`wU wbtq MtelYv Kiv nte ZvtK msÁwqZ Kiv Ges Zvi Dci w fivE Kti wK wK ckewRÁvmv Kiv nte tm mæútk` wmvš`tbl qv| G t¶t¶, hv wKQB tKŠZntj v`xcK ev PgKcð gtb nq Zvi mewKQ tKB cðke Ašfß Kivi B`Qv Mtel tKi gtb Rv tM | tKŠZntj v`xcK I PgKcð mewKQ tK cðke Ašfß Kivi dtj AtbK AcðqvRbxq I AcðmwzK DcvE Mtel tKi nv tZ Gtm th tZ cvti, hv nqtZv MtelYvi gj Dfí k`tK e`nZ Ki tZ cvti | AZGe, h_vh_ ckewbeP tbi t¶t¶ Mtel K tK mPwšZ fite KZ,tjv c` t¶c MhY Ki tZ nte Ges mel qe` mæútk` uó avi Yv ARB Ki tZ nte, hv tZ Kti GB B`Qv w tK mseiy Kiv hvq| GLv t b th „ZcY`mel quU gtb ivLv cðqvRb Zv ntv, DcvE msMhni nwiZqvi i gta` cðZwU `dv GK GKwU AbKí Mv t b mrvnh` Kti | cðZwU `dvi Rb` GKRb Mtel K thb DcvEi gva`tg mg_ß tRvMv tZ cvti b Ges cðvY Ki tZ cvti b th, cðZwU DEiB gj mgm`vi Rb` ZvrchEY¶

DcvE msMhni nwiZqvi aiY (Types of Data Collection Instrument)

tKvb wv`ß mgm`v ev AvMhni wltqi Dci DcvE msMhni Rb` cðvbZt `ßaitYi nwiZqvi e`envi Kiv ntq _vtK: Óckgvy vð (questionnaire) ev Ómv¶vrKvi AbjnPxð (interview schedule)| ckgvy v I mv¶vrKvi AbjnPx `ßw wfbæcwi w`wZ tK wbt` R Kti | ckgvy vi t¶t¶, DEi`vZv mv¶vrKvi MhYKvixi mrvnh` QvovB wbtR wbtR ckgvy v c`y Kti _vtKb| A_¶, ckgvy v ntv KZ,tjv cðke mgætg MwZ GKwU dg`hv DEi`vZv wbtRB c`y Kti cðke DEi cðvb Ktib| GwU DEi`vZvi Kv tQ mivmwi tçtQ t`qv nq, A_ev WvK thv tM cvv t b nq Ges DEi`vZv tmU c`y Kti Mtel tKi Kv tQ tdir cvVvb| cðqB Avgiv tKvb bv tKvb fite ckgvy v c`tYi AwfÁZv mÁq Kti _wK| thgb, e`vstK wmv tLv jv, wekte``vj t q fivZ`ev PvKixi Rb` Avte`b cI c`y Kiv, BZ`w`i gva`tg ckgvy v c`tYi AwfÁZv th Kv tvi B i t q tQ| Zte`eÁw bK Mtel Yvq e`eüZ ckgvy v wbgfY I c`tYi t¶t¶ Av t v teKx wvææx wbgg Abj ni Y Ki tZ nq|

ckgvy v ntv KZ,tjv cðke mgætg MwZ GKwU dg`hv DEi`vZv wbtRB c`y Kti cðke DEi cðvb Ktib|

mv¶vrKvi AbjnPxi t¶t¶, mv¶vrKvi MhYKvix DEi`vZv tK ckewRÁvmv Kti Zvi DEi wj wæx Ktib| A_¶, mv¶vrKvi AbjnPx ntv tek wKQz cðke KvVtgvæx mgvni, th,tjv mv¶vrKvi MhYKvix GKRb DEi`vZvi gtlvgwL ntq wRÁvmv Ktib I DEi`vZv KZK cðE DEi,tjv wj wæx Ktib| DcvE msMhni Rb` wKQz Kg msMwZ I bgbxq Av t i K ai tYi nwiZqvi e`eüZ nq, hv tK Ómv¶vrKvi wbt` kßvð (interview guide) etj | mv¶vrKvi wbt` Rbv ntv wKQz wv`ß weteP` mel q ev cðt`zi GKwU Zwj Kv, hv GKRb mv¶vrKvi MhYKvix mv¶vrKvi t b l qvi mgq wetePbv Kiteb| G t¶t¶, mv¶vrKvi MhYKvixi ckewRÁvmv Kivi µg Ges fiv v e`envi w t j Xvj v I bgbxq ntq _vtK|

mv¶vrKvi AbjnPx ntv tek wKQz cðke KvVtgvæx mgvni, th,tjv mv¶vrKvi MhYKvix GKRb DEi`vZvi gtlvgwL ntq wRÁvmv Ktib I DEi`vZv KZK cðE DEi,tjv wj wæx Ktib|

mv¶vrKvi wbt` Rbv ntv wKQz wv`ß weteP` mel q ev cðt`zi GKwU Zwj Kv, hv GKRb mv¶vrKvi MhYKvix mv¶vrKvi t b l qvi mgq wetePbv Kiteb|

cāZw DcvĒ msMōni nwiZqvīi mjeav I Dc̄thwMZv itq̄tQ| GKwU cwi etZ^o Av̄i KuU eēnv̄tīi w̄m×všw ubfP K̄ti M̄telYvī D̄t̄i k̄ wK n̄te, wK aītYi DcvĒ msMō Kiv n̄te, bḡbvi Av̄Kvi I c̄k̄wZ wK n̄te, M̄telYv cwi P̄vj bvi Rb̄ j f̄ m̄aū itq̄tQ wK bv, wK wK P̄j K̄t̄K cwi gvc Kiv n̄te Ges cwi gvt̄ci wK wK t̄K̄skj eēnvi Kiv n̄te Zvi Dci | Zj bvgj Kfv̄te mv̄lvrKvi Ab̄jmx n̄tj v DcvĒ msMōni mētP̄tq bḡbxq nwiZqvī | M̄telK̄t̄K h̄w ī agv̄l GKwU nwiZqvī eēnv̄tīi w̄m×vš-ub̄tZ nq, tm t̄l̄t̄l mv̄lvrKvi Ab̄jmxī eēnvi B n̄tj v m̄tevf̄Kō cō` |

c̄k̄ḡvj v I mv̄lvrKvi Ab̄jmxī ḡtā Zj bv (Comparison between Questionnaire and Interview Schedule)

c̄k̄ḡvj v I mv̄lvrKvi Ab̄jmx Df̄q nwiZqvīB DĒi`vZv KZR cōĒ e³tēi h_v_Zvi Dci Av̄aK cwi gvt̄Y ubfP K̄i t̄j I `t̄Uv t̄K̄sk̄t̄j i ḡtā wKōz i`ZcY^ocv_Ē itq̄tQ| c̄k̄ḡvj v c̄ōqv̄t̄Mi gvātḡ M̄telK th Z_ msMō K̄tib Zv DĒi`vZv KZR cōĒ ceēbañi Z c̄ōk̄i wj wLZ e³tēi ḡtā mx̄gZ _vt̄K| Gi c̄k̄wZMZ Kvi t̄YB c̄k̄ḡvj v mv̄lvrKvi Ab̄jmxī Zj bvg Av̄aKZi Kg eēqm̄ub̄eGKwU nwiZqvī | GwU cwi P̄vj bvi t̄l̄t̄l Kg `l̄Zvi c̄ōqv̄Rb nq| mētP̄tq Kg eēvL`v c̄ōqv̄t̄Mi gvātḡ c̄k̄ḡvj vt̄K DĒi`vZvi Kv̄tQ n`vš̄i ev WvK̄thv̄tM t̄cōY Kiv hv̄q| Dci Š, c̄k̄ḡvj v GK̄Bm̄v̄t_ ep̄Ēi Gj vKv I Av̄aK msL`K DĒi`vZvi Dci cwi P̄vj bv Kiv hv̄q|

%be^o KZvi Kvi t̄Y DĒi`vZv c̄k̄ḡvj v c̄i t̄Y tekx ubfPZv cvb Ges ubfPq Zv̄ i gZvgZ c̄k̄vk K̄i t̄Z cv̄tib| c̄k̄ḡvj v c̄i t̄Yi Rb̄ DĒi`vZv h̄t_ō mgq cvb etj wZvb Zvi mjeavgZ mḡtq tmwU c̄i Y K̄i t̄Z cv̄tib| w̄efb̄e c̄ōk̄i t̄l̄t̄l h̄t_ō w̄š̄i m̄th̄wM cvb Ges w̄b̄t̄Ri B`OvgZ th t̄Kvb mḡtq Ges μtḡ c̄ōk̄i DĒi w̄ t̄Z cv̄tib| wKŠ` mv̄lvrKvi Ab̄jmx eēnv̄tī mḡtqi Pvc _vt̄K etj DĒi`vZvi t̄l̄t̄l Lp̄ tekx mgq w̄b̄tq DĒi c̄ōv̄t̄bi t̄Zgb m̄th̄wM _vt̄K bv| Z̄te c̄k̄ḡvj vi t̄l̄t̄l DĒi`vZvi ch̄f̄B mgq I m̄th̄v̄t̄Mi mjeawU Z_ i ubfP̄t̄h̄wM`Zv I h_v_Zvi t̄l̄t̄l mx̄gve×Zv `Zwi K̄i t̄Z cv̄tib| Kvi Y, DĒi`vZv w̄š̄i K̄ti DĒi t̄ evi h̄t_ō mgq cvb etj ceēZx`c̄ōk̄i DĒi cieZP̄DĒi w̄t̄K c̄f̄w̄eZ K̄i t̄Z cv̄tib| Ggb̄wK cieZx`c̄ōk̄i ceēZx`c̄ōk̄i DĒi t̄K̄i c̄f̄w̄eZ K̄i t̄Z cv̄tib|

cwi gvt̄ci GKwU cwi t̄ek t_ t̄K Ab̄ cwi t̄ek c̄ōqv̄t̄Mi Rb̄ c̄k̄ḡvj vi `be^o K c̄k̄wZ, c̄ōgZ k̄āPqb, c̄ōk̄i Ab̄jμg, DĒi c̄ōv̄t̄bi m̄j̄w̄ θ w̄b̄t̄ R̄vej x, BZ`w̄ c̄k̄ḡvj vt̄K GKwU mḡi f̄cZv c̄ōvb K̄ti | wKŠ` GB c̄ōgZ mḡi f̄cZwU eēw̄t̄f̄t̄ w̄fb̄ent̄Z cv̄tib| GKwU k̄t̄ai A_ w̄efb̄e eēw̄t̄i Kv̄tQ w̄efb̄eī Kg n̄tZ cv̄tib | ī ayZvB bq, k̄āwU A_ GK̄Rb DĒi`vZv ēš̄tZ cv̄t̄j I Ab̄`Rb bvl ēš̄tZ cv̄tib| GK̄Bfv̄te, mv̄lvrKvi Ab̄jmx c̄ōv̄t̄bi mgq c̄ōgZK̄i Ȳt̄K w̄b̄w̄ōZ Kiv t̄M̄t̄j I c̄t̄qv̄t̄Mi mgq Zv Kiv hv̄q bv| Kvi Y, GK mv̄lvrKvi cwi t̄ek t_ t̄K Ab̄ mv̄lvrKvi cwi t̄ek̄i w̄fb̄ēv, mv̄lvrKvi Mōh̄YKvix t̄ i eēw̄t̄Z̄j w̄fb̄ēv Ges mv̄lvrKvi Mōh̄t̄Yi mgq mv̄lvrKvi Mōh̄YKvix I DĒi`vZvi ḡtā w̄g_w̄ēvi ḡtā w̄fb̄ēv c̄ōgZ mḡi f̄cZv w̄b̄w̄ōZK̄i t̄Y m̄gm̄ v m̄j̄ō K̄ti |

mv̄lvrKvi Ab̄jmxī gvātḡ Z_ msMōni t̄l̄t̄l t̄Mv̄cbxqZvi A/2xKvi _vK̄t̄j I mv̄lvrKvi Mōh̄YKvix DĒi`vZvi bvg I w̄vKvbv Rv̄t̄bb etj DĒi`vZvi ḡt̄b m̄t̄`n t_ t̄K hv̄q| d̄t̄j , Āt̄bK t̄l̄t̄l w̄efb̄e c̄ōk̄i DĒi t̄i ŌDĒi bv t̄`qv̄ō ev ŌRw̄b bv Ō DĒi cvl qvi m̄aēbv %Zwi nq| Z̄te c̄k̄ḡvj vi t̄l̄t̄l I G aīt̄Yi cwi w̄wZ `Zwi n̄tZ cv̄tib| Kvi Y, t̄Kvb bv t̄Kvbfv̄te c̄k̄ḡvj v t̄cōYKvixi Kv̄tQ DĒi`vZvi bvg I w̄vKvbv _vt̄K etj Āt̄bK mgq DĒi`vZv c̄k̄ḡvj v c̄i Y K̄ti t̄dir c̄i v̄b bv| mv̄lvrKvi Ab̄jmxī gvātḡ c̄k̄ḡvj v c̄i Y K̄ti DĒi c̄ōv̄t̄bi nvi Āt̄bK t̄ekx|

cġvj v cġY Kti DEi cġvtbi nvi memgq wbgentq _vtK| GB nvi 10 t_ġK 50 kZvsk chŠ we`Z| e`vZµgx cwi w`wZġZ, cġvj v cġvtb wekl hZetbqv, AbmiY Kiv I wekl DġxcK e`envi Kivi gva`tg m`uYZvi nvi 70 t_ġK 80 kZvsk chŠ-ARß Kiv m`e ntZ cvti | wKŠ`mavi Yfite, tkð cwi w`wZġZ m`uYZvi nvi ZvrcheY`gvġvq Kg ntq _vtK|

cġvj v cġYi mgq DEi`vZv hw` tkvb cġġK fj fġte e`vL`v Kti _vtKb Ges we`wšKi DEi wj ġL _vtKb, Zte Zv mstġvatbi tkvb mġhvM _vtK bv| Ab`w`ġK, mvġġvrKvi MġYKvix ZvrġwYfite DEi`vZvi tmB fj fġwġtq w`ġZ cvtib Ges h_vh_ DEiW wj wce`x KiġZ cvtib| mvġġvrKvi AbjnPx cġqvġMi Rb` mvġġvrKvi MġYKvixġK tmfġteB cġġġY t`qv nq| Rġġj I AvteMcY`DEi`vZvi tġġġ mvġġvrKvi AbjnPx e`vL`vi mġhvM cġvb Kti| mvġġvrKvi AbjnPx cġqvġMi tġġġ, hLb cġġwRÁvmi gva`tg DEi wj wce`x Kiv nq, ZLb mvġġvrKvi MġYKvix Ges DEi`vZv DfġqB Dcw`Z _vtKb etj cġġwRÁvmi Kiv I DEi cvl qvi tġġġ thvMġhvM cġZövi Rb` AwakZi hZevb nl qv hvq| mvġġvrKvi MġYKvix DEi`vZvi cġZµqv I th mweK cwi w`wZi tġġġcvġtU DEi`vZv Zvi cġZµqv e`³ Ktib Zv chġġġYi GKġU cġ`ġġ mġhvM cvb| thġnZġAvġvPbvi mġhvM _vtK, tmġnZġmvġġvrKvi AbjnPġZ DEi`vZv`i KvQ t_ġK Awak cwi gvġY mġhvMxZv cvl qv hvq| Zv Ovov, gvby hv Zviv fġteb Zv wġtq Zviv eÜZcY`cwi tetk Avġj vPbv KiġZ cQ` Kti b|

cġvj v cġqvġMi tġġġ DEi`vZv hw` hġ_ó cwi gvġY wġwġZ bv nb, Zte Z` msMġ Kiv KwB ntq coġe| Rġġj weġ qe` wġtq wbgZ cġvj v Lp mwgZ msL`K RbġMvöxi gġa` cġqvM Kiv m`e| wKŠ` mvġġvrKvi AbjnPx mvġġvrKvi MġYKvixi gva`tg cġY Kiv nq etj Ges Rġġj cġġġ tġġġ DEi`vZvġK cġġm`uġK`tcġrmwvZ (probe) Kivi mġhvM iġtqQ etj GġU Avcvgi RbġMvöxi tġġġ cġqvM Kiv hvq| AZGe, enġi RbġMvöxi Dci MġelYv cwi Pvj bv KiġZ ntj ev MġelYvi djvdġġK cġZġwġZġxj ntZ ntj cġvj vi cwi etZ`mvġġvrKvi AbjnPx Dcvġ msMġni GKġU h_vh_ nwiZqvi wmwġte weġenPZ nq|

Dcvġ msMġni nwiZqvi wbgġY (Constructing Data Collection Instrument)

Dcvġ msMġni nwiZqvi wbgġYi jġġġ cġġġ `dv wbeġġbi cġµqvġU `xN`Ges Rġġj, hvġZ cġġi cwi gvġY mZKZv Ges `ahġġj K cġPóvi cġqvRb| cġġġ `dv wbeġġb tkvb „i`ZcY`cġġe er` cotj Zv m`uY`Mġel YvġKB AMġYthvM` Kti Zj ġZ cvti | AZGe, cġvj v ev mvġġvrKvi AbjnPx wbgġYi cUfġg wmwġte GKġU mvġġvrKvi wġt`Rbv cġqb Kiv thġZ cvti | G jġġġ, cġġġ Mġel K Zvi mgm`wġi AšwġġZ thšw`K ci`úivġK mwiRġq tġteb Ges wZġb Zvi wR`^ AwfÁZv Ges Mġel Yv mwiZ` chġġj vPbvi wfiġġZ Ggb cġġ½ wbeġġb Kiġteb hv H AšwġġZ thšw`K ci`úiv`ġjvi mvġ_ m`úwKZ| GB chġġq, Mġel K Zvi mnKgx` eÜZ Ges Ab`vb` MġelġKi mvġ_ Avġj vPbv Kti mgm`wġi e`vcġti Zv`i gZvgZ MġY Kiġteb| G gġtZ` MġelġKi nvġZ hv iġtqQ Zv KZ`ġjv maviY cġġġzi GKġU Lmov Zwiġ Kv gvġ| Mġel K GB cġ_vgK Zwiġ Kwġ GKB aiġYi mgm`v wġtq MġelYv KtiġQb Ggb weġġIÁ Ges Ab`vb` weġġIÁ`i mvġ_ Avġj vPbv Kiġteb| GġZ Kti t`Lv hvġte th, cġZġU Avġj vPbvi mvġ_ mvġ_:

- m`e` cġġġzi Zwiġ Kv teto wMġtqQ;
- AvMġni weġ ġqi msL`v teto wMġtqQ;
- Mġel Yvi AšMZ weġ ġqi msL`v Kġg wMġtqQ;
- cġġġzi 0`Zv, cġġwZġ; `ġġ cwi`úh`BZ`w`ġZ axġi axġi mwiKZv GġmġQ; Ges
- wġt`Rbvi weifbġAšġki gġa` thšw`K m`uK`Mġo DġVġQ|

Avtj vPbvi djvdj ,tj vtK LpB mZKfvtē evQvB Ges wētklY KitZ nte, hv mvŕlvrKvi wbt`Rbv cŕqbtbi thšw³K wfvĒ wmwte KvR Kite| mvgwRK MtelYvq DĒi`vZv wmwte AskMōY Kti:Qb Ggb wKQze`w³i mvt_ tek wKQzAmsMwZ I AbymŪvbgj K mvŕlvrKvi MōY Kiv cŕqvrB| G me mvŕlvrKvi:K chŕj vPbv Kti Pōvš-cŕkē%Zwi i Rb` bq, eis G ,tj vtK cŕkē%Zwi i wbt`Kv wmwte e`envi Kiv nq| G chŕq, Mtel K GKw mvŕlvrKvi wbt`Rbv cŕqbtbi KitZ tcti:Qb etj ejv hvq|

MtelK:K Gw eštZ nte th, i agvĪ Avtj vPbvi wfvĒ:ZB GKw wLz mvŕlvrKvi cwi Pvj bv Kiv mæ bq| A_ŕ, hZB wPšv-fvebv, thšw³K gvbmKZv ev Zx² Aš`w w tq mgm`wUtK wētePbv Kiv tnvK bv tKb, AwfÁZvgj K cixŕlv wbxŕlv Qvov GKw Kvŕi cŕkēvj v ev mvŕlvrKvi AbymPx cŕqbtbi Kiv mæ bq| G chŕq, `ŕw ,i "ZcY`cŕkē mgvavb Kiv cŕqvrB| cŕgZt, th me tŕtĪ Mtel Yv mwvZ" AchŕB itqtQ, tm wel q ,tj vtK Mtel K wKfvtē cŕkēvj v ev mvŕlvrKvi AbymPx `dvq mŕex Kiteb? wZxqZt, wKfvtē wZwb Pōvš-Zwv Kiv G wel q ,tj vtK Ašfŕ Kiteb? cixŕlvj K Mtel Yv c`wzi (pilot study) gva`tg cŕgw Ges cŕk-cixŕlv (pre-test) gva`tg wZxq cŕkē mgvavb cvlqv thtZ cvti | mgm`wUi Dci Mtel Yv mwvZ" chŕj vPbv Ges wētklÁt`i mvt_ Avtj vPbv Kivi ci tmB mgm`vi ,i "ZcY` Dcv`vb ,tj vi e`vcti Mtel:Ki tKej gvĪ GKw A`úo avi Yv %Zwi ntZ cvti | Avgiv Rwb th, GB chŕq Mtel K hv `Zwi Kti:Qb Zv ntj v GKw mvŕlvrKvi wbt`Rbv gvĪ |

cŕkēvj v ev mvŕlvrKvi AbymPx `dv cŕqbtbi cŕwK avc wmwte GKw cixŕlvj K Mtel Yv Pvj vtbv thtZ cvti | cixŕlvj K Mtel Yvq mvŕlvrKvi ,tj v vtK AmsMwZ Ges bgbxq; cŕkē,tj vi tKv Kwvtgv vtK bv; i agvĪ mvavi Y tŕtĪ ,tj vtZ mvŕlvrKvi cwi Pvj bv Kiv nq; Ges AšMvQvtj v AbgvbtK cixŕlv Kiv nq| G ai:Yi bgbxq mvŕlvrKvti i mgq Mtel K cŕZw mæ` mŕtK AbymY Kivi tPōv Ktib| thgb, cŕkē kã Pqb, wRÁvmvi tŕtĪ, GKB cŕkē DĒti i wērfbZv, wel qe`i bZb tŕtĪ, BZ`w | Mtel K Zvi Mtel Yvi KZ ,tj v DĪtK` wbaŕY Kitj I wZwb wvōZ bb th, mŕbw ōfvte wK wK wel q wZwb cŕkēvj vq Ašfŕ Kiteb, wZwb Kvŕi i mvŕlvrKvi MōY Kiteb, bKkwm wKfvtē Kvŕi Kiteb, BZ`w | G me mvŕlvrKvti i djvdj ,tj v mZKfvtē wētklY KitZ nte, tKbbv tm ,tj vB cieZŕZ gj cŕkēvj vi thšw³K wfvĒwUtK mvrŕtq tZvtj | cixŕlvj K Mtel Yw hw` fvŕvfvte mæubēKiv hvq Ges Gi djvdj ,tj vtK mæúY`mō`envi Kiv hvq, Zte Zv fj ev ZurichŕY`bq Ggb AbKí cixŕlv GovZ mrvh` Kti Ges cŕi mgq, kŕ I A_`mvtK Kti |

G chŕq ejv hvq th, Mtel K GKw cŕk-cixŕlv cwi Pvj bvi Rb` cŕZ ntqtQb| Gw cixŕlvj K Mtel Yvi tPtqI AwakZi AvbŕwbK GKw avc| cŕZctŕ, Gw Pōvš-Mtel Yv KvŕthP GKw cYŕ% gnov| dtj cŕk-cixŕlv cŕwqv cŕZw Ask GtKvti Pōvš-Mtel Yv KvŕthP gZB nlqv DŕPr| GgbwK e`w³MZ ev `jxq mvŕlvrKvi wbt`Rvej ,tj vl GtKvti Pōvš-iftc vKtZ nte, hvZ Kti tm ,tj vi h_v`Zvi wfvĒ cixŕlv Kti t`Lv mæ nq| hw` cŕkēvj v e`envi KitZ nq, Zte Zvi GKw cŕQ`-cĪ ev Pōvš-wbt`Rvej xl Gi mvt_ vKtZ nte Ges cYŕ% Mtel Yvi mgq thfvte bgbv Pqb Kiv nte (tQv AvKvti ntj I) wK tmfvte GLvtbl bgbv Pqb KitZ nte| GKRb `ŕ Mtel K cŕk-cixŕlv t`tK cŕB Z` ,tj vtK mwvYex Kti t`Lteb th, GtZ wK wK `ŕZv itqtQ| cŕkēK Kwv, A`úo ev AšMvQvtj vfvte mvrŕvtvi KvŕtY, ev bgbv bKkvi `ŕZvi KvŕtY AcZ`wKZ djvdj cŕwSi gvĪvl cŕk-cixŕlv i djvdj wētklY aiv cŕo| tKv DŕcŕZ tŕtĪ DŕšmPZ ntZ cvti, ev tKv GjvKvi RwZMZ ev Avtqi wēvŕtmi eo ai:Yi cwieZŕ aiv cotZ cvti, A`ev tKv wv`ŕ DĒi`vZvtK LŕR tei Kivi gZ mgm`v wŕwYZ ntZ cvti |

c0K-cixŋlvq c0B Z`mgnŋK cixŋlv Kij mæZt t`Lv hvte th, Zŋ`i tKvb ŋŋ` Ask
Abcw`Z iŋt0, ev nqtZv AnZwi` GKwU c0ketvM Kij B tek wKQzweiq` úo ntq DŋVŋQ|
DĒŋi gŋa` Amgŋm`Zv cvlqv thŋZ cvŋi Ges DĒi tŋLvi `vb l gj`Y mgn`v j ŋŋ` Kiv
thŋZ cvŋi | DĒŋi gŋa` µgnxbZv j ŋŋ` Kiv thŋZ cvŋi | KviY, tKvb tKvb c0kæev c0kæ`Q
mKj DĒi`vZvi Rb` GKB A`enY Kŋi bv, ev `ŋŋ` cZ`qMZ Dcj`x i dtj RŋUj kã ev
c0kæ e`envi AtbK DĒi`vZvŋK DĒi bv w`ŋZ eva` Kŋi | DĒi bv t` lqv ev mKŋi i GKB
i Kg DĒi t` l qvi c0YZv j ŋŋ` Kiv thŋZ cvŋi | 0Rvb bv0 ev 0eyS bv0 aiŋYi DĒi Lp tewk
AvmŋZ cvŋi | c0ŋi cwi gŋY Ac0m`K ev gZvgZhyß DĒi AvmŋZ cvŋi | DĒi`vZv DĒi w`ŋZ
A`ŋkŋZl RvbŋZ cvŋi b | c0kæŋ cwi eZ0 NUvŋj DĒŋi gŋa` c0ŋi cwi gŋY weŋfbz`v
cwi j wŋZ ntZ cvŋi | G mKj weŋqŋK chŋj vPbv Kŋi c0kæjv ev mvŋŋvrKvi AbŋmPŋK
mŋkwaZ Kij t`Lv hvte th, c0kæ 0`Zv, cŋŋcwZZj, `eŋ kã Pqb, BZ`w`ŋZ axŋi axŋi
mŋwKZv Gŋt0 Ges DcvĒ msM0ni nŋwZqvŋi weŋfbæ Astki gŋa` thŋß`K mæuK`Mŋo
DŋVŋQ|

**c0kæjv/mvŋŋvrKvi AbŋmPx wbgŋY wKQz, i`ZcYŋm`vš-(Some Important
Decisions in Constructing Questionnaire/Interview Schedule)**

c0kæjv/mvŋŋvrKvi AbŋmPxi gŋa` wK weŋq` Ašŋß Kiv nŋe, c0kæ gŋa` wK aiŋYi kã
Pqb Kiv nŋe, DĒŋi aiY, tŋj v wK nŋe Ges c0kæjv tKvb weŋvm l Abŋŋŋg mvRvŋbv nŋe, G
me weŋŋq wŋxvš-M0Y LpB, i`ZcYŋ Mŋel Yvi weŋq` i mvŋ_ mŋZ tiŋL Mŋel K KZ, tŋj v
c0kæDl vcb Kivi gŋa`ŋ G mKj weŋŋq wŋxvš-M0Y KijZ cvŋi b | mæe` wKQz c0kæ Zvŋj Kv
wbŋ` Rbv wŋmvŋe wbŋgŋDŋj l Kiv nŋj v |

c0kæ weŋq` cŋŋŋ½ (On Question Content):

- th c0kæ wŋRÁmvv Kiv nŋe tmw wK c0qvRbxq? Zv wK wKfvŋe DcŋhvMx?
- GB c0kæ weŋq` i Dcŋi wK GKwU c0kæ hŋ_ó, bv wK KŋqKwU c0kæKivi c0qvRb
iŋt0?
- DĒi`vZvŋ i KvŋQ wK GB c0kæ DĒi t` l qvi gZ hŋ_ó Z` iŋt0?
- th Z` Pvl qv nŋ`Q Zv wK DĒi`vZv c0vb Kijeb?
- c0kæ wK Avl ev`emæšZ, mŋbŋ` 0 Ges DĒi`vZvi wbR`^ AvŋfÁZvi KvQvKwQ n l qv
DwPZ?
- c0kæ weŋq` wK mvari Yfvŋe teŋMg` Ges KwŋgZv t`ŋK gŋß?
- DĒi`-` dv, tŋj v wK mvari Y gŋbvŋvŋK c0kæ Kŋi Ges mŋbŋ` 0 gŋb nq?
- c0kæ weŋq` wK cŋŋcvZgŋ K ev GKgŋLx nŋqŋ? BZ`w` |

c0kæ Ašŋß kã Pqb cŋŋŋ½ (On Question Wording):

- weŋkl kã e`envŋi dtj c0kæ wK fj tevSv ntZ cvŋi? GŋZ wK tKvb Kw/b ev A`úo
kã ev kã`Q wbeŋŋb Kiv nŋqŋ?
- c0kæ wK gj wŋRÁm` weŋq` i mvŋ_ RŋoZ weKí kã, tŋj vŋK mŋwKfvŋe c0kæ KŋiŋQ?
- c0kæ wK tKvb Ae`³ aviYvi KivŋY DĒi`vZvŋK fj w`ŋK cwi Pwŋj Z Kijeb?

- GuU wK AvteMcY[©]ev tKvb GKwU wbu[®] aiYi DEti i w tK DEi`vZvK cwiPwj Z Ki te?
- cOkie ka Pqb wK DEi`vZvi Rb[®] tKvbfvte AvciEKi nte?
- cOkakG ev tekx gvIvq e^w3MZ tKvb ka Pqb Kitj wK Avi I fij djvdj Avmte?
- cOkwU wK Avtiv mivmwi ev ctiv[¶]fivte Kitj fij nq? BZ`w[®] |

cOkie DEti i aiY cOn^t½ (On the Form of Response to the Question):

- cOkie DEi wU wK OmUKO t`lqv aiYi ntj fv^tjv nq, bv wK tQvU, GK ev `B ev KtqK ktai gta[®] DEi ntj fv^tjv nq, bv wK tLv^v DEi, ev wUK DEti i mv^t_ Avi I mn^thMx DEi ntj fv^tjv nq?
- hw[®] wUK t`lqv aiYi DEi e^euZ nq, Zte tKvbwU GB cOkie Rb[®] fv^tjv nte — wOc`x, euc`x, bv wK gvcbxgj K?
- hw[®] GKwU wbt[®] wKv e^euZ nq, Zte Zv wK mKj Zvrch^eY[®]ieKí[®] t^vtK A^sf[®] Ki te?
- GuU wK th^w3Kfvte ch^vB %N[®]m^ub[®]
- wel q[®] t^vvi `dv[®] t^vvZ ka Pqb wK wbi^tc[¶] Ges fvi mv^gc^Y[®]ntqtQ? BZ`w[®] |

cOkie mgavi vq cOkie `vb cOn^t½ (On the Place of Question in the Sequence):

- cOkwi DEi wK ce^eZx cOkie wel qe[®] `Ovi v c^fw^eZ nl qvi m^thM i^tqtQ?
- cOkwU wK `v^fw^eKfvte Dc[®]w^cZ ntqtQ?
- GuU i gb[®] w^vZ[®] Ab^vug wK wK Av^tQ?
- cOkwU wK tK^SZnj RvM^vtbv, ev g^tb^vth^vM cvl qv, ev evav Gov^tbv, BZ`w[®] i w K t[®]t[®] L[®] ZvovZw^o ev L[®] t[®]wi[®] t[®]Z Ki v ntqtQ? BZ`w[®] |

DcvE msM[®]ni nwiZqvi wbg[®] P^ovS-Kivi c[®]te[®]G mKj cOkie m^ts[®]H RbK DEi M^tel K^tK L[®]R t^tZ nte| G mKj DEi DcvE msM[®]ni nwiZq^tii w^bf[®]t^hM[®]Zv I h^v_v[®] Z^vt[®]KB i[®]ay w^bw[®]OZ Ki te bv, eis M^tel K^tKI A^tbK^Uv Av^vkxj K^ti Z^j te|

mvi vsk

mv^gw[®]RK M^tel Yvq DcvE msM[®]ni th[®] wU nwiZqvi Anin e^euZ nq tm[®] t^vv n[®]Q c[®]kvj v Ges mv[¶]v[®]rKvi Ab^vnPx| mvaviYZt, c[®]kvj v A^tc[¶]v[®]KZ w^kv[¶]Z Rb^tM^vox^tZ e^euZ nq, c[¶]v[®]s[®]ti mv[¶]v[®]rKvi Ab^vnPx w^kv[¶]Z I A^tc[¶]v[®]KZ Kg w^kv[¶]Z Rb^tM^voxi gta[®] e^euZ nq| Zte th Rb^tM^voxB nDK bv tKb, M^tel Yvi[®] YMZ gvb w^bf[®] K^ti m^gm^vt[®]K `e^Aw^bKfvte ms^Aw^qZ K^ti cOkie avc I aiY wK Kivi Dci| eZ[®]v[®] cv^tV Av^giv c[®]kvj v Ges mv[¶]v[®]rKvi Ab^vnPx i gta[®] GKwU Zj bvg[®] K Av^tj vPbv K^ti wQ Ges c[®]kvj v/mv[¶]v[®]rKvi Ab^vnPx wbg[®]Yi t[¶]t[®] wK wK[®] i[®] Z^cY[®]m^xv[®]s[®]w[®]t[®]Z nq Zvl Av^tj vPbv K^ti wQ|

cvfVvEi gj`vqb

`be⁹³K cċæ

mvVK DĒti i cvfk WJK (√) wPý w` b –

1| DcvĒ msMĠni nwiZqvi wbgŸY cwi Kí bvi cĠg avcuU ntj v:

- K. MtelYv cwi Pvj bvi Rb` A_ŸmsMĠ Kiv
- L. cċgyj v`Zwi i`ŸZv ARĠ Kiv
- M. Ÿh mgm`wU wbtq MtelYv Kiv nte ZvfK msÁwqZ Kiv
- N. Dcti i me|

2| _____ ŸŸŸĠ DĒi`vZv mvŸŸvrKvi MĠYKvi xi mvvvh` QvovB wbtR wbtR cċkæ DĒi wj wceX Ktib|

- K. cċgyj vi
- L. mvŸŸvrKvi AbjnPx
- M. ŸKm-÷wWi
- N. Dcti i me

3| mvŸŸvrKvi AbjnPx Avcvgi RbtMvĠxi ŸŸŸĠ cċqM Kiv hvq| KviY,

- K. DĒi`vZvfK cċæm`úŸKŸcĠrmwvZ Kivi mŸhvM itqtQ etj
- L. cċKvix Dcw`Z`_vŸKb etj
- M. cċKvix cŸve we`vi Kitz cvtib etj
- N. Dcti i me|

mswŸŸB cċæ

UxKv wj Lp:

- K. cċgyj v
- L. mvŸŸvrKvi AbjnPx

iPbvj K cċæ

1| ersj v` Ÿki MĠgvĠŸj cwB eUv MtelYvq DcvĒ msMĠni Rb` cċgyj v I mvŸŸvrKvi AbjnPx gŸa` ŸKvbwŸŸK AvcwB tekx`i`ZjŸ`teb?

2| cċgyj v I mvŸŸvrKvŸi i msÁw` b I cv`R` D`vni Ymn wj Lp|

c0k0e wel qe` ; KWvtgv I aiY
Content, Structure and Types of Questions

GB cW tkfI hv Rvbr hvte —

- c0k0e wel qe`
- c0k0Kvvtgv
- c0S-tLj v c0k0e
- c0S-eU c0k0e
- c0k0e aiY

c0k0e wel qe` (Question Content)

*mKj DcvE mSM0ni
nmZqvti i gj wfuE ntjv
c0k0 Mtel Yvi
DfI`k` , tj vtK ubw` 0 wKQz
c0k0e gva`tg Abev` KivB
ntjv c0k0gvj v ev mvfIvrKvi
AbmPx c0vqfbi c0vb KivR|*

mKj DcvE mSM0ni nmZqvti i gj wfuE ntjv c0k0 Mtel Yvi DfI`k` , tj vtK ubw` 0 wKQz c0k0e gva`tg Abev` KivB ntjv c0k0gvj v ev mvfIvrKvi AbmPx c0vqfbi c0vb KivR| G me c0k0e DEiB AbKí cixfIvi Rb` Z` thvMvq| Mtel Yv c0vqvi GKiu wel q` i`tZi mvt_ gtb ivLv c0vqRb th, c0k0e DEti DEi`vZv Zvt` i wPsv, AbfWZ I AvPiY m0utK0hv etj b Mtel K i`agvI ZvB cwi gvc Ktib| wZvb Zvt` i c0KZ wPsv, AbfWZ I AvPiYtK cwi gvc Ktib bvl thgb, GKiu Mtel Yvq DEi`vZv hv etj b th, Zviv gv`K`e` tmeb Ktib bv, tm tffI Mtel K DEi`vZv i gv`K`e` tmetbi c0KZ AvPiYtK cwi gvc Ktib w, tKej gvI Zviv hv etj tQb tm_ tjvtKB cwi gvc Ktib tQb| A_0, hLb Avgiv Dcmsnvi Uwb, ZLb Avgiv DEi`vZv hv etj b Zvi Dci wbf0 Kwi, Zviv c0KZc0fI hv Ktib Zvi Dci bq| AZGe, gvbI i AvPiY m0utK0DcvE mSM0ni j`fI` c0k0K Ggbfvte wbgZ ntZ nte, hvZ gvbI Zvt` i AvPiYi m0Z`Kvi i`c0vUtkB c0vk Ktib| c0k0bgfIyi cte0G wel qW` i`tZi mvt_ gtb ivLv c0vqRb|

*gvbI i AvPiY m0utK0DcvE
mSM0ni j`fI` c0k0K
Ggbfvte wbgZ ntZ nte,
hvZ gvbI Zvt` i AvPiYi
m0Z`Kvi i`c0vUtkB c0vk
Ktib|*

c0k0e wel qe` wK nte Zv wbePfbí Rb` Mtel K mvaviYzt Mtel Yvi wel qe` I DfI`k`i Dci wfuE Kti w0vS-M0hY Ktib| G tffI Mtel K aviYv Kti tbb th, wZvb hv RvbtZ Pvb DEi`vZvi KvQ tmB me Z` i`tqtQ, Zviv me c0k0e DEi` t`evi Rb` ht_0 ep0gvb, Zviv tm mKj Z` aviY Kivi Rb` ht_0 cwi gvY D0x Ges mvfIvrKvi M0hYKvi xi KvQ Zv t`evi Rb` c0Z`_vtKb| wKŠ` c0KZc0fI, wel qW GZ mij bvl ntZ cvti| c0k0e wel qe` wbePfbí tffI Mtel Yvi wel qe` I DfI`k` i`ZcY0ntjI thtnZi c0k0gvj v I mvfIvrKvi AbmPx Dfq tffI B c0k0wRÁvmvi gva`tg Z` mSM0 Kiv nq, tmtnZi gvbI hv Rvrb, hv wckjm Kti, hv c0Z`vkv Kti, hv Abfe Kti, hv Pvq, hv Kti ev KitZ Pvq, hv Kti tQ, tm m0utK0c0k0wRÁvmv KivB hv0hv0|

*AwaKvsk c0k0K mvaviYzt`
0U fvtM fWm Kiv hvq:
Z`_gj K c0k0Ges fveMZ
AwfÁZv m0umKZ c0k0*

AwaKvsk c0k0K mvaviYzt` 0U fvtM fWm Kiv hvq: Z`_gj K c0k0Ges fveMZ AwfÁZv m0umKZ c0k0 Z`_gj K c0k0DEi`vZv i` cUfwg, `ewk0, AvPiY, cwi tek, BZ`w` m0umKZ Z` mSM0ni Rb` Kiv nq| metPtg c0vuj Z aiYi Z`_gj K c0k0entjv cUfwggj K c0k0 hv DEi`vZvi wj 1/2, eqm, ag0`eevniK gh0v, wKfIv, Avq, BZ`w` m0umKZ Z` AvniYi Rb` wRÁvmv Kiv nq| G me `ewk0`i wfuE tZ DEi`vZv i` tkYwef0 Kij cieZ0Z Zvt` i AvPiY I gtbvfvteí gta` we`gvb cv`R` , tj vtK e`vL`v KitZ mnvh` Kti| Ab`vb` aiYi Z`_gj K c0k0DEi`vZvi mvgwRK cwi tekí Dci Z` mieivn Kti| thgb, DEi`vZvi

cwiertfi KZRb m`m` evm Ktib, Aemi mgta wZwb wK Ktib, wZwb Kvtr hvevi mgq wK
aitYi hvevnb e`envi Ktib, BZ`w | Ab`vb` cOkie Zj bvg Z`gj K cOkombgP mnRZi
etj gtb Kiv ntj | DEi`vZv wevfbaKvity fj DEi`w`Z cvtib | thgb, Z`wU Zvi Rvbw
bvl `vKfZ cvti, Rvbw `vKfj Zv ueu`siY KitZ bvl cvtib, cOkwtk eStZ bvl cvtib,
A`ev Z`wU RvbwZ A`xkuz RvbwZ cvtib |

fiveMZ AwfAZv m`umKZ cOkie DEi`vZvi gtbvfe, AbfwZ, wekym Ges gZvgZi mvt`
m`umKZ | e`w³i gtbvfe ZLbB Zvi e³e` ev AvPitYi gva`tg cOkwKZ nte, hLb gtbvfe
cOkvki melqe` DEi`vZvi cZ`fKvityi gta` aiv cotel A`f, GKRB e`w³ tKvb melqai
ctf | ev wectf | `p gtbvfe cOk kO Kiteb ZLbB, hLb tm melq wZwb cOkie m`Sxb nteb,
ev cZ`fivte tm melqai gLvgL nteb | gZvgZ | gtbvfe Dci cOkombgP | cwi gvc
`fUvB tek RuWj | GKwU gZvgZgj K e³te`i mvt` wK cwi gvY DEi`vZv GKgZ ntj b wK
ntj b bv Zvi wfwEzZ gZvgZtk Ges GKwU gtbvfe gvcxii Ašfß eü gtbvfevgj K
e³te`i (tmU cvP t`tk cvPkU ntZ cvti) mvt` DEi`vZvi GKgZ nl qv bv nl qvi wfwEzZ
gtbvfetK cwi gvc Kiv nq | gtbvfe cwi gvtci Avek`Kxq kZwU ntjv th, gtbvfevgj K
e³e`_tjvtK GKwU gvcxii gva`tg `Zwi KitZ nte |

cOkwVvfgv (Question Structure)

cW 1-G Avgiv trtbw th, th Z` Pvl qv nq, wRÁvm` cOkw thb DEi`vZvtK Zv t`evi Rb`
Drmvnx Kti tZvtj | cOkie`ZwitZ gL` weteP` melq`_tjv ntjv: Gt`i aiY, melqe`, ká
web`vm, KvWvfgv, iwZ Ges Abjvg | fvtjv cOkwbePb Kiv GKwU AwZ m², RuWj, KwŠKi
Ges KLtbv KLtbv nZvkv`ÁK KvR, hv tKD cKZ Abkxj b bv Kiv chS`eStZ cvtib bvl
AZGe, wK cOkwRÁvmv Kiv nte Zvi cte`omxvš`wbZ nte th, cOkie KvWvfgwU wK nte |
DcvE msMhni nwiZqvi wbgP`Y mvariYZt` f`aitYi cOkwVvfgv e`eüZ ntq `vtK: ÓcŠ-
tLvj wU | ÓcŠ-eÜ cOkwVvfgv | `YMZ gvbm`úbeDcvE msMh, DcvEi mnR e`envi |
wbgšfYi Rb` cOkie KvWvfgv wK cš`-tLvj v nte, bv wK cš`-eÜ nte, tm melq wmxvš`-MhY
MtelKt`i Rb` GKwU Zirchey`weteP` melq | GB cš`-tLvjv ev cš`-eÜ cOkie iwZwU
KvWvfgvex` m`fjvrKvi Abjpx Ges `^cwi Pwj Z cOkwvjv Dfq aitYi cOkombgP cwi Kí bvi
mvt`_ Ruoz |

cš`-tLvjv ev cš`-eÜ cOkie`envi i h`vh`Zv KZ`_tjv Dcv`vtbi Dci wbfPkvj | cLgZt,
hw` Mteltki Df`k` nq th, wZwb DEi`vZvi KvQ t`tk GKwU wbw` e³te`i mvt`_ ÓGKgzÜ
ev ÓwGzÜ tcvlY Kiv m`utK`RvbwZ Pvb, tm t`fj` cš`-eÜ cOkie e`envi tek DcthvMx ntq
`vtK | Avi hw` DEi`vZv Zvi wbr`^fvlvq tKvb melq m`utK`Kfvte gZvgZ cOkvK Ktib Zv
wZwb RvbwZ Pvb, tm t`fj` cš`-tLvjv cOkie e`envi ht`vchP` nq | wZxqZt, m`fjvrKvi
MhYKvix cš`-tLvjv cOkie gva`tg cOkie Ašfß cš` m`utK`DEi`vZvi Avtbi NvUwzi
gvlvtK RvbwZ cvtib, hv cš`-eÜ cOkie gva`tg Rvbw hvq bvl | ZZxqZt, thLvfb DEi`vZvi
gtb GLb chS`-tKvb gZvgZ `vbw teta Dfv wb, tmLvfb cš`-tLvjv cOkie`envi Kiv thtZ
cvti | G aitYi cwi w`wZtZ, cš`-eÜ cOkie gva`tg cÜ E tKvb DEi`-` dv ev Zvi weKí MhY
GK aitYi avš`-gZvgZ cOkvki SmK `Zwi Kti | PZz`Zt, tKvb aitYi cOkie`envi KitZ
nte tm melq wmxvš`-MhYi t`fj` ZvMek wetePbmU weteKl fivte `i`ZcY` mvariYfivte, cš`-
eÜ cOkieZLbB e`envi Kiv DvPr nte, hLb GKwU cOkie ZEMZfivte cOm`K mKj m`ve`
DEi`-` dvvtK AvtM t`tkB wbaP`Y Kiv hvq Ges DEi`-` dv`_tjv mwgZ msL`K nq |

Ab`w` tK, c0S- tLjv c0k0e e`envi ZLbB h_vh_ nte, hLb AbmUvbgj K MtelYvi t`q` t` ZEMZ w`w`E tZgb weKukZ _vtK bv| G Ovovl , Mtel tKi c` t` h` AvtM t` tKB c0k0e m`e` DEi-` dv_ tjtK wba`Y Kiv m`e` bv nq, A_ ev h` m`e` DEi-` dvi cwi gvY A t`K tekx nq Ges hvi Zwj Kv c0Z Kiv ev`em`Z nq bv, tm t` t` c0S-eU c0k0e e`envi h_vh_ nte| w`K` w`K` w`K` t` t`, c`k`g`j v ev m`v`v`r`Kvi AbmPxtZ `jait`Yi c0k0eB m`e`g`j Z c0qvM Kiv ntq _vtK| Zte DEi-` dv_ tjtK Zwj Kvex Kivi ci 0Ab`vb`0 etj GKwU `dv h` Kiv nq, hv tZ c`e`f`ev hvqwb Ggb DEi Gtj Zv cieZ`Z mvt`K`Z`K`i`Yi gva`tg DEi-` dvq A`S`f` Kiv hvq| hLb 0Ab`vb`0 `dvwU h` Kiv nq, ZLb DEi `vZvtK Zv w`w` 0 Kti ej vi Rb` w` t` Rbv t` evi c0qvRb nq|

c0S- tLjv c0k0e (Open-ended Questions)

c0S- tLjv c0k0e tKvb m`w` 0 DEi-` dv _vtK bv Ges DEi `vZv hv etj b Zvi c`i`w`UB nq m`v`v`r`Kvi M0YKvix ev DEi `vZv w` t`R wj w`e`x Kti b| c0S- tLjv c0k0e A t`Kuv ci`v`v`q i Pbv`g`j K c0k0e gZ| G ait`Yi c0k0e i w`Z`Z DEi `vZv tKvb w`e`e`x K`v`v`g`v Abmi Y bv Kti `v`x`b`v`v`e t`h`v`v`e L`k` c0k0e DEi w` tZ cvt`b| thgb, GKRb DEi `vZvtK c0k0e Kiv th tZ cvt`i th, 0` t`k A`e`a A t` j e`envi tiva Kt` w` Kiv hvq etj Av`c`w`b g`tb Kti b0? c0k0e c`i Lw`j RvqMv t` qv _vtK, thLv`b DEi `vZv Zvi `v`x`b gZv`Z c0v`bi gva`tg DEi t` t`eb| Zte c0S- tLjv c0k0e L`e` mZK`Zvi mvt` w`b`g`Y Kiv DvPr, hv tZ Kti c0k0e me DEi `vZvi Kv tQ GKwU cwi`g`Z, `v`f`w`e`K I meRb `t`K`Z c0k0e cwi`Y`Z nq| cwi`g`v`Z`K`i`Yi w`el`q`w`U `i`Z`c`Y`G`R`b` th, c0k0e ZLbB A_`en nte hLb GwU w`w`0Z n`l`q`v h`v`e` th, me DEi `vZv c0k0e c0Z GKB`v`v`e Zv` i c0Z`w`v`q`v e`3 K`i`t`eb Ges DEi w` Zj b`v`h`v`M` nte|

c0S- tLjv c0k0e w`K`Z`w`e`k`l` m`e`av i t`q` tQ| c0gZt, c0k0e D`i`k` D`c`j`w`a` Kivi ci DEi `vZv Zvi w`S`v`K` Zvi w` t`Ri f`v`l`v`q` c0k0e K`i`Z` cvt`b| w`Z`i`q`Zt, DEi `vZv Zvi w`e`k`l`m, Abf`w`Z, gZv`g`Z ev ci`v`g`k` `v`x`b I `Z`t`u`Z`v`v`e c0v`bi gva`tg g`p` g`tb DEi w` tZ cvt`b| c0S-eU c0k0e t`q` t` thgb w`K`Z` w`w` 0 DEi-` dv t` t`K (thgb, 0GKgZ0 ev 0w`gZ0, 0n`w`0 ev 0bv0, BZ`w`) DEi `vZvtK t`e`Q w` tZ eva` Kiv nq, c0S- tLjv c0k0e t`q` t` Zv`i` Ggb w`K`Z` eva` _vtK`b` bv| Z`Z`i`q`Zt, c0S- tLjv c0k0e w`Z`p`g`x` DEi t` evi m`v`h`v`M` _vtK| A_`v`, Mtel K nq`Zv c`e`K`L`b`v` c`Z`v`k`v` Kti b`w` Ggb DEi I DEi `vZv w` tZ cvt`b| P`Z`i`Zt, th`n`Z`i`c0S- tLjv c0k0e tKvb w`w` 0 ait`Yi DEi`i` B`w`Z` t` qv _vtK bv, tm`n`Z`i` DEi `vZv c0k0e I AKw`g DEi w` tZ cvt`b| d`j, c0k0e m`u`w`K`Z` w`el`q` DEi `vZvi Avb I D`c`j`w`a`i` g`v`w`U` R`v`b` hvq Ges DEi `vZvi Rb` t`K`v` w` K`w` g`L`, Zvi Ab`g`v`b` Kiv hvq| c`A`g`Zt, Mtel Yvi w`el`q`w`U t`K`v` b`Z`b` w` K` ev th`w` t`K` Mtel t`Ki m`w`g`Z` Avb i t`q` tQ Ggb w` K` D`t`b`w`P`t`bi` Rb` c0S- tLjv c0k0e L`e`B` D`c`h`M`x`| G ait`Yi c0k0e t`K` cieZ`Z` c0S-eU c0k0e DEi-` dv MvB Kiv tek mnRZi nq| l`o`Zt, c0S- tLjv c0k0e DEi h`w` DEi `vZvi Kv tQ A_`u`o` _vtK, Zte DEi `vZvtK Av`t`iv` w`K`Q`w`v` `u`o`f`v`v`e` e`v`L`v` Kiv ev e`3`e`i` `c`t`q` h`y`3` t` evi Rb` Ab`t`iva Kivi gva`tg m`v`v`r`Kvi M0YKvix t`c`0`r`m`w`n`Z` K`i`Z` cvt`b|

c0S- tLjv c0k0e Mtel t`Ki Rb` w`K`Z` m`g`m`v`l` `Z`wi` Kti | c0gZt, m`v`v`r`Kvi M0YKvix` i` Rb` G ait`Yi m`v`v`r`Kvi cwi`P`v`j`bv` Kiv GKwU m`g`q`m`v`t`c`q` e`v`c`vi` ntq `v`v`v`q`| w`Z`i`q`Zt, Z_` m`S`M`0`ni` ci` DEi` tjtK` Avevi` c0S-eU` Av`K`v`i` i`f`c`v`S`w`i`Z` Kivi` Rb` Mtel`K`t`K` GKwU` mvt`K`Z`x`K`i`Y` K`v`v`t`g`v` w`b`g`Y` K`i`Z` nq| Gi` d`j, DEi `vZv` K`Z`K` c0`E` w`K`Z`Z_` n`w`i`t`q` th`Z` cvt`b| Z`Z`i`q`Zt, GB` c`x`w`Z`w`U` A`t`b`K`U`v` w`el`q`e` `w`e`k`h`Y`i` g`Z`B` Ges` K`L`b`l` K`L`b`l` G`t`K` 0`c`i`e`Z`P`mvt`K`Z`x`K`i`Y`0` etj` Aw`f`w`n`Z` Kiv` nq| GB` c`x`w`Z`w`U` i`a`y`m`g`q`m`v`t`c`q`B` b`q, GwU` w`K`Q`w`U` Aw`b`f`P`t`h`v`M`I` e`t`U`| Kvi`Y, G`t`Z` DEi` mvt`K`Z`x`K`i`Y`i` m`g`q` w`f`b`Z`v` `Z`wi` i` m`v`h`v`M` _v`K`i` d`j

cwi gvcRwbZ áwš-nřZ cvti, hv MtelYvi h_v_ZvtK e`vnZ Kti | PZ_Zt, Dbšß còkè DÈi`vZvi ktg tenk nq| ^c+iYKZ còkègvj vi tñtñ còš-řLv v còkè mxvG DcřhvMzv itqtQ| còš-řLv v còkèřtnZi Avak ktgma` Ges D`P tçÙ Yv l gbřhvMi mvt_ Gi DÈi w`řZ nq, řmřnZieù DÈi`vZv eo DÈi řj Lvi řřq AbřmřnřZ nřq cořZ cvřib, hv nqtZv wbgævřti còkègvj v c+iYi mgm`v %Zwi KiřZ cvřti, weřkl Kti WvtK tçÙ Z còkègvj vi tñtñ | cÁgZt, KwVřgvex mřñřvrKvi wřwřEK MtelYvq DÈi wj wceXKiřYi tñtñ GKRB mřñřvrKvi MòhYKvix t_řK Ab` mřñřvrKvi MòhYKvixi gřa` wřbřv `Zwi nq| KviY, DÈi`vZv hv eřj b mřñřvrKvi MòhYKvixi cřñ Zv ueù wj wceX Kiv mæe nq bv| GB wřbřv DcvřÈi gřa` áwš-`Zwi Kti | řóZt, KLřbv KLřbv còš-řLv v còkè DÈi ř`qv l weřkřY Kiv tek KwWb nřq cřo|

còš-eÜ còkè(Closed-ended Questions)

còš-eÜ còkè tñtñ, DÈi`vZvt` i Rb` wKQz wbw` ð DÈi-`dvi weKí ř`qv _vtK, hv t_řK Zvív Zvt` i cQ` mB DÈi tetQ wřřZ cvřib| GwW cixñřvq eùweKí hřß (multiple-choice) DÈi-`dv mæřj Z còkè gZ| còš-eÜ còkè DÈi-`dvi GB weKí řj v wZbwW cåvb Dcvřq Dc`vcb Kiv hvq| cÙgwW řKej řn`w A_ev řbv ò aiřYi nřZ cvřti; wřZxřwW wewřbægvřvq gZvgZ còvřbi gřcbx mæřj Z nřZ cvřti; Ges ZZxřwW řgci`úivq mæúK hřß DÈi weB`m aiřYi nřZ cvřti, řhLvB t_řK DÈi`vZv Zvi Ae`vřbi KivQvKwQ`GKwWřK wbeřřb Kiřeb| còkè weřqe`i Dci wřfř Kti DÈi-`dvi RvWj Zvi gvřv ewX cvřq| MtelK còqkt DÈi`vZvtK ÒAb`v`ò břřg GKwW AwZwi`³ DÈi-`dv mieivn Křib, hvřZ Kti DÈi-`dvq Dvj wřZ řbB, A_P DÈi`vZvi KvtQ Zv `i`ZcY`Ggb weřq DÈi`vZvi DÈi nřj Zv řhb wZwb wbw` ðfvře Dřj ĽKivi gřa`řg Zv wj wceX KiřZ cvřib|

còš-eÜ còkèMtelKřK KZ_řj v mřæav còvb Kti | cÙgZt, còš-eÜ còkèRÁvmv Kiv mnR Ges DÈi ř`qvl mnR| wřZřqZt, còš-eÜ còkè tñtñ DÈi`vZv ev mřñřvrKvi MòhYKvix DřřřqB řKvb wKQzřj Lvi còqřRb nq bv| còhvr` DÈi-`dvřK řagvř wJK l řm wřY w`řj ev eřKvi Kiřj B řřj | ZZřqZt, còš-eÜ còkè gřa`řg còš DÈi t_řK DcvřÈ còřqvKiY mnR nq| PZ_Zt, còš-eÜ còkèDÈiři Zj břřhvM`Zv ewX Kti | KviY, còš-řLv v còkè cieZř`mřřřřKZKiřYi tñtñ, DÈi`vZv KZř còÈ DÈiři weciřřZ řKvb GKwW wbw` ð mřřKZ còvb Kiv nřj řmW còKZcřñ GK DÈi`vZv t_řK Ab` DÈi`vZvi gřa` řKvb wřbřv %Zwi Kti bv| cÁgZt, còš-eÜ còkèDÈi`vZvi KvtQ còkè A_řK `úó Kti řZvtj | KLřbv KLřbv DÈi`vZv nqtZv řKvb còkè Dřřk` eřřZ cvřib bv Ges G me tñtñ mæe` DÈiři j ř`Zv còkè Dřřk`řK `úó Kti řZvtj | řóZt, mřñřvrKvři tñtñ còš-eÜ còkè DÈi wj wceXKiřY wřbřvřvi mæe`břřřK nřm Kti _vtK|

còš-eÜ còkè wKQz Amřæav l `Lv hvq| cÙgZt, DÈi`vZvi DÈiři `ZtçZřvi Afve _vtK| wřZřqZt, còš-eÜ còkè eva`Zvgj K DÈi cQř`i tñtñ DÈi `dv_řj vtK cvi`úwi Kfvře Ab`b` Ges cyLvbcyL wK bv Zv ej v KwWb| ZZřqZt, eva`Zvgj K DÈi-`dv_řj vi cQř`i e`vL`vi tñtñ DÈi`vZvt`i gřa` wřbřv _vKřZ cvřti| Dcřwäi GB wřbřvřvi KviřY eva`Zvgj K cQř`i DÈi-`dv_řj vi Dcw`wZ mgm`wWřK Avil RvWj Kti Zj řZ cvřti | PZ_Zt, DÈi`vZv řh DÈi w`řZ řvb řmW hv` còš-eÜ còkèc`È DÈi-`dv_řj vq Dcw`Z bv _vtK, Zře Zv DÈi`vZvi Rb` wei w`³Ki nřq `vovřZ cvřti | cÁgZt, mřñřvrKvi AbřmřřřZ AřřK tenk cwi gřřY còš-eÜ còkè_vKřj Zv mřñřvrKvi MòhYKvix l DÈi`vZvi gřa` mřmæúK` `vcřb evav mřó Kti | KviY, GřZ Kř_vcK_řbi mřřhvM _vtK Lř Kg|

c0k0 ai Y (Types of Questions)

GLvfb GwJ gtb ivLv c0qvRb th, KwVtgvex mvqvrKvi AbjnPx ev ^ciYKZ c0k0jvi t0t0, weifb0ai0Yi c0k0R0Amv Kiv nq| wK ai0Yi I wK i0Z0Z c0k0c0qb Kiv nte Zv wbf0 Kti MtelYvi D0i k", bgbvi AvKvi I c0k0Z, cwigt0ci j 0" Ges DcvE mslM0ni c0wZi Dci| c0k0c0q0bi weifb0ei0Z I aiY it0t0| Avgiv GLvfb D0j L0h0M" K0qKwJ aiY I i0Zi D0j L0Ki0ev|

KvVtgvex c0k0(Structured Questions): c0S-eU c0k0tj vB ntjv KwVtgvex c0k0 Zte, tm_0tjv ce0mst0KZ0KiYKZ ev ci eZ0mst0KZ0KiYKZ n0Z cvti | thgb,

c0k0 Avcb wK eZ0t0

- Awe0wZ
- we0wZ
- ZjvKc0B
- we0Qb0
- we0ev
- we0Z0K
- Ab"vb"?

wK0' wK0: c0k0 it0t0, th_0tjv c0S-0Lvjv ntjI D0Ei-`dvi m0Zvi Kvi0Y tm_0tjv AvcbvAvcbB KwVtgvex n0Z cvti | KviY, G0Z D0E0i i `dv GKwJ _vtK| thgb,

c0k0 MZ Rb00 t0 Avcbvi eqm KZ e0i n0t0t0? _____ e0i /

AKvVtgvex c0k0(Unstructured Questions): c0S-0Lvjv Ges mst0KZ0KiY Qvov th me c0k0bg0Y Kiv nq tm_0tjvtK AKvVtgvex c0k0tj | thgb,

c0k0 Avcbvi 0e0wK gh0v wK? _____

AKvVtgvex Ges c0S-0Lvjv c0k0 D0Ei tK0Zntjv0xcK ntjI Zv we0w0Ki n0Z cvti | thgb, 0e0wK gh0vi Dci D0Ei c0k0 D0Ei tK0 ej0Z cvtib, 0L0 fvtjv0, Avevi tK0 ej0Z cvtib th, 0hv Avkv K0i0Qjvg wK tZgb00, Avevi tK0 GgbI D0Ei w0Z cvtib th, 0Avgvi 0tK wR0Amv Ki0Z n0e0| AZGe, tKvb c0S-0Lvjv c0k0 G ai0Yi we0w0sgj K D0Ei cvevi m00ebv _vK0tj tmB c0k0tK KwVtgvex Kti 0Zwi Kiv tkq|

QKex c0k0 (Grid Type Quesitons): GKB mvt_ `0 ev Z0Zw0K c0k0 Reve wj0ce0Ki0Yi Rb" mvi0Y ev QK e0envi Kiv nq| thgb,

c0k0 w0g0j0LZ weifb0ai0Yi we`0j0t0i tKvbi0t0Z Avcb KZ e0i wK0KZv Kti0Qb?

we`0j0t0i aiY	e0i			
	1-2 e0i	3-4 e0i	4-5 e0i	6 e0i0i AwaK
mi Kvix				
0emi Kvix				
Bst0wR gra"0g				
ew0Egj K				
Ab"vb" (w0w" 0 Kti ej0)				

Zvj Kve×KiY cġæ(Listing Type Questions): G ai tYi cġæmKQz` dvi Zvj Kv t` I qv nq, hvi th tKvb GKUġK tetQ wbtZ nq| thM`Zv mspvš-cġæDĒi`vZvtK tek wKQz thM`Zvi GKUġ Zvj Kv t` I qv nq| thgb,

cġæ Avcbvi wġŷMZ thM`Zv wK? (mW/K Nti wJK w`b)/

- cġ_wgK
- gva`wgK
- D`P gva`wgK
- mæZK
- mæZtKvĒi
- w GBP wW
- Ab`vb` (wbr` Ÿ Kti ej b)|

tKŷre× cġæ(Category Questions): DĒi wmwte wKQz tKŷre× `dv Dc`vcb Kiv nq| DĒi`vZv tKej GKUġ tKŷxiB Ašfß nŷZ cvti b Ges tmB tKŷxtZB wJK wPy w`teb| thgb,

cġæ Avcub tKvb eqtMvxi Ašfß? (mW/K Nti wJK w`b)/

- 15-19 eQi
- 20-24 eQi
- 25-29 eQi
- 30-34 eQi
- 35-39 eQi
- 40-44 eQi
- 45-50 eQi

µggj K cġæ(Ranking Type Questions): DĒi`vZvt`i tKvb ŷb ev`ewkó`tK ŷi`Zj I AMġaKvti i µtgi wfivĒZ mrvtZ ejv nŷZ cvti| thgb, Rxeŷbi gvb m`úwKŷ GKUġ Mtel Yvq DĒi`vZvt`i Rxeŷbi wewfbwel tqi ŷi`Zj ev AMġaKvti i wltq Z` msMŃni j tŷŷ` GKUġ µggj K cġæ t`Qi bgbv wbtgwt` Lvŷbv ntj v|

cġæ Avcbvi Rxeŷbi j tŷŷ` wmwte wbtgwt` Pvi w e³te`i gta` AMġaKvi wfivĒZ tKvbuġK Avcub cġg, wZŷq, ZZŷq I PZŷ[®]etj gtb Kti b? (cQŷ`i mL`wUtK eĒivKvi Ki`b)/

		µggvb			
K.	fvŷv Avq I Rxeŷb fvŷv wRwbmtK tŷwM Kivi gZ GKUġ mg× Rxeb	1	2	3	4
L.	m`úYŷŷc Avgvi cwi ewi tK tK>`Kti GKUġ mŷx cwi ewi K Rxeb	1	2	3	4
M.	ARŷbi gva`tg m`ŷyb I `ŷKwZm`úbæGKUġ ŷi`Zŷŷ [®] Rxeb	1	2	3	4
N.	mKj tgŷŷj K Pwin`v wglvŷbvi gZ GKUġ wbi vc` Rxeb	1	2	3	4

gvcbxgġ K cġæ(Scale Type Questions): cġæcŷqbw cwi Kí bvq gvcbxi fvgKv wtkl fite ŷi`Zŷŷ[®]wtkl Kti gŷbvŷve cwi gvtci tŷŷŷŷ | GtZ tKvb GKUġ wltq gŷbvŷve cwi gvtci j tŷŷ` Mtel K GK ev GKwaK e³e` cġvb Kti b Ges ceŷbaŷi Z mwstKZxKi tŷŷi wfivĒZ

DĒi`vZvK tm mKj e³te`i Dci cĀ Ē μggj K DĒi-`dvi wfĒĒZ Zv`i gZvgZ cĀvb
KiĒZ etj b| thgb,

cĀæ AvBb weFmĒK cĀvmb t_ĒK Avj v`v KĒi tdj v DmPr| (mĀVK NĒi ĀUK w`b)/

- m^uY^gGKgZ
- GKgZ
- ĀwĀZ bq
- ĀgZ
- m^uY^gvĒe ĀgZ

cwi gvY I Z_`gj K cĀæ(Quantity Type and Factual Questions): G aiĒYi cĀkĒ
gra`tg ĒKvb mSL`v Āvīv ĒKvb `emkĀĒK wPnyZ KiĒZ ej v nq| G aiĒYi cĀkemvāiYZt
cĀgvy vi e`w³MZ AĒk _vĒK Ges cĀqkt ĀRb%ĀvĀK Z_`Ā ev ĀDcvĒ cĀĀ wnmvĒe ĀwfvnZ
Kiv nq| thgb, eqm, Avq, Avev`j , BZ`w` m^uĀKZ Z_`| Pj ĒKi cĀKwZ I wĒkĒĒYi
DĒiĒk`i Dci wbfP KĒi Z_`gj K cĀæcĀS-eĀ I cĀS-ĒLvj v`Āi KgB ĒZ cvĒi | thgb,

cĀæ Avcbvi AvbgvmbK evrmvī K Avq KZ? (h_vh_ NĒi ĀUK w`b)/

- 50,000 UvKvi bĒP
- 50,000-1,00,000 UvKv
- 1,00,000-1,50,000 UvKv
- 1,50,000-2,00,000 UvKv
- 2,00,000 UvKvi DĒi

cĀæ Avcbvi eqm KZ eQi? _____ eQi /

cĀæ Avcbvi cwi evĒi i m`m` mSL`v KZRb? _____ Rb/

mvi vsk

MĒel Yvq Z_` mSĀni Āb`Zg nwmZqvi Ē`Q cĀgvy v ev mvĒjvrKvi ĀbvmPxi | GB cvĒV Avgi v
cĀgvy v I mvĒjvrKvi ĀbvmPxi mvĒ_ m^uĀKZ wēl qe` , KvVtgv Ges cĀkĒ wēwfĒeai Y wĒtq
AvĒj vPbv KĒi wQ| mvāiYZt, cĀkĒ KvVtgv I aiY wbfP KĒi MĒel Yv mgm`vi cĀKwZi Dci |
ZĒe GwĀ Ā`Kvi Kivi Dcvq ĒbB th, cĀS-eĀ cĀætekx _vKĒj cĀKZP Ges DĒi`vZvi
gĒa` th m^uĒK^p m^w nq, Zv cĀYeš-bv Ētq ĀĒbKwv AvbĀvmbKZvq cwi YZ nq|

cvfVvEi gj`vqb

`be⁹³K cke

mVK DEti i cvfk WJK (v) wPy w` b -

1| ckgvj v ev mvfvrKvi AbymPx cVqtbi cAvb KvR:

- K. MtelYvi Dti k` ,tj vfk GKwI Z Kiv
- L. MtelYvi Dti k` ,tj vfk Rvbvb t` qv
- M. MtelYvi Dti k` ,tj vfk wbr` 6 wKQzcKke gra`tg AbymPxe Kiv
- N. MtelYvi Dti k` ,tj vfk mvi wYe Kiv|

2| gtbvfe cwi gvtci Avek`Kxq kZU ntj v:

- K. gtbvfevj K e^{3e} ,tj vfk GKwI gvcbxi gra`tg `Zwi Ki tZ nte
- L. gtbvfevj K e^{3e} ,tj vfk eYBv Ki tZ nte
- M. gtbvfevj K e^{3e} ,tj vfk DE`vZvi KvQ mvfvrKvti i AvfMB tciQtZ nte
- N. Dcti i me|

3| DcvE msmni nwiZqvi wbgfY mavi YZt _____ ckeKvrtgr e`euZ ntq _vfk|

- K. `jai tYi
- L. wZb ai tYi
- M. Pvi ai tYi
- N. cvP ai tYi

msvB cke

- 1| cS-tLj v ckanK?
- 2| cS-eU ckanK?

iPbvj K cke

- 1| ersj v`tki GKwI Mtg KwI Avq-e`tqi Dci MtelYv cwi Pvj bvi Rb` GKwI ckgvj v/mvfvrKvi AbymPx `Zwi Ki`b?
- 2| cS-tLj v Ges cS-eU ckgvj vi gta` Avcb tKvbWtK cQ>` Kti b? Avcbvi DI ti i`ctf hy³ t` Lvb|

c0k0e k0web0vm, Abj0g I Aw0zK
Wording, Ordering and Format of Questions

GB cW tk0l hv Rv0v hv0e —

- c0k0e k0web0vm
- c0k0e web0vm I Abj0g
- c0k0e Aw0zK
- D0i -` dvi Aw0zK

c0k0e k0web0vm (Wording of Questions)

GKw DEg I h_v_c0k0e
D0i `vZvi g0a` M0elYvi
i`Zi; c0m0zKZv I
Acwi nvhZvi Abj0z `Zwi
K0i |

0h0nZy GKw M0elYvq c0k0e gva`tgB DcvE msM0h Kiv nq, tm0nZi c0k0e0vq0bi Rb` k0 Pq0bi t0t0t we0kl hZ0etbqv c0qvRb | GKw DEg I h_v_c0k0e D0i `vZvi g0a` M0elYvi i`Zi; c0m0zKZv I Acwi nvhZvi Abj0z `Zwi K0i | c0k0ebg0Y mvgmRK we0v0bi KwB c0z`q ev cwi fvlv,tjv A0nZK e`env0i i c0qvRb tbB | c0k0e k0,tjv Ggb nI qv D0Pr hv0Z K0i D0i `vZv tm,tjv mn0RB e0t0Z cv0ib Ges Zvi Awf0Zvi mv0_vg0v0Z cv0ib | 0h0nZi D0i `vZv me00i i Rb0Mv0x t_0k wbe0PZ nb, tm0nZi c0k0e A00f0 k0,tjv0K A0_P w`K t_0k `u0, mnR I mij n0Z n0e, hv0Z K0i GKRB mvaviY gv0l I mn0RB e0t0Z cv0ib | L0e tekx e`vL`vi c0qvRb i0t0Q Ggb k0 e`envi Kiv D0Pr bq | c0k0e g0a` k0 web0vm Ggb nI qv D0Pr, hv c0Zw D0i `vZvi Kv0Q GKB A_0enb K0i |

c0k0e k0 wbe0Pb ev web0vm Awf0ZvgjK gj`vq0bi c0Z c0hvR` n0Z n0e, hvi gva`tg we0kl t0kv k0 A0vZ c0v0v0Z c0k0e g0a` c0e0 Kiv0Q w`K bv Zv 0evSv hv0e | t0Kb bv, A0bK k0ai M0 ev fveMZ A_0M0el0Ki Rv0v_0v0K bv, hv c0k0e D0i0K c0fveZ Ki0Z cv0i | G ai0Yi cwi w`v0Z0Z, GKw we0kl k0 D0i `vZvi Kv0Q w`K A_0enb Ki0Z cv0i Zv w0b0f0Yi Rb` M0elK c0k0e`e0Z k0ai we0f0b0mgv_0 k0 e`env0i i gva`tg c0k0i we0f0be fv0` w0g0Y K0i cix0v Kiv 0h0Z cv0i | c0k0K mvaviYzt eZ0vb Kv0j i w0qv0t` eY0v Kiv D0Pr | GKgv0 AZxZ Awf0ZvgjK ev fwe0r NUBvejxi t0t0t Zvi e`vZ0g n0Z cv0i | h_vh_ Kv0j i w0qv0t` e`e0Z bv n0j D0i `vZv` i Kv0Q c0k0e a00Ski n0Z cv0i | G0Ki Aw0K aviYv enYKvix R0Uj c0k0ebg0Y Gw0t0 Pjv D0Pr | t0Kj gv0 GKw aviYv0K enb K0i c0k0K mnR, mij Ges c0z`0 n0Z n0e | 0h ai0Yi k0, k0web0vm I c0k0e Gw0t0 Pjv D0Pr Zvi w`K0zD`vniY w0t0eAv0j vPbv Kiv n0j v |

A`u0, Aw00 0 I Abgv0gjK c0k0e (Ambiguous, Imprecise and Presumptive Questions): M0el0Ki Kv0Q GKw c0k0e`0Q I `u0 g0b n0Z cv0i, w`K0`mvaviY D0i `vZvi Kv0Q Zv bvI g0b n0Z cv0i | GKRB0i Kv0Q 0h0w mvaviY A_0evaK k0, Ab` gv0b0l i Kv0Q Zvi w0f0beA_0vK0Z cv0i | c0k0e g0a` A`u0, Aw00 0 I Abgv0gjK k0 mgm`vi m00 Ki0Z cv0i Ggb w`K0z0el q we0f0beD`vni0Yi gva`tg ch0j vPbv Kiv hv0K | thgb,

c0k0e Av0ub Av0bvi m000bi we`ij q cv0`m0gi mv0_ KZUKz m0u,3? (m0wK N0i w`K w`b) |

- A0bKLwb
- G0Kev0B bv
- w`K0Uv

G tñtñ, ðAtbK Lmbð-i A_°Rb e`w³i KvqQ `ñi Kg nñZ cvti | Zv Qvov, GuU wbowðZ Kti ej v hvte bv th, DËi`vZv`i cðZ`KB ðcv`µgð kãW w`tq GKB welqtK eštðb wK bi? G tñtñ cvWµtgi GKwU mPúó msÁv Ges cðZwU DËi-`dvi Rb` mgtqi cwi gvY wbow`ð Kti t`lqv Avek`K | Avti KwU D`vniY w`tq G welq,tj vtK tevSvi tPóv Kiv hvK | wbtgic ckwtk LpB mvaviY l mij gtb nñZ cvti | wKš`wKQWv Mfxti tMtj Gi wfZti mgm`wU aiv cto | thgb,

ckæ Avcbvi mštb wK aiñyi we`vj tq cto? (mWVK Nti wUK w`b) |

- wKÜvi MvtUð
- cð`wgK we`vj q
- gva`wgK we`vj q
- Bšti wR gva`g we`vj q
- Ab`vb` (wbow`ð Ki`b) _____

GB cðkæaviYv Kiv ntqtQ th, DËi`vZvi tKej gvñ GKRb mštb itqtQ | wKš`Zvi hw` PviRb mštb `vtK? hw` GKwU bv `vtK? A_ev wZwb hw` weewwZB bv nb? tm tñtñ wZwb wK DËi t`teb?

wð-glx ckæ (Double-barreled Questions): wð-glx ev ð`fevaK ckæ th tKvb cwi w`wZtZB weáwšKi Ges wbfPthwM` l h_v_°DcvÉ mšMðn cðZeÜKZv mwð Kti | wð-glx ctkæ gta` GKwaK welqtK Ašfß Kiv nq | thgb,

ckæ Avcbw wK mwZvi Ges wRg`wðKm PpP`Kti b? (mWVK Nti wUK w`b) |

- niw
- bv
- Rwb bv

GB cðkæ mgm`wU ntj v th, DËi`vZv hw` `iay GKwU welq PpP`Kti b, Zte wZwb wK DËi t`teb? tKvb DËi`vZv hw` ðn`wð Nti wUK wPy t`b, Zv wK `ñwtkB PpP`Kiv ešvte? hw` wZwb `iagvñ mwZvi PpP`Kti b ev wRg`wðKm PpP`Kti b, tm tñtñ tKvbwtk DËi etj aiv nte? hw` DËi-`dv,tj vtK Avj v`v Kti Gi GKwtk wPnyZ Kitz ej v nq, ev tKvb gv`tÜi wfvÉtZ tm,tj vtK µggj Kfvte mvrvtZ ej v nq, tKej ZLbB ðGesð kãW e`envi Kti `ñwU welqtK GKwñ Z Kiv hvq | thgb,

ckæ t`k eZgvtb `ñw cãvb mgm`vi m`g`lx: mvgwRK wbi v cÉvnxZv Ges `pñZ | G `ñw mgm`vi tKvbwtk Avcbw cãvb etj gtb Kti b? (mWVK Nti wUK w`b) |

- mvgwRK wbi v cÉvnxZv
- `pñZ
- Rwb bv

cðYv`bvj K ckæ (Leading Questions): cðYv`bvj K ckæ Ggbfvte wbgZ nq, hvZ Kti gtb nq thb Mtel K GKwU wekñ DËi`K cZ`vkv KitzQb | cðYv`bvj K ckæ PnyZ Kiv mnR bq | Zte, cðkæ Avte McY`fvvi e`envi DËi`vZvi DËi`K wbow`ð tKvb w`tk wbt`KZ Kitz cvti, ev cðYw`Z Kitz cvti | thgb,

ckæ ðmštbi tj Lvcovi e`vciti wZigvZvi gZigZ t`l qvi AnaKvi itqtQð Avcbw wK G e³te`i mvt` GKgZ bb? (mWVK Nti wUK w`b) |

- niw
- bv
- Rwb bv

G aiñyi cðkæ DËi tKvb AwffvetKi cññ ðbvð ej v KwWb | KviY, ckwU wK Ggbfvte wbgP Kiv ntqtQ, hvZ Kti DËi`vZvi tKvb weKí cQ>`_vtK bv | KviY, gvby Am`gZ

gvbl Am^{sz} cKvtki
Zj bvq c^{ke} fvlvi mvt₁
m^{sz} cKvk KiZ tekx
"Q" teva Ktib|

cKvtki Zj bvq c^{ke} fvlvi mvt₁ m^{sz} cKvk KiZ tekx "Q" teva Ktib|
mvgwRKfvte cZ^{wkZ} Ges M^hYthM" gj¹ tevtai mvt₁ m^{sz} cKvtkl gvbl i GKwU mvaviY
c^{ke}YZv j¹ Kiv hvq| GKBfvte, tKvb c^hz^zK AM^{wa}Kvi t¹ qv ktai e¹envi c^{ke} DEi¹ tK
gviVZ^{wk}fvte c^fw^eZ KiZ cvti | thgb, c^{ke} h^w nq th, ¹vi¹ g¹gvbl tK mthh^wz^vi t¹ t¹
mi Kvi wK L^e tekx ev Kg A^eivi Kti¹Qb¹? G t¹ t¹ A^wkvsk gvbl L^e Kg A^eiv¹ i
K^vB D^tj t¹ Kiteb| AZGe, tKvb w^etkl¹ w¹of^wz^zK w¹t¹ R KiZ cvti ev w^etkl A^eev
B^wz^v enb Kti Ggb ka ev ka¹ "Q e¹envi Kiv D^wPr bq|

Abgvbgj K ev Ab¹Ki gj K c^{ke} (Presuming or Hypothetical Quesitons): G ai¹Yi
c^{ke} Ggb GKwU A¹sb¹h¹Z Abgvb¹ v¹tK th, c^{ke} thb bgbvq A¹sf¹ mKj DEi¹ vZvi t¹ t¹
mgvbfvte c¹qvR¹ | thgb,

c^{ke} Avcbvi w¹t¹q¹M¹Kvix wK AvcbvtK gvZZ¹/w¹cZZ¹Kvj xb QwU h¹ o¹ m¹th¹M t¹ b? (m¹wK
N¹i wK w¹ b)|

- niv
- bv
- Rwb bv

G c^{ke} m¹g¹w¹U ntj v th, DEi¹ vZv h^w gvZZ¹Kvj xb QwU b^wz¹ZB w^ekl¹mx bv nb, tm t¹ t¹
DEi¹ vZv tKvb DEi¹ dv tetQ w¹teb? GB c^{ke} t¹ t¹ qv ntqtQ th, gvZZ¹/w¹cZZ¹Kvj xb QwU
t¹ l¹ qv Aek¹B D^wPr Ges Ggb Abgvvtbi Kvi¹YB c^{ke} A¹th¹M¹ ntq cto¹Q| Z¹ m¹sl¹M¹ni
nwZqv¹ G ai¹Yi m¹g¹v¹ v¹K¹tj Zv nte¹ t¹ w¹h¹ | wKoz DEi¹ vZv t¹ s¹Rb¹ i¹ q¹vi Lw¹Z¹ th
tKvb GKwU DEi¹ dv¹tK w¹Py¹Z Kivi g¹va¹t¹g DcvE¹tK w^eKZ Kti t¹ dj¹ t¹eb| c^{ke} g¹ta¹
o¹c¹h¹vR¹ b¹q¹ DEi¹ dv¹ h¹ Kti G ai¹Yi c^{ke} QvKbx c^{ke} m¹vt¹e e¹envi Kiv t¹ t¹ cvti |
KL¹tbv KL¹tbv Abgvb Kiv nq th, c^{ke} A¹sf¹ w^el¹ q¹U mevi Rb¹ c¹h¹vR¹ | wKs¹ c¹KZc¹ t¹ q¹,
Zv DEi¹ vZv¹ K Ac¹z¹ ev w^ei¹ Kti Zj¹ t¹ cvti | thgb,

c^{ke} Avcbvi h^w tKvb c^wi¹ e^wi¹ K¹ w¹q¹Z¹; bv v¹tK Ges c¹Pi A^e v¹tK, Avcb t¹ m¹B A^e
w¹ t¹ wK Kiteb¹?

tKvb DEi¹ vZv Gi Revte ej¹ t¹ cvti b th, Av¹g¹vi c^wi¹ e^wi¹ K¹ w¹q¹Z¹; i¹ t¹ q¹Q, Av¹g¹vi UvKv t¹ bB
Ges h¹Z¹ t¹ t¹ Lv hvq f¹w¹el¹ t¹ t¹ K¹ b¹ Zv n¹tel¹ bv| Zvntj G w¹t¹q¹ t¹ f¹te wK j¹ v¹ f¹o¹? A¹ f¹, G
c^{ke} DEi¹ DEi¹ vZvi wKoz¹ evi v¹tK bv etj c^{ke} A¹ f¹xb ntq cto|

Ac¹z¹Ki I m¹ste¹ b¹k¹j w^el¹ q¹ m¹ub¹e c^{ke} (Questions Related to Offensive and
Sensitive Issues): KL¹tbv KL¹tbv c^{ke} gv¹ v ev m¹ v¹ r¹ Kvi Ab¹ym¹ P¹z¹ Ggb w^el¹ t¹ q¹ Dci c^{ke}
A¹sf¹ KiZ nq, hv DEi¹ vZvi Rb¹ Ac¹z¹Ki I m¹ste¹ b¹k¹j ntz cvti Ges Gi dtj Zv
DEi¹ t¹ evi Rb¹ K¹w¹b ntq cto| thgb, DEi¹ vZvi th¹ s¹b Av¹ Pi Y, gv¹ K¹ e¹ t¹ me¹ t¹ b¹ Af¹ vm,
BZ¹ w¹ | Av¹ f¹ A¹ Z¹ v¹ ä c¹gv¹ t¹ Lv t¹ M¹ t¹ Q th, Ac¹z¹Ki ev m¹ste¹ b¹k¹j w^el¹ q¹ m¹ub¹e c^{ke} av¹ s¹-I
c¹ q¹ cvZ¹ g¹ K DEi¹, DEi¹ v¹ t¹ b A¹ f¹ K¹ w¹ I w¹ b¹ g¹ ev¹ t¹ DEi¹ t¹ evi c¹ e¹ Y¹ vi Rb¹ t¹ q¹ | hZ tekx G
ai¹Yi c^{ke} v¹ K¹ te ZZ tekx w¹ b¹ g¹ ev¹ t¹ DEi¹ cvl qvi gv¹ v e¹ w¹ cvte| thgb,

c^{ke} Avcb wK t¹ d¹ w¹ Y¹ w¹ j¹ t¹ me¹ b Kti b? (m¹wK N¹i wK w¹ b)|

- niv
- bv

m¹ste¹ b¹k¹j w^el¹ t¹ q¹ c^{ke} ka w^e b¹ vm Ges Gi μ g Ae¹ v¹ b w¹ t¹ q¹ Av¹ z¹ w¹ hZ¹ k¹ xj n¹ l¹ qv
c¹ q¹ Rb| G ai¹Yi m¹ste¹ b¹k¹j c^{ke} t¹ v c^{ke} gv¹ vi t¹ kl w¹ t¹ K ivLv ev¹ A¹ b¹ x¹ q¹ | c¹ q¹ Rb¹ t¹ ev¹ t¹,
DEi¹ vZvi Av¹ z¹ k¹ v¹ N¹ v¹ K¹ iZ cvti Ggb c^{ke} m¹ w¹ t¹ q¹ t¹ dj¹ v¹ B¹ f¹ t¹ v|

cōkē web`vm I Abjg (Ordering and Sequence of Questions)

cōkēj v ev mġjvrKvi Abjg cōqtb cōkē μgavivq Abjgtgi Dcv`vbuU ōi`tZji mvt_ weťepbv Kiv cōqvRb| G tġġġġ, `ŹwŹ wel qťk j ġġ KġtZ nťe| GKŹW nťj v wel qe`i wfvĒtZ cōkē web`vm Ges Ab`wU nťj v, cōkē`Qġi gťa` wboeoZvi wfvĒtZ ci`uivi Abjg| AmZK ev hZxob cōkē web`vm I ci`uivi Abjg AbvKw`LZ dj vdtji Rbř w`tZ cvti | thgb, wbgenvti DĒi`vb ev cġġcvZhř DĒi cōvb| maviYfvte, cōkēj v ev mġjvrKvi Abjg cōg w`tki cōkēj v cieZ`chřqi cōkēj vťK cřwēZ Kivi K_v bq| wKš`KLťbv KLťbv cōkē web`vm ġKvb GKŹW cōkē Ae`vb cieZ`cōkē DĒi`ťK cřwēZ KġtZ cvti | thgb, Avgiv hw` cōg w`ťK `wi`^ I `wi`^ gvbġli Ae`v m`uťK`KQz Z_`gġ k cōkēRÁvmv Kwġ Ges cġi w`ťK hw` rÁvmv Kwġ th, ġKvb mvgwRK mgm`wUťK gvbġ meťPťq gvi vZ`K eťj weťepbv Kġi? Avakvsk DĒi`vZv `wi`ťKB Dġ E-KġtZ cvti b|

tKvb ġKvb Mťel K GB mgm`vťK Govťbvi cōPón wnmvte cōkēj v `ePwqZfvte web`-Kġi b| GwU GKŹW e`cōvm| KviY, GiKg `ŹePwqZ cōkē web`vm DĒi`vZvi KivQ tMvj ġgtj Ges A_řvb ġtb nťe| meťPťq wbivc` mgvavb nťj v mgm`wUġi mstē`bkj Zvi wel quwťK weťepbv Kiv| tKvb Mťel Yvq cōkē μgavivi web`vmwU hw` mwZ`B Lę ōi`ZcY`hq, tm tġġġġ Mťel K wřbēwřbēAbjg Abjgqv cōkē web`-Kġi GKwāK cōkēj v `Zwi KġtZ cvti b Ges cōk-cixġvi gva`ġg tm ōj v dj v dġ hvPvBceř Pevš-fvġ wġi wel ġq w`vš-wbťZ cvti b| wKš` Zv AťbK e`qeuġ tKšġj | weKġ wnmvte, gZvgZġj k cōkēj vťK Z_`gġ k cōkē cře` Dc`vcťbi gva`ġg ceēZ`cōkē cġġcvZġj k cřwēťK w bqšY Kiv thťZ cvti |

h_vh_ cōkē web`vm DĒi cōvťb DĒi`vZvťK AvMōx Kġi Zġ tZ cvti | GwU wvKťhvM tčōi Z cōkēj vi DĒi cōvťbi nvi epixi tġġġġ weťklfvte ōi`ZcY` `^cwi Pwġ Z cōkēj v Ges mġjvrKvi Abjg cōkē cZ`wKZ μgavivq cōkē web`vťmi gťa` wKQŹv Zdvr iťqťQ| cōgUťZ, maviYZt meťPťq tKšZnj x cōkē`Q w`ťq `ii` KivB fvťj v| hw` tZgb tKšZnj x wel q bv `vťK, Zte gZvgZġj k cōkē`ťq `ii` Kiv thťZ cvti | KviY, gvbġ maviYZt gZvgZ cōvb KġtZ cō` Kġi eťj Zviv DĒi w`ťZ `ii` Kġi | Avi GKevi `ii` Kġi maviYZt Zv tkl Kġi | GKbmvť_, `ii` w`ťki cōkēj v thb ōgwKġj k ev AcōwZKi bv nq| thgb, thšb AvPiY ev gv`K `ē` e`envi mšp`vš-cōkē `^cwi Pwġ Z cōkēj vi tġġġġ, Rb%ÁwbK Z_` (thgb, eqm, wġ ½, `eewwK ghř v, BZ`w`) tktli w`ťk ivLvB fvťj v| mġjvrKvi Abjg tġġġġ DĒi`vZvi mvt_ m`uťK`vcťbi Rb` meťPťq fvťj v nq, hw` mġjvrKvi MōYKvix Mťel Yvi Dġġk` m`uťK`GKŹW řwgKv t`evi ci cwievřii m`řm`i Rb%ÁwbK Z_` ōj vi msvġB weeiY w`ťq `ii` Kġi b| G aiťYi cōkē DĒi t`I qv mnR Ges maviYZt AvcuĒRbK nq bv| Gici axť axť ġbvfve Ges Avil `úkřvZi wel q ōj vi w`ťK Amōni nI qv hvq|

wel qe`i wfvĒtZ cōkē web`vm wbařġYi ci Abjgtg cōkēj vťK Dc`vcb Kiv nťe tm wel quwťK weťepbvq Avbv DġPr| cōkē Abjg wbařġY `ŹwŹ maviY ifťK Mťel KMY DcťhvMx eťj ġtb Kġi b: ġPvOv Abjg (funnel sequence) I wecixZ ġPvOv Abjg (inverted funnel sequence)| ġPvOv Abjgtg, cōZwU cōkē cęřci m`uťK`ř_ vťK Ges μgv`ťq mKxY`cwġwāi nťZ `vťK| thgb, tKvb Mťel K hw` RvbťZ Pvb th, DĒi`vZvť i ivR%ŹwZK, A_`řwZK I mvgwRK `wřwřzi mvt_ Zviv th cwġ Kv cťob Zvi m`uťK`ġLťZ Pvb, tm tġġġġ wZwb cōġġ KZ ōj v wel q m`uťK`RvbťZ Pvb ġeb| thgb, DĒi`vZvi tKvb aiťYi wel qe`ťK mgm`v eťj ġtb Kġi b, cōZwU mgm`vi AvťcwġK ZvrchřK Zviv wKfvte cZ`ġġ Kġi b, Zvť i Zť`i Dm wK Ges tKvb cwġ Kv Zvť i wšřťK cřwēZ Kġi q wK bv,

BZ`w | hLb Mtel K we`wi Z Z` tctZ Pvb Ges DEi`vZvi DEi t`evi Rb` c0Z `vtKb, ZLb tPvOv Abjuti AbmiY LpB Dc`thMx I KvhRi fvgKv cvj b Kti | GwU DEi`vZvtK Zvi `siYkw3 t`tK c0qvRbxq Zt`i we`wi Z weeiY w`tZ mnvh` Kti | G Qvovl, Mtel K tKvb AcZ`mkZ djvdj tctZ PvbTj c0tg eo c0kU wRÁvmv Ki`teb | wbtgje c0kjtj v GKU tPvOv Abjuti `Zwi Kti:

- RvZ AvR wK wK c0vb mgm`vi m`x`xb etj Avcub gtb Kti b?
- Avcub th mKj mgm`vi K_v Dtj t`Kti t0b, Gi gta` metPtq `i`ZcY`mgm`v tKvbW?
- G mgm`v m`utK`Z` `tj v Avcub tKv_v t`tK tctqt0b?
- Avcub wK `wbK BtEdvK ctob?

wecixZ tPvOv Abjuti, enr cwivai c0kjtj v msKxY`c0kjtj vtK AbmiY Kti | hw` MtelYvi c0h`wU DEi`vZvi KvTQ Kg `i`ZcY`nevi KvitY ev AwfÁZwU mv`c0ZK bq etj `siYkw3 tZ ZZUv `úo bv nevi KvitY hw` Zvt`i tK AwfgZ e`3 Kivi Rb` D0x bv Kti, tm t`tt msKxY`cwivai c0k`tq`i`i` KivB tktj | KviY, G `tj v DEi w`tZ mnR nq | enEi cwivai I KwB c0kjtj vtK cti Dc`vcb Kiv thtZ cvti | wech`qi mgq D`xvi KgRvtUi KvhRvixZv m`utK`DEi`vZvi gZvgZ c0Bi c0P0vq wbgw`wLZ Abjuti c0kjtj vtK Dc`vcb Kiv thtZ cvti:

- Utb`WtZ KZRb gvbj gvi v w`tqutj v?
- KZRb Ggbfite AvnZ ntqutj v th, Zvt`i tK nvmcvZvtj wbtZ ntqutj v?
- KZ`Y cti gvi vZKfite AvnZ e`w3 t`i nvmcvZvtj tbqv ntqutj v?
- Avcub wK KvD`tK c0_wgK wPwKrmv c0vb Kitz t`tLw0tj b?
- tK tmB c0_wgK wPwKrmv c0vb Kti w0tj b?
- Avcbvi gtZ, Zvi v KZUK`KvhRi fite c0_wgK wPwKrmv I D`xvi Kvh`g Pwj tqu0tj b?

c0kDc`vc`bi Abjuti DEi`-`dv wbePtb c0fve we`vi Kitz cvti, wetkl Kti gZvgZ I gtbvvevj K c0k`e t`tt | hw` tKvb gtbvvevj K c0k`e cte`tmB c0k`e welq m`umKZ c0m`wK c0k`_vtK, Zte Zv DEi`vZvi gtbvvetK c0fveZ Kitz cvti | wKŠ` wbitc` c0k`_vKtj Zv nevi m`vebv `vtK bv | Zvwj Kv ev m`ggj K c0k`e c0É DEi`-`dvi Ae`vb LpB `i`ZcY` KviY, AwfÁZvq t`Lv w`ttq0 th, gvbj mvaviYzt c0g `dwUtKB M0Y Kitz tekx c0` Kti | tm Rb` DEi`-`dv `tj vi Ae`vbMZ Dc`vc`bi welquU `i`tZi mvt` wetePbv Kitz nq, wetkl Kti th mKj c0k`efveMZ e3 te`i mvt`_msuk` G t`tt, `0efite m`gavi wU Dc`vcb Kitz G mgm`wUtK wKQlv Govtbv m`e | c0k`e Abjuti wetePbvi t`tt mnR, tKŠZnjx I weZK`m`wó Kite bv Ggb c0kjtj v c0g w`tK Zvwj Kve` Kiv c0qvRb, hvtZ Kti DEi`vZvi mvt`_mv`vrKvi M0YKvix ev c0k`gvi vi welqe`i mvt`_GKU mnR m`utK` Mto D`v | th mKj c0Š`-tLvj v c0k`etex mgq Ges wPŠ`i c0qvRb nte, tm `tj vtK mvaviYzt c0g w`tK bv ivLvB fvtj v | KviY, tm `tj v DEi t`evi t`tt DEi`vZvi AvM0 Kvgtq tdj tZ cvti |

c0k`e Avw`K (Format for Questions)

c0k`e k`a Pqb, web`vm I Abjuti wbtq hZ hZB tbqv tnvK bv tKb, Gi me c0P0vB wedtj hute, hw` c0k`K DEi`vZv ev mv`vrKvi M0YKvixi Rb` m`yavRbKfite Dc`vcb Kiv bv

hvq| Gi gj j` q`wU nl qv DriPr, tKvb Z_`fK bv nwi tq thb mnRfvte Ges mjeavRbKfvte tekx DEi Av`vq Kiv hvq| c0qB t`Lv hvq th, tKvb tKvb c0keGKRb DEi`vZvi t`qfT c0hvR` ntej Ab`f`i t`qfT c0hvR` bq| thgb, hw` GKwU c0keKiv nq th, 0Avcvbi wekte`'vj tq fvZ`nevi w0qtb metPttq` i`ZcyY`KviYwU wK wQj 0? GB c0kU i`argvT D`P gra`ngK cix`lvq cvk Ktit0 Ges wekte`'vj tq fvZ`ntZ Pvq Ggb DEi`vZvt` i t`qfT B c0qvr` nte, Ab`f`i t`qfT bq|

c0kgj v ev mv`lvKvi AbyPx c0vqfbi t`qfT c0qkt Ggb wK0z c0kæb0g`Y Ki tZ nq, hv wK0z DEi`vZvi t`qfT c0hvR`, wKŠ` Ab`f`i t`qfT bq| tKvbwU nqfZv gurnj vt` i mvt`_ m`u`wKZ Ges c`j`l`f` i Rb` bq| Avevi tKvb c0kæntZv i`argvT` ^wbtqwnRZ tckvi DEi`vZvt` i Rb` c0hvR` ntej | G aifYi c0kæntZv tK GK aifYi Avw/2tK Dc`vcv b Kiv nq, hv tK 0mvtc`q c0kæntZ | GKwU mvtc`q c0kæntZ GK aifYi c0Š-eU c0kæ hv i`argvT DEi`vZvt` i GKwU wettkl tkYxi Rb` c0hvR` nq| MtelK mKj DEi`vZvtK GKwU ce`Z`P` QvKbx (filter) c0kæ Kti wbtq GB wettkl tkYxi mvt`_ c0kæ m`u`K`bafY Ktib|

mvtc`q c0kæ(Contingency Questions): mvtc`q c0kæ i`wiz LpB Dc`thvMx| tKb bv, G aifYi i`wiz DEi`vZvt` i Rb` AewA`Z c0kæRAvmv Kiv Ges we`awšggj K cwi w`wz t`fK i`qv Kti| thgb, GKwU Rwi tc QvKbx c0kæntZ cvti th, 0Avcvbi wK wbtqngZ cvT Kvi Lei c`tob0? GB QvKbx c0kæmvtc`q c0kæ ntej cvti th, 0m`u`c0ZK tKvb NUbv m`u`tK`0Avcvbi cvT Kvq c`t0t0b? (GKwU msv`f`B weeiY w`b)0| QvKbx c0kæ DEiti mvtc`q w0Zxq c0kæ c0mw/2KZv`wzi nq| hviv c0g`c0kæ DEiti 0n`w0 ej teb, Zvib i`argvT w0Zxq c0kæ Reve t`evi Rb` c0mw/2k nteb| AZGe, QvKbx c0kæ DEi`-`dv nte: 01. 0n`w0 (wbtqge c0kæ DEi w`b); 2.0bv0 (3 b`af c0kæhv)0| mvtc`q c0kæb0g`Yi wevfbeiwz i`tqtQ| thgb,

c0kæ Avcvb wK KLbI gv`K`e` tmeb Kti t0b?

- niw
- bv

hw` n`u` nq, Zte MZ GK mBvtn KZevi Zv tmeb Kti t0b?

- GKevi
- 2-5 evi
- 6-10 evi
- Rwb bv

mvtc`q c0kætek Ruj ntej | hLb MtelK GKwU gra`tg wevfbeitkYxi DEi`vZvt` i m`u`Z`v hvPvB Kti Z` msM0h Ki tZ Pvb, ZLb wZvb Ruj mvtc`q c0kæ i`wiz AbjmiY Ktib| thgb,

cikæ Avciub wK Av`k@bMi cwi Kí bvi K_v i`tb.tOb?

- niu
- bv

hw` n`u nq:

K. Avciub wK Zv Abtgv` b Kti b, bv wK Kti b bv?

- Abtgv` b Kti b
- Abtgv` b Kti b bv
- gZvgZ tbB

L. Avciub wK KLbl Av`k@bMi evmxt` i mfvq wMtqtOb?

- n`u
- bv

hw` n`u nq, Kte Avciub G ai`yi mfvq wMtqtOb? _____

g`wU² cikæ (Matrix Questions): cikæZwj Kvi GKwaK welq GKmvt_ DEi t`evi Rb` GKwU wba`wi Z cš-eÜ DEi gvj vq g`wU² cikæ`eüZ nq | G ai`yi g`wU² i xwZ welq, tji vi Dc`rcb Kiv tK mrvqZv Ki tZ cvti | cšqkt, GKRb Mtel K Ggb cikæKi tZ PvBteb th, tm mKj cškie DEi tji v thb GKB ai`yi tkYxfj³ nq | wetkl fite, hLb j vBKwU² gvc bxi gva`tg DEi -` dv e`eüZ nq, ZLb G ai`yi Awl/2K e`envi Kiv nq |

cikæ bxtPi cšZwU e³te`i cxtk wbt`R Ki`b, Avciub wK welqe` tji vi mit_ 0GKgZ0, 0m=üYfite GKgZ0, 0w0gZ0, 0m=üYfite w0gZ0 tciY Kti b, ev 0m×všAxb0 i`tqtOb?

		m=üY ⁰ GKgZ	GKgZ	m×všAxb	w0gZ	m=üYfite w0gZ
K.	mšym`g tbi Rb` Avil KvhRi AvBb cšqb Kiv DvPr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L.	evsj vt`tki cjj ktk h_vh_fite A t`imw4Z Kiv DvPr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M.	mšymxt` i tK mivmwi AKi`tj B wj Kiv DvPr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DEi -` dvi Awl/2K (Format of Response-Categories)

DEi -` dv Dc`rcb i Rb`, wetkl Kti cš-eÜ cškie t`tt, weifbawekí i xwZ e`eüZ ntq v`tk | GKwU cškie m=te` DEi -` dvi mvgtb 0wUK0 ev 0m=ü wPý t`evi Rb` GKwU Ni ev GKwU tiLv Dc`rcb Kiv th tZ cvti, A_ev 0eEvKvi0 Kivi Rb` msL`v ev A`ji e`envi Kiv th tZ cvti | wel qwU GKwU D`vni Y w` tq wbtgac0 k0 Kiv ntj v |

cikæ Avciub wK G gütZ`Ab` GKwU Pvkix L`RtOb?

- niu ev ___ niu ev K. niu ev 1. niu
- bv ___ bv L. bv 2. bv
- Rwb bv ___ Rwb bv M. Rwb bv 3. Rwb bv

Zte, GB weKí ,tj vi gta` GKwU wbw`Θ Nti ŌUUKŌ ev ŌμmŌ vPy t`evi i xwZwU meŷPŷq KvHŷi
djvdj cŌvb Kti eŷj MtelKiv gtb Ktib| KviY, wbw`Θ Ni t`qv _vKtj DĒi`vZvtK ŷúó
I mwK DĒi w`tZ eva` Kti |

mivisk

cŷgvj v wbgŷY ktāi web`vm, cŷkie AwŷK, Abγg I DĒi-`dvi AwŷK LpB ŷi`ZcY©
welq| ktāi web`vm hw`h_vh_ bvnq, Zvntj fj DĒi Avmvi mgn mŷtebv _vtK | eZŷvb
cvŷV gj Zt G welq ,tjv wbtq Avtj vPbv Kiv ntqtQ| Avgiv t`tLwQ th, Abγvbgj K Ges
A`^Q cŷkeDĒi`vZvtK DĒi`vtb wKfvte weeZKi Ae`vq tdtj | wŷ-gŷx cŷke cŷYv`bvgj K
cŷkel ŷúkŷvzi cŷkecwi nvi Kiv DĒg| MtelKtK gtb ivLtZ nte th, tKvb aitŷi Z`
DĒi`vZv w`teb Zv wbfŷ Kiŷe cŷkie aitŷi Dci |

cvfVvEi gj`vqb

`be⁹³K c0ke

mWVK DEti i cvtk WJK (v) wPy w`b -

1| c0kK mnR ntZ ntj :

- K. wel qtK mnR ntZ nte
- L. c0k0m vavfvl v e`envi Ki tZ nte
- M. c0k0GKwJ avi Ytk enb Ki tZ nte
- N. DEi`vZvi w`tk j` ti tL c0k0vqb Ki tZ nte|

2| wbg0vti DEi cvl qvi m0tebv`vtK:

- K. Ac0ZKi wel q wbtq c0k0vj v`Zwi ntj
- L. `ukRvZi wel q wbtq c0k0vj v`Zwi ntj
- M. c0cvZgj K wel q wbtq c0k0vj v`Zwi ntj
- N. Dcti i me|

3| mvtc0 c0ke i wZ:

- K. AewAZ c0k0R0vmv Kiv t`tk wei Z ivtL
- L. AewAZ c0k0vqtb mnvqZv Kti
- M. we0wšej K c0k0vqtb mnvqZv Kti
- N. L I M|

msv0B c0ke

2| `ukRvZi c0k0vj v wK?

3| c0k0vj v`Zwi tZ c0ke Awztki` i`Zi wK?

i Pbvj K c0ke

1| D`vni Ymn c0k0vj v`Zwi tZ c0ke web`vtmi ai Y Avtj vPbv Ki`b|

2| eisj vt`tki mgvR Mtel Yvq tkvb aitYi ktai mgvni` i`Zi cvl qv DvPZ etj Avctb gtb Kti b? Avcbvi DEti i` ct0 h³ w`b|

čĕĕvj v ev mvŕŕvrKvi AbjnPxi mvavi Y AvwzK
General Format of a Questionnaire or an Interview Schedule

GB cvW tkŕl hv Rvbn hvte —

- vbt` kŕej x
- Dc`vcbv Ges m34v
- AvKvi l`N©
- fvgKvgj K e3e` ev cŕQ` cŕ
- čĕĕvj v ev mvŕŕvrKvi AbjnPx cŕqŕtbi Rb` GKw vbt` ŕKv

vbt` kŕej x (Instructions)

DcvĚ msMŕni nWZqvi vbgŕYi mgq AvŕiKw Dcv`vb ſi`ŕZi mvŕ_ weŕPbv Kiv cŕqvRb Ges tmw nŕjv cŕZw cĕĕev cĕĕŕŕQi mvŕ_ cŕqvRbxq vbt` Rvej x cŕqb| th mKj cĕĕe`ĚvL`vZ bq, tm mKj cŕĕĕe mvŕ_ vbt` Rvej x mshŕ Kiv AZ`vek`K| tmw h_vh_ DĚi`dvŕK eĚvKvi Kivi gZ mij ŕ_ŕK GK ſ_ Q DĚi`-` dvŕK ſg Abŕvqx AMŕaKvi cŕvb Kivi gZ RwJ nŕZ cvŕi| hLb mvŕŕvrKvi AbjnPxi gva`ŕg Z` msMŕ Kiv nq, ZLb mvaviYZt vbt` Rvej x ſ_ŕjv _vŕK mvŕŕvrKvi MŕYKvixi Rb` Ges tm_ŕjv cŕqkt mŕŕŕB nŕq _vŕK| DĚi`vZv hLb GKw DĚi` cŕvb Kŕib, ZLb mvŕŕvrKvi MŕYKvixi Rb` wK KiYxq, KLb we`wi Z DĚi`i Rb` ŕcŕmwnZ KiŕZ nŕe, A_ev wKfvŕe GKw cĕĕK e`vL`v Kŕi eŕvŕZ nŕe, Zv G mKj vbt` Rvej xi gŕa` eYŕv Kiv _vŕK| Gi dŕj, DĚi`vZvi th ŕKvb cĕĕe DĚi` mvŕŕvrKvi MŕYKvixi cŕŕŕ ŕ`qv mŕe nq|

wKŕ` DĚi`vZv KZŕ čĕĕvj v cŕŕYi ŕŕŕŕ vbt` Rvej x ſ_ŕjv _vŕK DĚi`vZvi Rb`| čĕĕvj v cŕŕYi mgq mrvh` Kivi Rb` DĚi`vZvi mvgtb mvŕŕvrKvi MŕYKvix Dcv`Z _vŕKb bv| dŕj, hv` ŕKvb cĕĕeA`úo ev A`^Q _vŕK, Zŕe Zv fj DĚi`-` dvŕK wŕvŕZ Kŕi ŕdŕŕZ cvŕi| AZGe, DĚi`vZvi KvŕQ ŕcŕi Z čĕĕvj vi ŕŕŕŕ h_vh_ l mŕbw`ŕ vbt` Rvej xi Aŕŕŕŕ weŕkl fŕŕe ſ_ i`Zcŕŕŕ tm_ŕjv čĕĕvj v ev Gi Abŕ`Q` ſ_ŕjvŕK cwiŕPZ Kivŕbvi Rb` mvavi Y vbt` Rvej x ŕ_ŕK cŕZw cĕĕe cŕe`mŕbw`ŕ weei Y chŕ-nŕZ cvŕi |

h_vh_ vbt` Rvej x Dbz gvbm`úbeDcvĚ msMŕn weŕkl mrvqK fvgKv cvj b Kŕi| AZGe, cŕZw čĕĕvj vq (Zv DĚi`vZv KZŕ cŕYKZ ŕnvK, ev mvŕŕvrKvi MŕYKvix ŕvŕi cŕYKZ ŕnvK) Aek`B mŕúo vbt` Rvej x _vŕKŕZ nŕe| cĕĕe DĚi` ŕ`evi Rb` wbaŕi Z Nŕi ŕUKŕ wŕvŕŕ w`ŕZ nŕe, bv wK ŕŕmŕŕ wŕvŕŕ w`ŕZ nŕe, bv wK ŕKvb msL`vŕK ŕeĚvKvi ŕ KiŕZ nŕe, bv wK DĚi`ŕK eYŕv Kŕi wj LŕZ nŕe, Zvi mŕúo vbt` R _vŕKŕZ nŕe| thLvŕb cŕhvR` tmLvŕb fvgKvgj K gŕŕe`i Dŕj _vŕKŕZ nŕe| Mŕel K cĕZcŕŕŕ wK Pvb, Zvi GKw fvgKv w`ŕq`i` Kiv Dŕŕ| čĕĕvj v hv` weŕfŕeAbŕ`ŕŕ` wef` _vŕK (ŕhgb, ivR`wZK gŕbvŕve, agŕe gŕbvŕve, cUfvggk K Z`, BZ`w`), Zŕe cŕZw Abŕ`Q` ŕK GKw mŕŕŕŕ e3ŕe`i gva`ŕg Gi weŕqe` Ges Dŕŕ k`ŕK cwiŕPZ KiŕZ nŕe| ŕhgb, ŕGB Abŕ`ŕŕ` wKŕ cĕĕe gva`ŕg Avgiv Avcbvi gŕZ meŕŕŕq ſ_ i`ZcŕŕŕmŕgŕRK mŕm`vej x mŕúŕK`RvŕŕZ Pvbŕev? ev ŕŕh mKj weŕq vbt`q Avgiv Avŕj vPbv KiŕQ, GB Abŕ`ŕŕ` Zvi gb`weŕŕ weŕq mŕúŕK`Avcbvi KvŕQ wKŕ RvŕŕZ Pvbŕevŕ|

†Kvb GKwU wbu` 0 c0kwh` Ab`vb` me c0kaet`_†K wfbæng, †m †¶†† h†_vchj³ DËi cvevi Rb` we†kl wbt` Rvej x c0vb Kiv evÄbrq| †Kvb c0kæ †¶†† GKwaK DË†i mæebv _vK†j , M†elK hw` †Kej GKwU DËi Pvb, Z†e Zv c0kæmj`úófv†e D†j †K†Z n†e| †hgb, 0c0vb KviY0 ev 0me†P†q fv†j w0 DËiw†Z wJK w`b| †ggjK c0kæ †¶†† wbt` Rvej x` `úófv†e †`l qv _vK†Z n†e| †hgb, 0me_†j w0, 0c0_g l w0Zxq0, 0c0_g l †kl0, 0me†P†q „i“ZcY0 Ges 0me†P†q Kg „i“ZcY0 DËiw†Z wJK w`b| †Kvb c0kæev c0kæ`Q hw` †Kvb DËi`vZvi †¶†† c0hvR` bv nq, †m †¶†† †mB c0kæK ev c0kæ`Q†K ev` w`†q c0mw†K l c0hvR` c0kæDj çb Kivi Rb` mj`úó wbt` Rvej xi c0qvRb c†o| †hgb,

c0kæ Avcub wK KLbl RivZiq ev AvÄij K wber†b †fiU w`†q†Qb?

- n`u (Avcub 14-25 bæ† c0kæ DËi w`b)|
- bv (mivmw 8g c0vi 26 bs c0kæ†j hvb)|

Dc`vcbv Ges m3/4v (Appearance and Layout)

c0kæj v ev mv¶vrKvi AbjmPx c0q†bi Aw†zKwU c0kæ: c0kæZ l kæwb`v†mi gZB „i“ZcY0 mvaviYfv†e, c0kæj v ev mv¶vrKvi AbjmPx we`Z Ges †MvQ†bv n† qv DvPZ| M†elK†` i g†a` c0kæj v ev mv¶vrKvi AbjmPx†K GKwU wbu` 0 mS`K c0vi g†a` mgvex` ivLvi GKwU c0vZv j`¶` Kiv hvq| KviY, Abw†Á M†elK†` i g†b memgq GKwU AvksKv KivR K†i th, Zv†` i c0kæj v ev mv¶vrKvi AbjmPx †eva nq L†e †ekx eo n†q hv†e| d†j Zviv c0kæ†j v†K GK jvB†bi g†a` msKwPZ K†i Avb†Z †P0v K†ib, ev c0kæK msv¶jB K†i †d†j b Ges hZUv mæe Kg c0v e`env†i †P0v K†ib| G mKj †K†Kj c0qv†Mi †P0v Aw†ePbv†hZ Ges Ggb wK, †¶†† we†k†l wec3/4bK n†q _v†K| G ai†Yi msKwPZ l Kg RvqMvi g†a` Aw†K c0kæmvR†j DËi`vZv nq†Zv fv†j †Kvb c0kæev` w`†q †d†j †Z cv†ib, ev †Kvb „i“ZcY0 msv¶jB c0kæj ¶` bv† K†Z cv†ib, Drmvn nmw††q †d†j †Z cv†ib Ges äw†sgjK DËi w`†Z cv†ib| `†y DËi`vZv bq, w†lqvU mv¶vrKvi M0YKvixi †¶†† l c0qvR`| KviY, L†e m1/4PZ mv¶vrKvi AbjmPx mv¶vrKvi M0YKvixi `w0kw³ l gb†hv†Mi Dci Aw†wi³ Pvc †d†j, hv Zv†K wbi`rmw†Z Kivi gva`†g Dcv†Ei gv†bi Dci FYvZK c†ve †d†j †Z cv†i| ZvB, c0kæj v ev mv¶vrKvi AbjmPxi Aw†zKwU n†Z n†e`úó Ges we`Z|

GKwU c0kæj v ev mv¶vrKvi AbjmPx†K Aek`B Qvc†bv n†Z n†e, mnRcvW` n†Z n†e Ges †`L†Z AvKl¶xq n†Z n†e/

c0kæ: Dc`vcbv l m3/4vi e`vcv†i †Kvb evav aiv w0qg †bB| Z†e G c†h†z wKQz mvaviY wbt` k0v GKwU gvbmæ`ubæc0kæj v ev mv¶vrKvi AbjmPx c0q†b mrvnh` K†Z cv†i| †hgb, GKwU c0kæj v ev mv¶vrKvi AbjmPx†K Aek`B Qvc†bv n†Z n†e, mnRcvW` n†Z n†e Ges †`L†Z AvKl¶xq n†Z n†e| wbt` Rvej x_†j v`úó K†i eo A¶††i ev c0qvRb†eva wfbæai†Yi gv¶¶††i Qvc†Z n†e| AvKl¶xq g`†Yi cvkvcwk, w†wfbæc0kæ DËi`dvi g†a`Kvi`††Zj w†lqvU „i“ZcY0 GKwU c0kaet`_†K Ab` c0kæ g†a` ch0B d†Kv RvqMv ivL†Z n†e, hv DËi`vZv ev mv¶vrKvi M0YKvix†K c0kæ†j v†K`úófv†e AbjmiY K†Z mrvnh` K†e Ges M†elK†Kl DËi we†k††Yi mgq mrvnh` K†e|

Ab†`Q` ev cw††`Q†` i w†lqev`, ev c0kæj v/mv¶vrKvi AbjmPxi `N`© ev c0kæmsL`v w0w†k†l , c0kæ`dv_†j v avivem†K†ve †ggK bæ†fv³ n†Z n†e| DËi c0v†bi Ni_†j v†K GK jvB†b mw†ev` ivLv †h†Z cv†i| G†Z, GKw†K †hgb DËi`vZvi Rb` DËi c0vb mnR n†e Ges Ab`w†K †Zgb M†elK†K Z`_†††i K†Z mrvnh` K†e| M†elK hw` †Kvb KwæúDuv† †c0M0g e`env†i K†Z Pvb, †m †¶†† c0vi Wvb w`†K msv†KZxK††Yi Rb` wKQwv Lw†j RvqMv ivL†Z n†e| c0kæ w†v†m l Abjµg†K h†Z†e mv†_ ch0j vPbv K†Z n†e| mvaviY Ges mnR

cłkgyj v w`tq`ii` KiłZ nte Ges axti axti młbw`θ I RuUj cłn½,tjvi w`tK G,tZ nte|
`úkRvZi melq,tjv cłkgyjvi tktli w`tK ivLłZ nte| metktl, cłkgyj włtK fvłj vfvte
chłj vPbv Kti fvteZ nte th, MłtelK włłR GB cłkgyj v łctj Zvi AbfłwZ łKgb nłZv?
DŁi`vZvi KvtQ thfvte wZwb cłZ`vkv Kiteb Ges hv cłZ`vkv Kiteb, wZwb włłRI wK
GKBfvte cłZwłqv e`3 Kiteb?

AvKvi I `N°(Size and Length)

tKvb cłkgyj v ev młłvrKvi AbjmPx GZ `xN°nl qv DłPr bq, hv cwi Pvj bv KiłZ AłbK tenk
mgq tjłM hvte| `xN°ev Amsj Młecłkgyj v ev młłvrKvi AbjmPx młłvrKvi MłhYKvix Ges
DŁi`vZv DfłtqiB Drmvm bó Kti łdtj | AZGe, MłtelYvi Dłłk` cłłYi Rb` cłkgyj v ev
młłvrKvi AbjmPx wK hZUKz`xN°nl qv cłqvRb Zv Zvi łPłq tekx nl qv DłPr bq| cłkgyj vi
`łN° młgv wbałłłYi tKvb mnR Dcvq łbB| Złe GłU włwłZ Kti ej v hvq th, cłkgyj v ev
młłvrKvi AbjmPx hZ młłłł nte, młłvrKvi MłhYKvix Ges DŁi`vZv DfłtqB ZZ `łQ`
łeva Kiteb| GLvłb GłU głb ivLłZ nte th, młłłł cłkgyj v ev młłvrKvi AbjmPx
DŁi`vZvi Rb` DctłhMx nłZ cvłi, wKŠ` Zv MłtelYvi Dłłk` cłłYi Rb` hł_ó bvl nłZ
cvłi | Ggb wK, Zv młłvrKvi MłhYKvixi Rb`I Dchłł bv nłZ cvłi | KviY, AwZ młłłł
cłkgyj v DŁi`vZvi młł_ młłvrKvi MłhYKvixi młłłł`łctłbi gva`tg cY°młłłłwZv
Av`vtqi młłłł Kvgłq ł`q | %N°I cwi łai w`K ł`łK th tKvb cłkgyj vi GKłU młgvłi Lv
_vKv DłPr | młavi Yfvte, GKłU młłvrKvłi i `N°Avav NłUvi tenk nl qv DłPr bq| Ggb wK,
GB mgqUKz tKvb DŁi`vZvłK Kłš-Kłi łdj łZ cvłi | GłU Ggb GKłU Dfłq mskU th,
młłłł cłkgyj v GKłłłK MłtelYvi Dłłk`łK e`nZ KiłZ cvłi, Ab`w`łK `xN°cłkgyj v
młłvrKvi MłhYKvix I DŁi`vZvłK Kłš-I łei`3 Kti Zj łZ cvłi |

*cłkgyj v ev młłvrKvi AbjmPx
wK hZUKz`xN°nl qv
cłqvRb Zv Zvi łPłq tekx
nl qv DłPr bq|*

*GKłU młłvrKvłi i `N°
Avav NłUvi tenk nl qv DłPr
bq|*

fłvgKvgj K e`3e` ev cłQ` cł (Introductory Statement or Cover Letter)

cłkgyj v ev młłvrKvi AbjmPx wbgłłYi ci th KivRuU Kiv cłqvRb, tmłU nłj v cłkgyj vi Rłb`
GKłU cłQ` cł Ges młłvrKvi AbjmPxi Rb` GKłU fłvgKvgj K e`3e` tj Lv| GłU cłkgyj vi
łłłłł metłtq „i`ZcYł KviY, cłkgyj vi gva`tg MłtelYv cwi Pvj bvq D`P nłti DŁi cvł qv
tek Kłwb nq| GKłU cłQ` cłłłK DŁi`vZvi młł`vi, ev DŁi`vZv KZłł mł th tKvb
cłZelłKZv AwZmłłł mdj nłZ nte| cłkgyj vi łłłłł młłłLZ cłQ` cł Ges młłvrKvi
AbjmPxi łłłłł MłtelYvi Dłłk` młłłłłGKłU Kvhłł I młłłłł fłvgKv cł vb DŁi cł vłbi
nłłłK ełł KłłZ mrvnh` Kłi | GKłU cłQ` cł cłkgyj vi młł_ młłłł Kłi DŁi`vZvi KvtQ
cłvłłbv nq, thłłłZ MłtelYvi łelqe` Ges Dłłk`łK e`vL`v Kiv nq| GB fłvgKvgj K cłłU
DŁi`vZvi młł_ MłtelłKı thłMłłłłł `łctłbi GKgvł gva`g| AZGe, GłUłK hłZłe młł_
łj łłZ nte, hv DŁi`vZvi Rb` cłqvRbxq Z` mieivn Kite Ges ZvłK DŁi cł vłb Drmvmx
Kti Zj łe|

GKłU fłvgKvgj K cłł th mKj łelq Ašfłł Kiv cłqvRb, tm,tjv nłj v: MłtelYv cłłłł i
Dł`v`3vi cwi wPvZ, MłtelłKı bvg, wKvıv I łUłj łdvb błł, DŁi`vZvł`i wbełłb c`xłZ,
MłtelYvi Dłłk`, MłtelYvi djvđj e`enłłi łłłł, DŁi`vZvi cwi wPvZi łMłcbxqZv i łłvi
AłłKvi I cłłKZ cłkgyj v łdir cłvłłłvi Zwi L | młłvrKvi AbjmPłłZ łj łLZ fłvgKvgj K
e`3łe`i Zj bvq cłkgyj vi cłQ` cłłłK AłbK tekx w`włłZ nłZ nte| KviY, młłvrKvłi i
j łłł młłvrKvi MłhYKvix ZvrłłłYK e`vL`vi Rb` DŁi`vZvi młłłL Dcw`Z _vłKb | wKŠ`
cłkgyj v cłłYi mgq DŁi`vZvłK mrvnh` Kivi Rb` łKD _vłKb bv | AZGe, cłQ` cł
GKmłł_ DŁi`vZvłK Dłł Kłi Ges MłtelYvi Dłłk` ev`evłłł mrvnh` Kłi |

*GKłU fłvgKvgj K cłł th
mKj łelq Ašfłł Kiv
cłqvRb, tm,tjv nłj v:
MłtelYv cłłłł i Dł`v`3vi
cwi wPvZ, MłtelłKı bvg,
wKvıv I łUłj łdvb błł,
DŁi`vZvł`i wbełłb c`xłZ,
MłtelYvi Dłłk`, MłtelYvi
djvđj e`enłłi łłłł,
DŁi`vZvi cwi wPvZi
łMłcbxqZv i łłvi AłłKvi I
cłłKZ cłkgyj v łdir
cłvłłłvi Zwi L |*

cġgġj v ev mġlvrKvi AbjnPx cġqġbi Rb` GKwU wbt` ġKkv (A Checklist for Constructing Questionnaire or an Interview Schedule)

1. Avcbvi wK Rvbn cġqvRb tm welq wmxvš-wbb| A_ġ, th mg-welq Z_` iKvi Zvi Zvwj Kv cġqb Ki`b| Avcbw wbtRtK wRÁvmv Ki`b, tKb GB Z_` cġqvRb? cġxZ Zvwj KwU cixġlv Ki`b Ges th cġ½,tjv MtelYvi mvt_ mi vmi má,³ bq, Zv mwi tq tdj p|
2. cġgġj v/mġlvrKvi AbjnPx wK G tġtġ Z_` msMġni metPtq fij Dcvq? Ab`vb` weKí,tjv wetePbv Ki`b| Z_` msMġni gva`g wnmvte mġlvrKvi tKŠkj e`eüZ ntj mġlvrKvti i aiY wbePb Ki`b| KvVrtgve x mġlvrKvti tKej KwVrtgve x DEi Avmte, Avcbw wK ZvB Pvb?
3. cġkġ aiY mátK^mvš-wbb| cġgġj v wK cġš-tLvj v, ev cġš-eÜ aiYi nte? tm,tjv wK tgšwLK, msL`vgj K, QKex, ev gZvgZgj K nte? G mKj welq h_vh_wmxvš-MġY Kiv _i`ZcYġ KviY, cġZ`K aiYi cġkġ Rb` wfbwġtgi wekġY cġqvRb ntZ cvti |
4. cġgġwġi`i` Ki`b| cġgġj v wKQz Avj v`v Avj v`v UKtġv KwMtr wj tL tdj p, hvZ cġi µg Abhvqx mvrvtZ mġeav nq|
5. cġZw cġkġ kā web`vm j ġ` Ki`b| kā,tjvi gġa` tKvb ō`Zv, Awb` ōZv ev Abgyb itqtQ wK? cġkġ gva`tg DEi`vZvtK wK wKQz`šiy Ki tZ ej tQb? Zviv wK Zv`šiy Ki tZ mġg nte? DEi`vZvi Kv tQ wK Ggb wKQzPvBtQb, hv Zvi bvl Rvbn_vKtZ cvti? tKvb wġgġx, cġbv`bvgj K, Abgybgj K, ev Avcbwġki cġkġitqtQ wK? fvlv mnRteva` ivLp| Ggb tKvb kā e`envi Ki t**eb** bv, hv DEi`vZv bvl eštZ cvti b|
6. hLb Avcbw cġkġ kā web`vm Ges mwK aiY mátK^msō nteb, tm,tjvtK mwK µg Abhvqx mvrvb| mste`bkj cġ½,tjvtK cġgġwġj Kvq cġi i w`tK ivLvB DEg|
7. cġmšp vš-wbt` Rvej x,tjv wj tL tdj p| DEi`vZv wKfvte DEi w`teb tm e`vcvti Zvi`úó avi Yv_vKtZ nte| mġlvrKvi AbjnPxġ tġtġ, DEi`vZv hw` mntr cġqvRbxq Z_` cġvb Ki tZ mġg bv nb, Zte ZvtK mġlvrKvi MġYKvi x tġmwinZ Ki t**eb** wK bv tm welq mġúó wbt` Rbv_vKtZ nte| wbt` Rvej xtK`úófvte Dc`vcb Ki tZ nte| cġqvRb ntj, tm,tjv wfbwġyġtġi A_ev tKvb wekġl`v**tb** cġkġ Kti t`Lv tZ nte| mstKZxKi tYi Rb` Wbw`tK Lwj RvqMv ivLteb wKbv tm welq wmxvš-wbb|
8. cġgġj vi máv Ges Dc`vcbv wbtq fvep| gġġwġi KtK mġúófvte wbt` R w`tZ nte| KviY, cġgġj vi Dc`vcbwU tKgb nte, Zv wK Kivi`wqZi Avcbvi, gġġwġi tKi bq| cġgġj v QvcvZ w`b|
9. cixġvgj Kfvte cġgġj v cġY Ki`b| wbePZ bgbvi gZB Kv tġv Kv tQ GB cġgġj v cvvb| Zte Zv má bv ntj, cwi evi, eÜjevÜe ev mnKgġ`i mvrw` tbl qv hvq|
10. Avcbvi wekġYi cxwZ,tjv cġqvM Kti t`Lp| gvġ cuP/QquU cġgġj v wekġY Ki t**j** B eštZ cvt**eb** th, gġ MtelYvi wekġYi mgq tKvb mgm`v t`Lv t`te wK bv|
11. cixġvgj K cġgġj v cġY, DEi`vZvt`i gZvgZ Ges cġwġgK wekġYi AvtjvtK cġgġj vq cġqvRbxq mstkvab Ki`b| j ġ` Ki`b, hw` Avcbvi MtelYvi welq cġgġj v cġY AZ`waK mgq j vtM, Zte tft**e** t`Lp tKvb`dv**t**K ev` t`teb wK bv|
12. cġcwZZi Govt**vi** mteP cġvm Pjv b| Avcbvi hw` welqU i tKvb GKwU w`K mátK^ġ tKvb`p gZvgZ_vtK, Zte wekġl fvte mZR tnvb| Ab`tK D hw` AvcbvtK H cġw Kti b, ZLb Avcbvi DEi l wK GKB iKg nte?

mvisk

GB cıV Avgiv ckgjv ev mvŋvrKvi AbjnPxi †ŋ†ŋ th wbt` Rvej x_vKte tm wel q Ovovl ,
Dc`vc†bi aiY, AvKvi I `N`©wbtq AvtjvPbv K†iwQ| MtelK†K ckgjvi †ŋ†ŋ
mybw` 0fvte th wel q,tjv†K g†b ivL†Z nte, tm,tjv n†jv, ckgjv KZ `xN`nte Ges tmB
`†Nŋ g†a` MtelYvi th D†İk` wbaŋY Kiv n†q†Q, tm D†İk` Abhvqx ckeAšfß Kiv
n†q†Q wK bv| e`Ztc†ŋ, MtelYvi djvdj KZUKzh_vh_ nte, Zv wbfŋ Ki†e ckgjv ev
mvŋvrKvi AbjnPxi _YMZ gv†bi Dci |

cvfVvEi gj`vqb

be³K cke

mVK DEti i cvfk WJK (v) wPy w`b -

1| ckgj v ciYi tft th me wbt` Rvej x_vtK Zv:

- K. Mteltki Rb`
- L. DEi`vZvi Rb`
- M. mvrvKvi MhYKvixi Rb`
- N. Dcti i me|

2| cke tklw`tk mvavi YZt:

- K. msL`vgj K wel q,tj v_vKtZ nte
- L. eYvgj K wel q,tj v_vKtZ nte
- M. gj wel q,tj v_vKtZ nte
- N. ukRvZi wel q,tj v_vKtZ nte|

3| GKw mvrvKvfi i` Nmvavi YZt:

- K. 20 wubtu tewk nl qv DPr bq
- L. 30 wubtu tewk nl qv DPr bq
- M. 40 wubtu tewk nl qv DPr bq
- N. 50 wubtu tewk nl qv DPr bq|

msvB cke

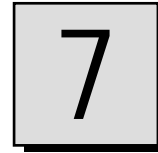
1| ckgj vi AvKvi I` N³muK³stftc wj Lp|

2| MtelYvq cO`cft i fvgKv wK?

iPvgj K cke

1| ejs vt`tki GKw AMhi Mtg MYgva`g mPZbZv cwi gvfc i Dft`tk` e`euZ mvrvKvi AbmPxi Rb` GKw fvgKvgj K e³e` i Pbv Ki`b Ges e³e`i h_v_Zv Avtj vPbv Ki`b|

2| Avcub wK gtb Kti b th, fvgKvgj K e³e` Qovov Mtel Yvi h_vh_ dj vdj cvl qv hvte br? DEti i`ctft hy³ w`b|



bgjvqvb c×wZ *Sampling Procedure*

MtelYvi Dfík`k`k mdj Kti tZvjvi j`f` thgb GKwU c`cvZnxb, wbf`thvM` I h_v_© DcvE msM`ni nwiZqvi wbg`Y Kiv c`qvRb, tZgwb h_vh_ DcvE msM`ni Rb` Kv`i KvQ t`_k Ges wKfvte DcvE msM`n Kiv nte, tmwU i`Zc`Y` KviY, Awf`ÁZvj ä mvariYxKi`Yi Rb` th`nZiMtelK`k mvariYZt mgM`Ki c`jiwUi cwiefZ`tmwUi GKwU Ask ev bgjv t`_k DcvE msM`n Ki`Z nq, tm`nZi tmB Astki ev bgjvi c`ZwbwaZ`kxj Zv wbtq c`k`e AeKvk _vtK| GB c`ZwbwaZ`kxj Zvi welqwu wbow`Z Kivi Rb` c`gZt, MtelYvi Dfík`i mvt_ m½wZc`Y`e`w³ ev tMv`xi wbe`Pb Ges w`ZxqZt, we`Avbm`S`Z bgjvqvb c×wZ AbjniY Kiv c`qvRb| mvgwRK MtelYvq e`eüZ bgjvqvb c×wZ`_tjvtK``wU enr cwiev`i wef³ Kiv hvq| GKwU ntjv Am`tebv bgjvqvb c×wZi cwiev`i Ges Ab`wU ntjv m`tebv bgjvqvb c×wZi cwiev`i | Am`tebv bgjvqvb c`ZwU GK`Ki wbe`PZ nevi tKvb wbow`Z tbB etj GB c×wZ`_tjv DcvE`i c`ZwbwaZ`kxj ZvtK wbow`Z Ki`Z cvti bv| Ab`w`_k, m`tebv bgjvqvb GKRB MtelK c`ZwU bgjv GKK ev Dcv`vbtK bgjvq A`S`f` nevi mgvb m`tebv wbow`Z Ki`Z cvtib| `ayZvB bq, c`ZwU GK`Ki wbe`PZ nevi m`tebwU KZUKi Zvi cwigvYwU wba`Y Ki`Z cvtib| GB cvtV G mKj welq wbtq we`wi Z AvtjvPbv Kiv ntq`Q| Zte welqe`i wj _vKvi Kvi`Y wKQz`wKQz`f`f`f, `mvgwRK cwimL`vb cwipwZ` (mgvRZÉj - 4) M`Si c`mw½K Astki mvt_ mv`k`_vKte|

GB BDwb`U Avgiv th c`w`_tjv Aa`qb Ki`ev, tm`_tjv ntjv:

- ◆ c`w - 1 : bgjvqvb`i h`³
- ◆ c`w - 2 : Am`tebv bgjvqvb c×wZ
- ◆ c`w - 3 : m`tebv bgjvqvb c×wZ - 1
- ◆ c`w - 4 : m`tebv bgjvqvb c×wZ - 2
- ◆ c`w - 5 : bgjvi AvKvi wba`Y

bgpvqtbi hy³
Logic of Sampling

GB cW tktl hv Rvbr hrte —

- bgpvqb GKwU Rxbteva
- bgpvqb tKb
- bgpv ebrg mgMk
- bgpvqtbi tgšwj K cZ`q I c`vej x
- bgpvqtbi mjeav
- bgpv I Abgbr ams-
- bgpvqb cxiZi cKvif`

bgpvqb GKwU Rxbteva (Sampling is a Way of Life)

bgpvqtbi aviYv Avgv`i cOZ`wnK Rxbte bZb bq Ges AcwiwPZI bq| thgb, fvZ wmx ntqtQ wK bv, Zv tevSvi Rb` nmo t`tk GKwU ev` wU fvZ wUtc cixqv Kivi tKSkj wU Avgiv` xNfb ati t`tl AvmUQ| emvYtR`i RMtZ e`emvqxiv Zvt`i Awakvsk tjb`b m`uv`b KtiQtb GK UKiv KvcO, wKQz gj`evb avZi, ev Lv` mvgMbi bgpv cO kfb i gva`tg| tKvb e`w³ GKwU tgvUi Mvox wKbtZ wMtq cixqv-Pvj bv (test-drive) Kti t`tlb th, thfvte wtpZv MvoxUi eYbv w`tqtQb, wK tmfvte Zv Pj tQ wK bv| hw` MvoxU cixqv-Pvj bvq KZKvh`nq, Zte tuzv gtb Ktib th, MvoxU fvzjv| evRvi RvZ Kivi cte`wefbæc`hvabx mvgMbtK bgpv cixqv Kiv nq| Pv, Kwdi` t` tfv`vt`i` t`i`i KivQvKwU ntqtQ wK bv, Zv Awf`A cixqvKvixt`i gva`tg bgpvwfwEK cixqv Kti t`Lv nq| Pvtqi` t` tevSvi Rb`, Pvj ev AvUvi` yMZ gvb tevSvi Rb`, ev i³ cixqv i Rb`, Pvtqi c`iv KivU, ev Pj -AvUvi c`iv e`v, ev kixt i c`iv i t`³ i cOqvRb nq bv| Aí cwi gvY t`tlb wmxvš-MbY Kiv hvq|` q e`w³ iv GB me KvR Ktib cO AvZ`wckjmx ntq| Zvt`i GB AvZ`wckjmi wOtb gj` Kvi YuU ntjv th, Zviv th mKj e`w` wbtq KvR Ktib, tm`tjv GZ mgjfc th, GKwU ev` wU bgpvB mgMk m`utK`m`uY`vte wbfj` aviYv w`tq`vtK| G`tjv bgpvqtbi m`vqvUv D`vniY ntj I G`tjvi cOmwZKZv Ab`Kvh` Gi meB bgpvqb cOqv i gva`tg mgMk m`utK`GK aiYi m`vavi YxKiY| G mKj KgRvtU bgpvqtbi gj` bxiZwU AbyniY Kiv ntq`vtK|

wKs` Avgiv th ev`eZvq evm Kwi, Zvi mKj Dcv`vb memgq mgjfc nq bv| Amgjfc Dcv`vb m`nj Z wltq| bgpvqtbi cOqvM ntq`vtK| thgb, GKwU fvZ`cixqv i gva`tg QvI-QvIxt`i wckje`vj tq fvZ`nevi thvM`ZvtK cwi gvc Kiv nq| GKwU m`vqvKviti gva`tg PvKix cO`x`i thvM`Zv wbaH Y Kiv nq| fvZ`cixqv I tgšwLK cixqv i gva`tg thvM` cO`x`beP`bi A`GB bq th, hviv wbePZ nqub Zviv A`thvM`| Zte GUKzejv hvq th, GKwU bgpv cixqv wbePZ cO`x`v H cixqv i wfwEtZ thvM`| wOZxq GKwU cixqv wbtj nqtZv t`Lv hrte th, A`tbK cteP Zwj Kv t`tk ev` ctoQ Ges bZb bvg hy³ ntqtQ| GtZ Kti cixqv i cke`ev tKSkj i h`v`Zv wbtq cke`etZjv thtZ cvti| wKs` hLb t`Lv hrte th, wKQz wKQz bvg` tUv Zwj Kvi gta`B i tqtQ, ZLb cke`ev tKSkj i e`vcvti wKQz Av`veib nI qv hrte| GB D`vniY` wU i gva`tg bgpvqb m`utK`Avgv`i tKvb ce`Avb bv`vKv mtEj| bgpvqb ZtEj

`ŃU tgšvj K mġ mgw_Ź ntqtQ| c`gZt, cwi gvġci nwiZqvġi gġa` āwš-Ges wŃZxqZt, GKwU bgbv t_ġK Ab` bgbvi gġa` cŃš gvġbi cv_Ŕ`|

Avqvġ i mgvġR, cŃv Abjvqx wetqi cġe`cvġx Ges cvġ t` Lvi GKwU ti l qvR AvġQ| GKw`b ev `Ńv b t`ġLB Avgiv cvġx ev cvġ m`úġK`m×vš-MŃY Kġi _wġK| tmB m×vġšġ wfvĒġZ wetqi gva`tg cwi evi MvB Kiv nq cġiv Rxeġbi Rb`| GwU bgbvqvġbi GKwU D`vniY| th me mgvġR cvġ ev cvġx wġġRiv cŃv` Kġi wetq Kġi, tmLvġbi GġK Acti i mvġ_ tgj vġkvi gva`tg eġšġZ tPŃv Kġi th, Zvġ i gġa` `xN`vqx m`úġK`Mġto DVġe wġK bv| G_ġj vġ bgbvqvġbi D`vniY| G aiġYi AġbK D`vniY t`qv thġZ cvġi | bgbvqvġ Ges Gi wfvĒġZ m×vš-MŃY aviYwU Avgvġ i Rxeġbi eŃ NUBvi mvġ_ hġ| AZGe, GwU ejġ fj ejv nte bv th, bgbvqvġ i agvġ cvġ` cġ#Kġi wġġiU mv`v Kvġj vġ Lv bq, GwU GKwU Rxeġveal eġU|

*bgbvqvġ Ges Gi wfvĒġZ
m×vš-MŃY aviYwU
Avgvġ i Rxeġbi eŃ NUBvi
mvġ_ hġ| AZGe, GwU
ejġ fj ejv nte bv th,
bgbvqvġ i agvġ cvġ` cġ#Kġi
wġġiU mv`v Kvġj vġ Lv bq,
GwU GKwU Rxeġveal eġU|*

bgbvqvġ tKb (Why Sampling)?

DcvĒ msMŃni nwiZqvġi wbgġYi ci, DcvĒ msMŃ KivB ntjv cieZġthšwġK c`ġġc| A_Ŕ, MġelYv mgm`vq Dġ wCZ cŃkġġj vġK AwfĀZvj ä Abjvġvġbi jġġ` cwi gvġci nwiZqvġiU hLb wbgw_Ź ntq hvq, ZLb cŃmġK DcvĒġK msMŃ Kivi KvR ii" Kiv hvq| DcvĒ msMŃ Kivi wewfbwDġi k` itqtQ| KLġbv Zv Kiv nq, mvgwRK cġĀmgġni `ewkŃ` eYŃvi Rb`, KLġbv G me `ewkŃ`i gġa` m`úġK`wBYġi Rb`, Avevi KLġbv Zv Kiv nq, Abġi cixġvi gva`tg tm mġKj m`úġK` eġvL`v l fweġ`ŃvYxi cġġ AwfĀZvj ä mg_Ń thvMġvbi Rb`| DcvġEi mg_Ńcġ GB eġvL`v l fweġ`ŃvYx_ġj vġK Aek`B maviYxKiYthvM` ntZ nġe|

wġK` cŃkġġj v th, maviYxKiYi jġġ` DcvĒ msMŃni Rb` wġK cġiv RbġMvŃx ev mgMġġK MġelYvq Ašfġ KġiZ nġe, bv wġK Gi GKwU AskġK wbeġb Kġiġ B Pj ġe? G wġlġq m×vš-MŃY Kiv MġelġKi Rb` „i“ZcYġ maviYfġe, MġelYv mgm`vi Ńv msĀwqZ me chġeġġY, me DĒi`vZv, ev me NUBvejx ġ_ġK DcvĒ msMŃ Kġi maviYxKiY Kiv nq bv| AwfĀZvj äfġe mgw_Ź maviYxKiY maviYZt, AvsġK Zġ`i Dci wfvĒ KġiB Kiv nq| A_Ŕ, Gi Rb` Zj bvgġ Kfġe Aġ msL`K chġeġġY, DĒi`vZv, ev NUBvejġK e`envi Kiv nq| thgb, wbeġbġbi cġe`Aġ msL`K tġvU`vbKvixi gZvgġZi Dci wfvĒ Kġi gZvgZ Rwi cKvix fweġ`ŃvYx Kivi tPŃv Kġib th, cġiv tġvU`vbKvix RbġMvŃx cġKZ tġvU Abġvġbi mgq wġKfġe tġvU w`ġeb|

*AwfĀZvj äfġe mgw_Ź
maviYxKiY maviYZt,
AvsġK Zġ`i Dci wfvĒ
KġiB Kiv nq|*

AġbġK cŃkġKiġZ cvġib th, AvsġK Z` tKb? cġiv Z` wġtq MġelYv Kġiġ ġZv Zv Avġiv wġfġthvM` l h_v`ġdjvdj cvlqv hġe| Gi DĒi ejv hvq th, MġelYv mgm`vi mvġ_ m`úġK` mġKj wġkġġYi GKK ġ_ġK DcvĒ msMŃ Kiv Awakisk mgġq Am`e, Aev`e l AZ`š-e`qeuġ ntq _vġK| thgb, GKwU wekte` vj ġq 30 nvRvi Qvġ-Qvġx itqtQ| Zvġ i Mo tgav gvb wBYġi Rb` Zvġ i cŃZ`ġKi tgav gvb Rvbv cŃqvRb| wġK` Gi Kg enR AvKvġi mgMŃKi tġġġ, cŃZwU chġeġġY GKK m`úġK`Z` Rvbv memgq m`e bq| mYzi vs, G tġġġ enR mgMŃKi cŃZwvġZi Kġi, Ggb wġQymsL`K chġeġġY ġ_ġK mgMġK m`úġK`Z` msMŃ Kġiġ mgm`wġġK AġbK mnR Kġi tZvġj |

*MġelYv mgm`vi mvġ_
m`úġK` mġKj wġkġġYi
GKK ġ_ġK DcvĒ msMŃ Kiv
Awakisk mgġq Am`e,
Aev`e l AZ`š-e`qeuġ
ntq _vġK|*

wŃZxq KviYwU wġQwv w`šqKi gġb ntZ cvġi | maviYfġe Avgiv Rwb th, cġiv mgMġK ġ_ġK msMġxZ Z` ntjv cY`Z`| wġK` AwfĀZvj ä cŃvġYi wfvĒġZ MġelKiv t`ġLġQb th, AġbK mgq mhġZwbeġPZ bgbv t_ġK msMġxZ Z` cġiv mgMġK ġ_ġK msMġxZ Z` ġ_ġK AġbK DbzZi ntq _vġK, wġkġ Kġi hLb mgMġwU enR AvKvġi i nq| thgb, Av`gi gviġZ GKwU

*mhġZwbeġPZ bgbv t_ġK
msMġxZ Z` cġiv mgMġK
ġ_ġK msMġxZ Z` ġ_ġK
AġbK DbzZi ntq _vġK,
wġkġ Kġi hLb mgMġwU
enR AvKvġi i nq|*

wbwr` 0 fL`U`i mgM0Rb`Mv0x`K MYbv Kiv n`j l G`Z AeMYbvi gv`v (undercount) Kg
_v`K bv| Av`gi gvixi cwi e`Z`0bgbv Rwi tci gva`tg msMpxZ DcvE` memgq Dbz` gv`bi n`q
v`K| KviY, Kg msL`K e`w`i Kiv0 t``K DcvE` msM0h Ki`j, Zv mn`R w0q`S`Y Kiv hvq Ges
DcvE` w`k`h`Yi Mf`x`i hvl qv hvq| tm Kvi`YB Av`gi gvixi ci w`v`f`b`w`l`q`v`w`E`K bgbv
Rwi c Kiv nq| thgb, Kul Rwi c, Av`0mvgw`RK Rwi c, Lv` Rwi c, BZ`w` |

*mgM0Ki c0ZubwaZ`k`j
Ask, hv t`_`K mgM0K m`u`K`
m`vavi YxKiY Kiv nq, Zv`K
bgbv e`j Ges mgM0K t`_`K
c0ZubwaZ`k`j Ask w`Y`q
Kivi c0`u`q`v`K bgbv qb e`j v
nq|*

GKuW Astki Dci w`f`w`E` K`i w`k`h`Yi mKj GK`K`i Dci m`2 Dcmsnvi Uvbw m`e` nq, h`w`
tmB AskwU w`k`h`Yi mKj GK`K`i `e`w`k`o``K m`w`K`f`v`te c0ZubwaZ`i K`i | m`vavi Y`f`v`te,
AskwU hZ eo n`te, m`vavi YxKi`Yi c0`j`b`wU ZZ m`w`K` n`te | mgM0Ki GB c0ZubwaZ`k`j
Ask, hv t`_`K mgM0K m`u`K`0m`vavi YxKiY Kiv nq, Zv`K bgbv e`j Ges mgM0K t`_`K
c0ZubwaZ`k`j Ask w`Y`q Kivi c0`u`q`v`K bgbv qb e`j v nq| bgbv q`b`i hv`0wU Z`j bvgj K`f`v`te
mnR`teva` | Avgiv h`w` Rvb`Z AvM0h` nB th, mi Kvi KZ`K` MpxZ h`e Dbq`b Kg`m`P`x` t`_`k`i h`e
mgv`Ri Kv`Q KZUK`z`Rb`w`c`q, Z`te Avgiv c0`tg 15 t`_`K 24 eQi eq`_`c` Rb`Mv0x`K Avgv`_`i
mgM0K w`n`m`v`te w`P`v`Y`Z Ki`te`v | Zvici, bgbv w`b`e`P`b`i `e`A`w`b`K c`x`wZ e`envi K`i h`e
mgv`Ri mgM0K t`_`K ce`0w`b`a`w`i Z AvKv`i`i GKwU Ask`K` w`b`e`P`b` Ki`te`v | GB w`b`e`P`Z
AskwU`K` mgM0Ki c0ZubwaZ`k`j n`Z n`te G Kvi`Y th, GB Ask t`_`K Av`w`i Z Dcv`E`i
`e`w`k`o`` w`b`f`P`f`v`te mgM0Ki `e`w`k`o``K c0Z`d`j` Z Ki`te` |

eY0vgj K M`te`l`Yi t`_`j`i`T, bgbv e`envi Kiv n`j l Avgiv t`k`l ch`S`-c`j`iv mgM0KuW m`u`K`0
AvM0h` n`q _w`K Ges bgbv i w`f`w`E`Z mgM0K m`u`K`0m`x`v`S`-M0Y Kwi, hv e`v`L`vgj K M`te`l`Yi
Avl Zv`f`P` | e`v`L`vgj K M`te`l`Yi gj D`i`k`wU n`j`v, bgbv i gva`tg mgM0Ki `e`w`k`o``K
c0`j`b` Kiv | thgb, XvKv w`k`h`e`_`j`q`i Qv`T`-Qv`T`x`i` i eq`m`i Mo, ev GKwU RbmsL`v`q KL`b`v
w`e`q` K`i`w`b` Ggb b`v`ixi msL`v, ev tgv`e`Vj t`d`v`b` e`envi Kvi`x` Rb`Mv0xi Mo Avq, BZ`w` | GB
`e`w`k`o``_`j`v` c0`j`b` Kivi Rb` GKwU bgbv w`b`e`P`b` Kiv nq, tmB bgbv i w`f`w`E`Z GKwU c0`m`w`z`K
cwi msL`v`b` w`Y`q Kiv nq (hv bgbv `e`w`k`o`` w`n`m`v`te MY` Kiv nq) Ges mgM0Ki `e`w`k`o``
c0`j`b`i Rb` tm cwi msL`v`b`wU`K` e`envi Kiv nq |

bgbv e`b`v`g mgM0K (Sample verus Population)

Av`k`M`Z`f`v`te, Avgv`_`i M`te`l`Yj ä dj`v`d`j`K Aw`k`Zi _i`Z`i` t`_`evi Rb` Avgiv c`j`iv
mgM0K`K` w`b`t`q`B M`te`l`Yv Ki`Z P`v`B`te`v | K`q`K` n`v`Rvi g`v`b`f`li m`v`q`v`r`Kv`i`i w`f`w`E`Z c0B
Dcv`E`i cwi e`Z`0` h`w` e`v`j`v`t`_`k`i mKj g`v`b`f`li m`v`q`v`r`Kvi w`b`t`q` w`k`q`v` l i`q`Y`K`x`j Zvi g`t`a`
GKuW D`P` abv`Z`K` m`u`K`0ch`e`q`Y` Kwi, Zv`n`j` M`te`l`Yv`q` c0B dj`v`d`j`i` c0Z Avgv`_`i w`k`l`m
_`w`c`Z` n`te A`b`K` t`e`k`x` | w`K`S` Avgiv R`w`b` th, memgq mgM0K w`b`t`q` M`te`l`Yv` Kiv m`e` nq bv
Ges bgbv i w`f`w`E`Z M`te`l`Yv`B Avgv`_`i t`k`l A`e`j` `b` n`q` _`v`w`q` |

*GKRb Aw`F`A` l`_`q` M`te`l`K
Zvi KvR`i`i`B` K`i`b
mgM0Ki f`v`e`b`v` w`t`q` Ges
t`k`l` K`i`b` bgbv` w`t`q` |
Ab`w``K, GKRb b`Z`b` Ges
A`_`q` M`te`l`K`i`i` K`i`b
bgbv` w`t`q` Ges t`k`l` K`i`b
mgM0K` w`t`q` |*

bgbv i w`f`w`E`Z Avgiv mgM0Ki `e`w`k`o``K` c0`j`b` Kwi e`j` _`f`v`e`Z`t`B` c`k`e`f`Z`v`j`v` th`Z` cv`i`
th, bgbv g`v`b`wU Av`m`j` mgM0Ki KZUK`z`D`E`g` c0`j`b`? GB c`k`w`i` ga` w`t`q` Avevi l c0Z`w`0Z
n`j`v` th, Avgiv t`k`l A`e`w`a` mgM0K m`u`K`0K`B` Rvb`Z` AvM0h` | GKRb Aw`F`A` l`_`q` M`te`l`K` Zvi
KvR`i`i`B` K`i`b` mgM0Ki f`v`e`b`v` w`t`q` Ges t`k`l` K`i`b` bgbv` w`t`q` | Ab`w``K, GKRb b`Z`b`
Ges A`_`q` M`te`l`K`i`i` K`i`b` bgbv` w`t`q` Ges t`k`l` K`i`b` mgM0K` w`t`q` | h`w` mgM0K`K` Av`M`
t`_`K`B` ms`A`w`q`Z` Kiv bv nq, Z`te` bgbv i ch`f`S`Z`v` gj`v`q`b` Kiv Am`e` bv n`j` l` Ku`w`b` n`q`
c`to` | mgM0K`K` m`w`b`w`0`f`v`te` ms`A`w`q`Z` K`i` bv` w`b`t`j` Ac`0`q`v`R`b`x`q` Ges Ac`0`Z`ubwaZ`k`j` bgbv
w`b`e`P`Z` n`Z` cv`i` |

tKvb RbtMvôxi Dci MtelYvu cwi Pwj Z nte, Zv wbarPv bv Kti hw` t`QvPwqZ e`w³t` i mvQlrvKvi MhY` i i` Kwi, Zte nqtZv t`Lv hvte th, cQqvRb tbB Ggb RbtMvôxB bgbvq Ašfš nqtQ tekx| A_ev, wekl GK aiYi gvb| tKB Ašfš Kiv nqtQ, hv MtelYvi Df`k` ARfb cZwbaZkxj bq| thgb, aiv hvK, iv`vq` wotq hvK mvgtb cvlqv tMj ZviB mvQlrvKvi tbqv ntjv, tm t`Qf` nqtZv t`Lv hvte th, nq AwakvskB bviX, ev cjt`l, ev AemicB e`w³ bgbvq Ašfš nqtQ| G aiYi bgbv h_v`ntZ cvti, hw` tm aiYi mgMK wbtq MtelYvu cwi Pwj bvi Df`k` wbaWi Z nqt`vK|

bgbvqb m`utK`GKuU mavi Y aviYv itqtQ th, bgbvqb ntjv awšt` GKuU c`avb Drm| GB aviYvi wKQv wfiE` th tbB Zv bq| bgbvvi wfiE`Z cwi Pwj Z MtelYvq cP`i cwi gvtY awš-ntZ cvti, hw` thLvb t`tK bgbv wbePb Kiv nq, tmB mgM`Ki Zwj KwU Am`uY`v`K ev h_vh_`bv nq| hw` mgM`Ki Ašfš` mKj e`w³tK bgbvq Ašfš` nevi mgvb m`hvM t`qv nq, Zte awšt` cwi gvtY A`bKvstK ntm cvte| m`tebv ZtE`i m`wK cQqvMi gva`tg GB awš-ntm Kiv tZv hvqB, Ggb wK, cjtiv mgMK t`tK DcvE` mSM`ni Zj bvq bgbvvi gva`tg A`bK tekx m`wK DcvE` mSM` Kiv m`e|

bgbvq`bi tgsj K cZ`q | c`vej x (Basic Concepts and Terminologies of Sampling)

bgbvqb cxwZ`Z tek wKQv cZ`q | c` e`eüZ nq| bgbvq`bi Avtj vPbvq hvevi cte`tm mKj cZ`q | c` i m`Av`tjv tRtb tbqv cQqvRb|

Dcv`vb (Element): Dcv`vb ntjv MtelYvi tmB GKK, hvi m`utK`Z` mSM` Kiv nq Ges hv DcvE` wekH`Yi wfiE` cQvb Kti | mavi Yfvte, mvgwRK MtelYvq GKRb e`w³ ev wbw` cKv`i i e`w³ gvb| ntjv mgM`Ki Dcv`vb| Zte, Ab`vb` aiYi GKKI Dcv`vb ntZ cvti | thgb, cwi evi, mvgwRK mSMVb, e`emv cZ`Zvb, m`cQvq, BZ`w` | cKZc`Q, Dcv`vb ntjv MtelYvi tgsj K GKK|

Dcv`vb ntjv MtelYvi tmB GKK, hvi m`utK`Z` mSM` Kiv nq Ges hv DcvE` wekH`Yi wfiE` cQvb Kti |

mgMK (Population): Rwi c MtelYvq e`eüZ Dcv`vtbi mgw`K mgMK etj | G mgw`K mgMK wnmvte wPwYZ Kivi Rb` GKU mjbw` m`Av` Ges mg`qvi gv`v wbaP`Y Kiv cQqvRb| thgb, wekte` vj`qvi QvT-QvTx ej`Z cY`Kvjxb Ges LÜ-Kvjxb QvT-QvTx, m`ZK Ges m`ZtKvE`i QvT-QvTx, cQ`b Ges eZ`gvb QvT-QvTxK tevSv`Z cvti | G aiYi Awbw` RbtMvôxtK mgMK ejv hvte bv| 2002 mvtj cQ`g etl`fwZ`nlqv wekte` vj`qvi QvT-QvTx` i GKU mjbw` mgMK wnmvte MY` Kiv hvte|

Rwi c MtelYvq e`eüZ Dcv`vtbi mgw`K mgMK etj |

Rwi c mgMK (Survey Population): Rwi c mgMK ntjv MtelYvaxb Dcv`vbm`ni Avtjv mjbw` GKU mgw` wekte` vj`qvi QvT-QvTx wnmvte hw` XvKv wekte` vj`qvi QvT-QvTx` i wbePb Kiv nq, tm t`Qf` XvKv wekte` vj`qvi QvT-QvTxivB tKej gvT` Rwi c mgMK wnmvte we`wPZ nte, Ab` wekte` vj`qvi QvT-QvTxiv bq| A`P, GKU Rwi c mgMK ntjv mgM`Ki Dcv`vbm`ni tmB mgw`, thLvb t`tK cKZc`Q Rwi c bgbvU mSM` Kiv nq|

bgbv (Sample): bgbv ntjv GKU mgM`Ki cZwbaZkxj wKQv Dcv`vtbi mgw`| Ab` K_vq, Av`kM`Zfvte mgM`Ki mKj` euk`K cZwbaZkxj Kti, mgM`Ki Ggb GKU Ask`K bgbv etj | Zte GwU gtb ivLv cQqvRb th, m`tebv ZE`i Abjmi Y bv Kti bgbv wbePb Kiv ntjv, Zv cZwbaZkxj nte bv|

bgbv ntjv GKU mgM`Ki cZwbaZkxj wKQv Dcv`vtbi mgw`|

*bgpvqtbi th tKvb chf@q
wbeP@bi Rb" wefepZ GKwU
ev GK tmU Dcv`vb tK bgpv
GKK etj |*

bgpv GKK (Sampling Unit): bgpvqtbi th tKvb chf@q wbeP@bi Rb" wefepZ GKwU ev GK tmU Dcv`vb tK bgpv GKK etj | GKwU mij GK-`ix bgpvqtbi (simple single-stage sampling) t@t@, Dcv`vb l bgpv GKK GKB ntq _v@K | Rwlj bgpvqtbi wef@be` fi wef@be` gv@vi bgpv GKK e`envi Kiv nq | thgb, aiv hvK, GKRB Mtel K GKwU DctRj v@K Zvi Mtel Yv Gj vKv wmwte wbePZ Kti@Qb | Zvi ci, tmB DctRj vi GKwU M@g Ges metk@l, tmB M@tgi c@B eq`c RbtMv@xi GKwU bgpv wbePb Kti@Qb | GB wZb `fi i bgpv GKK, tj v ntj v h_v@t@ DctRj v, M@g Ges c@B eq`c gvbl, hvi gta` tk l GKKwU ntj v Dcv`vb | GB wZb `fi i wZb ai@Yi bgpv GKK tK h_v@t@ c@_wgK bgpv GKK (primary sampling unit), gva`wgK bgpv GKK (secondary sampling unit) Ges P@vS`bgpv GKK (ultimate sampling unit) ej v nq |

*bgpv KwVrtgv ntj v bgpv
GKtKi cKZ Zwj Kv, thLvb
t_tK bgpv, ev tKvb bgpv `i
wbePb Kiv nq |*

bgpv KwVrtgv (Sampling Frame): bgpv KwVrtgv ntj v bgpv GKtKi cKZ Zwj Kv, thLvb t_tK bgpv, ev tKvb bgpv `i wbePb Kiv nq | mij GK-`ix bgpvqtbi t@t@, hw` GKwU tFvUvi Zwj Kv t_tK bgpv wbePb Kiv nq, Zte tmB tFvUvi Zwj KwU ntj v H bgpvqtbi bgpv KwVrtgv | hw` tKvb Rwlj bgpvqb c@_l@q c@_wgK bgpv GKK GKwU DctRj v nq, Zte DctRj vi Zwj KwU bgpv KwVrtgv wmwte wefepZ nq | mij GK-`ix bgpv bKk@vq (simple single-stage sample design) Mtel Yv mgM@Ki Dcv`vbm@ni Zwj KwU ntj v Gi bgpv KwVrtgv |

*GKwU chf@qY GKK, ev
Dcv`msM@ni GKK ntj v
GKwU Dcv`vb, ev Dcv`v@bi
mgw@, hv t_tK Z`" msl@h
Kiv nq |*

chf@qY GKK (Observation Unit): GKwU chf@qY GKK, ev Dcv`msM@ni GKK ntj v GKwU Dcv`vb, ev Dcv`v@bi mgw@, hv t_tK Z`" msl@h Kiv nq | chf@qY GKK Ges wefk@Yi GKK (unit of analysis) Aw@Kvsk t@t@ GKB ntq _v@K | Zte, me t@t@ GwU w@K bq | Kvi Y, A@bK t@t@ t`Lv hvq th, GKRB mv@v@Kvi M@YKvix GKwU cwiev@i c@v@tK (head of the household) c@k@Kti cwiev@i Ab`vb" m`m`i m@utK@Z`" tbb | G me t@t@, cwiev@i mKj m`m`i wefk@Yi GKK ntj l hvi KvQ t_tK Z`" t@v n@`Q, GKgv@ wZ@B (cwiev@i c@v@) ntj b chf@qY GKK | chf@qY GKK l wefk@Yi GKK GKB ntj, Mtel tKi Rb" KvRwU mnR ntq hvq | hw` chf@qY GKK l wefk@Yi GKK GKB bv nq, tm t@t@ Mtel tKi Rb" mgm`v `Zwi nq | Zte Mtel KI Zvi w@R`^D`w@v@v @lgZv e`envi Kti tm mgm`v KwU@q DVvi tP@v Kti b |

*civgvb ntj v mgM@Ki Aaxtb
c`E GKwU Pj tKi eY@vi
mvi -mst@C |*

civgvb (Parameter): civgvb ntj v mgM@Ki Aaxtb c`E GKwU Pj tKi eY@vi mvi -mst@C | thgb, XvKv kn@i i RbmsL`vi Av@qi Mo, ev eq@mi w@v`v@tK mgM@K gv@bi D`vni Y wmwte D@j l Kiv th@Z cv@i | GB mgM@K gv@v@tK Rvbevi Rb`B Avgiv bgpv t_tK Dcv`msM@h KwU |

*Mtel Yv bgpvq c@E GKwU
Pj tKi eY@vi mvi -mst@C
ntj v bgpv gv@ |*

c@`wj Z gv@ (Estimate): Mtel Yv bgpvq c@E GKwU Pj tKi eY@vi mvi -mst@C ntj v bgpv gv@ | XvKv kn@i i mKj RbmsL`vi Av@qi Mo, ev eq@mi w@v`v@mi cwiev@Z`GKwU Astki (hv@K Avgiv bgpv etj AwFwZ KwU) RbtMv@xi Av@qi Mo, ev eq@mi w@v`v@tK bgpv gv@bi D`vni Y wmwte D@j l Kiv th@Z cv@i | GB bgpv gv@v@B ntj v, c@Zc@t@, mgM@Ki c@`wj Z gv@ | bgpvi `euk@t@i wFwE@Z mgM@Ki `euk@tK c@`j b Kiv ntq _v@K | Zte, GwU gtb ivLv c@qRb th, c@`wj Z gv@ KL@bv civgv@bi gv@ MhY Kti bv Ges GKwU bgpv t_tK Ab` bgpvi c@`wj Z gv@ me mgq wF@v@ntq _v@K |

bgbvqþbi mjeav (Advantages of Sampling)

mgMŰK mæfŰ Z` mSMŰni `ŰU c×uZ itqtQ — i gvi x I bgbvqb | i gvi x tZ mgMŰKi cŰZuW GKK t_ tK Z` mSMŰ Kiv nq Ges G tŰtŰ tKvb bgbv e`envti i cŰqvRb nq bv | ZvB GLvfb bgbv æwš-(sampling error) NUvi AvksKv _v tK bv | wKS' Avgiv Rwb th, mgMŰKi cŰZuW GKK t_ tK Z` mSMŰ Kiv, ev i gvi x MYbv Kiv mKj tŰtŰ mjeavRbK bql tm tŰtŰ, bgbvqb AþK tekx mjeavRbK I mnRmva |

bgbvqþbi cŰvb mjeavU ntj v, GwU A_æmkŰ Kti | 2500 QvŰ-QvŰxi KvQ t_ tK DcvE mSMŰ wotmþ`tn 25,000 QvŰ-QvŰxi KvQ t_ tK DcvE mSMŰni tPtq Kg e`q euj | GwU KvŰiv eš tZ Amjeav nevi K_v bql bgbvqþb Zj bvgj Kfvte Kg kŰ cŰqvRb nql Kg mSL`K AwfA Ges `Ű kŰkŰ³ wotqvŰMi gva`tg DcvE mSMŰ, cŰLqvKiY I wetkŰY Kiv hvq | bgbvi gva`tg GKwU MtelYvi e`vcbv cŰiv i gvi x Zj bvq wotmþ`tn mnR Ges D`PZI mæZv cŰvb Kti | bgbvqb mgq evŰvql cŰZcŰŰ, GB mgtqi welqW wetePbv Kti B Av`gi gvi x gta` bgbv Rwi cŰK tKŰKj wnmvte e`envi Kiv nql cŰiv i gvi x Dci wŰwE Kti DcvE wetkŰY Ges Gi djvdj cŰKvŰK GZ mgq tjtM hvq th, hLb djvdj cŰKwKZ nq, ZLb tmB DcvŰEi cŰmŰZKZv AþK tŰtŰ nwi tŰ hvq | bgbvqþbi gva`tg cwi PwŰj Z MtelYvq, cŰZuW tŰtŰ AwkZi hZevb nI qv hvq Ges mgm`vi AþK MfŰti wMtq DcvŰEi we`wi Z wetkŰY I e`vL`v Kiv hvq |

Zte GwU gtb ivLv cŰqvRb th, hw` GKwU KvŰŰi bgbv bKkv (sample design) wbgŰŰ Kiv bv hvq, Zte bgbvqþbi th mKj mjeavi K_v DŰj L-Kiv ntqtQ, tm`tjvi KwŰŰZ ev`evq Kiv mæe nq bv | KviY, mvgwRK ev`ezvq gvŰŰli AvPiY GZ tekx wfbæGes wewŰI th, tm`tjvi mæ wetkŰYi Rb` AþK tekx mjeavx ntZ nql GKwU cY`mgjfcZvmæubæ (homogeneous) mgMŰK wnmvte fvZ vm× ntqtQ wKbv Zvi cixŰv, PŰti `Ű`i cixŰv Ges i³ cixŰvi Rb` bgbvqb hZ mnR, mvgwRK mæutKŰ gta` gvŰŰli gZ Amgjfc (heterogeneous) mgMŰK wotq bgbvqb ZZ mnR bql hvB tnvK, mgMŰK memq mgjfc ntZ nte Ggb bql, Zte bgbvi gva`tg cŰB DcvŰEi `ewkŰ mgMŰKi `ewktŰi cŰZuwaZkxj ntZ nte |

bgbv æwš-(Sampling Error)

bgbvqþbi AþK mjeav _vKv mtEj tek wKQz Amjeav itqtQ | thgb, bgbvqb c×uZ cŰqvŰMi tŰtŰ Awk cwi gvŰY cwi Kí bv, KgŰŰx I e`vcbvi cŰqvRb nql bgbvqþbi metPtq eo AmjeavU ntj v, bgbv æwš- A_Ű, mgMŰK t_ tK wbeŰPZ bgbv tK mgMŰKi cŰZuwa wnmvte MY` Kiv ntj I Zv mgMŰK tK mæuYŰvte cŰZuwaZi Kti bv | eis `Űti gta` wKQŰv e`eavb itqB hvq | e`eavtbi GB gvŰvŰKB bgbv æwš-ejv nql mgMŰK Avi bgbvi gvŰbi gta` e`eavb hZ tekx nte, bgbv æwš-ZZ tekx nte etj Abgvb Kiv nql thgb, aiv hvk, ersj v`tki gvŰŰli gv_v wCqyMo Avq 420 gwKŰ Wj vi | tKvb GKwU bgbv Rwi tci t`Lv tMj th, Zv`i gv_v wCqyMo AvŰti cwi gvY ntqtQ 750 gwKŰ Wj vi | bgbv Rwi tci GB djvdj tKvb fvteB mgMŰKi cŰZuwaZi Kti bv | A_Ű, GLvfb Awk gvŰvq bgbv æwš-cwi j wŰZ nt`Q | GB bgbvq, ersj v`tki mKj A_ŰwZK tkYxi Rbmavi YtK mgvbcwZKfvte bgbvi gta` AšfŰ bv Kti AŰcŰvKZ `Űj tkYxi gvŰŰ tK Awk mSL`vq AšfŰ Kiv ntqtQ etj , nqtZv gv_v wCqyAvŰti MowU eo ntqtQ |

bgbvqþbi metPtq eo AmjeavU ntj v, bgbv æwš |

AvaybK bgbrqb I m²tebr
 ZtEj bgbr awš-²bi/cY,
 wbye I xKi tYi Dciq
 D²weZ ntqtQ, hv bgbrqtb
 gva²tg cB DciE w²q
 mgMKtK Avt²v m²fi²e
 cwi gvc Kti fiel² vYxtK
 m² t²K m²Zi Kiv m²e
 Kti Ztj tQ

G ai tYi cwi w²ZtZ Avkvi K²wU ntj v th, AvaybK bgbrqb I m²tebr ZtEj bgbr awš-
 wbi/cY, wbye I xKi tYi Dciq D²weZ ntqtQ, hv bgbrqtb gva²tg cB DciE w²q
 mgMKtK Avt²v m²fi²e cwi gvc Kti fiel² vYxtK m² t²K m²Zi Kiv m²e Kti Ztj tQ |
 bgbr gvb² t²v mgMK gvtbi KZUKz KvQvKwQ MyQex² v²tK, Zv c²° j tbi Rb² m²tebr ZEj
 Avgvt² i m²bw² e m² c²° vb Kti tQ | GB m²fi i wZbuU Dcv² vb i tqtQ – mgMK gvb, bgbr
 Avkvi Ges cwi w²Z awš-(bgbr awš- GKwU cwi gvc) | m² wU ntj v,

$$S.E. = \sqrt{\frac{pq}{n}}$$

thLv²tb, S.E. = cwi w²Z awš-
 n = bgbr Avkvi
 pq = mgMK gvb

$$A_{ev}, S.E. = \frac{s}{\sqrt{n}}$$

thLv²tb S.E. = cwi w²Z awš-
 s = cwi w²Z e² eavb
 n = bgbr Avkvi

hw² mgMKwU tQvU nq, Zte² omw²Z mgM²Ki m²stkvab² w²m²te 1 - $\frac{n}{N}$ m²stkvab² Dcv² vbwU
 (correction factor) m²fi i g²ta² Ašf² KtZ nte |

$$S.E. = \frac{s}{n} \left(1 - \frac{n}{N} \right)$$

GB m²fi n ntj v bgbr Avkvi Ges N ntj v mgM²Ki Avkvi |

Abgbr awš-(Nonsampling Errors)

m²tebr ZEj bgbr c²xwZi v²iv m² awš-w²tq KvR Kti | GKwU t²wUxb bgbr bKk²vq bgbr
 awš²K w²bqš²Y ivLv hvq | w²Kš² bgbr awš-w²bqš²Y Kiv t²Mtj I Ab²vb² Drm t²KI awš-Zwi
 nq | thgb, cwi gvtci awš- hv Avgiv BDwbU 3-Gi cvW 4-G Avtj vPbv Kti wQ | mvgwRK
 MtelYvq metPtq e²vcK cwi gvtY th awš-nq, tmU²tK DĒinx² awš-(non-response error)
 etj | DĒi² v²tb A² xKwZ, Ab²cv²wZ Ges nvi v²tbv DĒig²v²vi Kvi tY th mKj ch²fe²Y²tK
 m²uY²Kiv hvq bv, ZvtK DĒinx²Zv (non-response) etj | DĒinx²Zv djv²tj i g²ta²
 D²tj t²h²vM² cwi gvtY c²q²cvZg²j K awš²K c²leó Kivq | w²bg² wLZ DĒinx²Zvi aiY² t²v
 w²ef²b²v²te djv²tj K c²fi²weZ Kti:

- Am²y², Awk²v²qZ, ev f²vl²vMZ m²gm²v i tqtQ, Ggb m²v²q²vrK²vi i A²thvM² e²w²³ |
- hv² i cvl² qv hvq bv, Ggb e²w²³ | Kvi Y, nq Zv²iv Ab² t²Kv²v²l Ptj t²M²tQb, bZev Zvt² i
 Kv²tQ t²c²š²v²tbv hvq bv |
- m²v²q²vrK²vi M²hYK²vix hLb m²v²q²vrK²vi M²hY KtZ hvb, ZLb e²vm² v²tbv Ab²cv²w²Z v²tKb,
 Ggb e²w²³ |
- DĒi² v²tb A² xKwZ Rvb²q, Ggb e²w²³ |

DĒinxbZvi gvĭwU wbfP Kti mgMŌKi cKwZ, DcvĒ msMŌni c×wZ, wRÁvm` cŌkĕ aiY, mVĭvrKvi MŌYKvixi `ŦZv Ges KZevi DĒi`vZvi KvŦQ hvlqv hvq Zvi Dci | GKwU `ŦP cKġvj v ev mVĭvrKvi LŦ wbgŏvŦi DĒi`vŦbi nvi cŌvb Kti | DĒinxbZvi cŦvetK cwi gvc Kivi weirfbŏtKŠkj iŦqtŦ, th, tj vi gva`tg Zv wbjfcY Kti mŦkvab Kiv mŦe nq |

bgpvqb c×wZi cKviŦf` (Types of Sampling Procedures)

AvaybK bgpvqb ZĒĒi, cŏvbZt `ŦaitYi bgpvqb c×wZi gŦa` cv_Ŧ` Kiv nq | GKwU ntj v AmŦebv bgpvqb (nonprobability sampling) Ges Ab`wU mŦebv bgpvqb (probability sampling) | AmŦebv bgpvqb Ges mŦebv bgpvqŦbi gŦa` th welqW cŏvbZt cv_Ŧ` mŦPZ Kti, Zv ntj v, mŦebv bgpvqŦb GKRb MtelK cŌZwU bgpv GKK ev Dcv`vbŦK bgpvq AŠfŦ nevi mgvb mŦebv wŦwŦZ KiŦZ cvŦib | iay ZvB bq, wbeŦPZ nevi mŦebwU KZUKi, Zvi cwi gvYwU wbaŦY KiŦZ cvŦib | Ab` K_vq, cŌZwU bgpv GKŦKi bgpvq AŠfŦ nevi mgvb mŦebv vŦK | AmŦebv bgpvqŦb cŌZwU bgpv GKŦKi bgpvq AŠfŦ nevi mŦebvŦK wŦwŦZ Kivi ŦKiv mŦhvM ŦbB |

GB cvŦV G `ŦaitYi cŏvb bgpvqb c×wZi AaxŦb cŏvb ŦkYx weirfM, tj vi DŦj L- Kiv nŦe Ges cieZŦcv, tj vŦZ tm, tj v we`wi Zfvte AvŦj vPbv Kiv nŦe |

AmŦebv bgpvqb cŏvbZt Pvi cKviŦi i nŦq vŦK:

1. mŦeavRbK ev AvKw`ŠK bgpvqb (Convenience or Accidental Sampling)
2. DŦi`k`gġ K ev weŦePbvġj K bgpvqb (Purposive or Judgemental Sampling)
3. ŦKvUv bgpvqb (Quota Sampling)
4. ŦmŦej bgpvqb (Snow-Ball Sampling)

mŦebv bgpvqb cŏvbZt Pvi cKviŦi i nŦq vŦK:

1. mi j `Ŧe bgpvqb (Simple Random Sampling)
2. wŦqgZwŠK bgpvqb (Systematic Sampling)
3. `ŦwqZ bgpvqb (Stratified Sampling)
4. `ŦQ bgpvqb: GK-chvŦx | eŦ-chvŦx (Cluster Sampling: Single-Stage and Multi-Stage)

mvi vsk

MtelYvq mgMŌ ŦŦK DcvĒ msMŌ bv Kti cŌZwŦwZŦkj Ask ŦŦK DcvĒ msMŌ Kivi cŦvqŦK bgpvqb cŦvqŦ etj | mgq, A_ŦGes ŦYMZ gvŦbi welqW weŦePbvq wŦq MtelK bgpv wbfP MtelYv Kti vŦKb | GŦZ Kti, DcvĒĒi ŦYMZ gvb eRvq ivLv mŦe | eZŦvb cvŦV bgpvqŦbi mŦŦ mŦwŦKZ weirfbŦwŦq (thgb, bgpv ŦwŠ, bgpvqb c×wZi cKviŦf`, bgpv mŦŦ mgMŌKi mŦuKŦB`w`) wŦq AvŦj vPbv Kiv nŦqtŦ | GwU gŦb ivLŦZ nŦe th, h_vh_ bgpvqb c×wZB cŌZwŦwZŦkj bgpv wbeŦŦb cŏvb fŦgKv cvj b Kti Ges cŌZwŦwZŦkj bgpvB mgMŌ mŦuŦKŦ`Q avi Yv Ŧ`q |

cvfVvEi gj`vqb

be⁹³K cke

mVK DEti i cvfk WJK (v) wPy w`b -

1| bgbv wbevPtb awsi cwi gvY AfbKvstK nvm cvte, hw` :

- K. m=tebv ZtEji wbw 0 mF e`envi Kiv nq
- L. m=tebv Ges wbtm=tebv ZtEji wePvti bgbv wbevPb Kiv nq
- M. m=tebv ZtEji mVK c0qm Kiv nq
- N. Dcti i me|

2| mgMK ntj v:

- K. Mtel Yvq e`euZ wbgg-Kvbjp
- L. Mtel Yvq e`euZ GKtKi mgw0
- M. Mtel Yvq e`euZ mvTvrKvi MhYKvixi msL`v
- N. Mtel Yvq e`euZ Mtel tKi wPsv-tPZbv|

3| bgbvqbtbi th tKvb chvq wbevPtb Rb` weteiPZ GKwU ev GK tmU Dcv`vbtK _____ etj |

- K. bgbv msL`v
- L. bgbv awsi-
- M. bgbv `enk0`
- N. bgbv GKK

msvTjB cke

1| msAv w`b I cv_R` t` Lvb

- K. mgMK I bgbv
- L. bgbv GKK I bgbv Kwvtgv

iPbvj K cke

1| 0bgbvqb i agvT cv`-cy` #Ki wbtIU mv`v KvTj v tj Lv bq, GwU GKwU Rxebteral etU|0 Avtj vPbv Ki`b|

2| bgbvqb c>wZtZ bgbv awsi-I Abgbv awsi` i`ZiD`vni Ymn Avtj vPbv Ki`b|

cW - 2

Amæebv bgbvqb c×wZ Non-Probability Sampling Procedure

G cW tkłl hv Rvbr hvte —

- Amæebv bgbvqłbi thšw³KZv
- Amæebv bgbvqb c×wZi cłkvi łf`
- Dłł k`gj K bgbvqb
- łKvlv bgbvqb
- wełePbvqj K bgbvqb
- łmæej bgbvqb

Amæebv bgbvqłbi thšw³KZv (Logic of Non-Probability Sampling)

cW 1-G Avgiv łRłbuQ th, cłiv mgMłK ł_łK DcvĒ msMłh Kłi Młel Yv cvi Płj bv Kiv memqg mæe bq, wełkl Kłi hw` mgMłKwU enr AvKvłi i ntq _vtK| G Qvovl , mgMłK gıbtłK Rvbr mæuYłfıte mæe bq cåvbZt `łU Kvi łY| cł_gZt, mgq, A_ĒGes `ł Rbkw³i Afıte cłiv mgMłKłK Młel Yvi e`e`ıcbıq łbtq Avmv tek Kwłb| wZıxqZt, mæuYłmgMłKi KvłQ KLbB łcšwłtv mæe nq bv| mKj cłkvi e`e`v MłhłYi ci l ł`Lv hvq th, mgMłKi GKwU Ask memqgB łKvb bv łKvb Kvi łY Avl Zvi evBłi ł_łK hvq| KvłRB weKı e`e`v wnmvte Avgiv mgMłKi GKwU cłZwıvazłxj Ask łbtq łmB Ask ł_łK cłB DcvłĒi wıwłłZ mgMłK mæułKłmvavi YxKi Y Kwı |

mgMłK gıbtłK Rvbr
mæuYłfıte mæe bq cåvbZt
łU Kvi łY| cł_gZt, mgq,
A_ĒGes `ł Rbkw³i
Afıte cłiv mgMłKłK
Młel Yvi e`e`ıcbıq łbtq
Avmv tek Kwłb| wZıxqZt,
mæuYłmgMłKi KvłQ KLbB
łcšwłtv mæe nq bv|

bgbvqłbi mdj ZwU łbłfł Kłi, GKwU bgbv th mgMłK ł_łK łbełPb Kiv nq, łmB bgbvU msłkæ- mgMłKłK KZUK cłZwıvazłj Kłi, Zvi Dci | Avi GB cłZwıvazłxj Zvi wıwłłZ cłivcłıi łbwłZ Kiv hvq mæebv bgbvqb c×wZi gıvłtg| mæebv bgbvqb c×wZi cłqıM łbłfł Kłi:

- mgMłKi cłkwiZi Dci | hw` mgMłKwU AwakZi mgıfc nq, Zte bgbvU AwakZi cłZwıvazłxj nte|
- mgMłKi cłZwU Dcv`vbtłK bgbvq Ašfłš nevi mgvb młhvM ł`qv nł`Q wK bv, Zvi Dci |
- bgbv KvłvłgıwU cłmwłK, mwłK l łbłfł wK bv, Zvi Dci |
- bgbv łbeıPłb chıłß mgq l głbvłhvM ł`qv nł`Q wK bv, Zvi Dci |
- `ł Rbkw³i e`envi Kiv nł`Q wK bv, Zvi Dci |
- Młel Yvi Dłł k` l cłkwiZi Dci |
- Młel Yvq e`euZ c×wZ l łKšłtj i Dci |
- mwłK bgbvqb c×wZ łbełPłbi Dci |

wKš` Młel Yvi łłłł memqg G iKg GKwU Av`k`cwi włwZ wıvR Kłi bv, thLvtb mgMłKwU mgıfc, ev bgbv KvłvłgıwU mæuYłGes łbłfł, ev chłß cvi gıvłY `ł Rbkw³ı cvl qv mæe, ev

mMK bgbvqb cxiZi wbePb I cQvM mæ, ev mgMKi cZu Dcv`vtK bgbvq Ašfš Kivi welquw wboZ Kiv mæ| KLtbv KLtbv ZvrŕwYK cQvRtb G me kZ©ciŕYi mgq Ges mŕhM _vtK bv| Ggb wK, KLtbv KLtbv mgMKi cKwZ Ges MtelYvi cKwZ I Dŕŕk`i KviŕY G me kZ©ciŕYi cQvRbl nq bv| thgb, hw` mgMKi cZu Dcv`vtbi %enkó` GKB iKg nq, tm tŕŕŕ th tKvb Dcv`vtbi wbePb GKB djvdj t`te| hw` MtelYvi Dŕŕk` imxvšgj K bv ntq D`wUbgj K (exploratory) nq, tm tŕŕŕ cZwbaZkxj Zvi welquw ZZ _i`ZcY©_vtK bv| hw` tKvb mgMKŕK mMKfvte msÁwqZ Kiv bv hvq, tm tŕŕŕ mæebv bgbvqb cxiZi e`envi Kwv ntq cto| G aiŕYi cwiv`wZŕZ, Amæebv bgbvqb cxiZ cQvŕMi thšw³KZwU Ab`ŕKvhŕ cZwbaZkxjZvtK wboZ KiŕZ bv cviŕj I iagvŕ mæav Ges A_©mvtq, G`ŕwU welq mæebv bgbvqŕbi me mæavŕK wwoŕq Amæebv bgbvqb cxiZŕK AwKZi mæavRbK Kŕi tZvtj |

Zte GwU gŕb ivLv cQvRb th, th mgMK t_ŕK bgbv Pqb Kiv nq, bgbvi `enkó` _ŕj v tm mgMK `enkó` _ŕj vi KZUKzKvQvKwQ nq, Amæebv bgbvqb cxiZ tmwU cŕ`j ŕbi tKvb mŕhM cŕvb Kŕi bv| A_ŕ, Amæebv bgbvqb cxiZ bgbv áwš-cwi gŕŕci mŕhM cŕvb Kŕi bv| dtj, Amæebv bgbvqb cxiZ AbmiY Kŕi th bgbv Pqb Kiv nq, tmB bgbvi gvaŕg mavi YxKiY Kiv mæ nq bv|

Amæebv bgbvi cxiZi cKviŕŕ` (Types of Non-Probability Sampling Procedure)

mvgwŕK wæÁvxi v cævbZt th me Amæebv bgbvqb cxiZ e`envi Kŕi b, tm _ŕj v ntj v:

- mæavRbK bgbvqb (convenience sampling)
- Dŕŕk`gj K bgbvqb (purposive sampling)
- tKvUv bgbvqb (quota sampling)
- wetePbvj K bgbvqb (judgemental sampling)
- tmæej bgbvqb (snow-ball sampling)|

wŕtgaG cxiZ _ŕj vtK w`wi Zfvte Avŕj vPbv Kiv ntj v|

mæavRbK bgbvqb (Convenience Sampling): GKRb MtelK hLb th tKvb mnRj f` bgbv GKKŕK Zvi mæav Abhvqx wbePb Kŕi b, ZLb ZvtK mæavRbK bgbvqb etj | thgb, HIV/AIDS-Gi Dci hŕ mgŕŕi Ávŕbi gvŕv wbiŕŕYi Rb` GKRb MtelK cŕ` _wŕtq th cŕg 200 Rb hŕK eqŕmi e`w³ŕK tctj b Zŕ` iB Zvi bgbv GKK wmvte wbePb KiŕZ cvŕib, ev GKRb wŕŕK Zvi Kŕj ŕi 200 Rb Qvŕ ev Qvŕx bgbv wmvte wbePb KiŕZ cvŕib| G tŕŕŕ, me KŕRb wbePZ bgbv GKK cŕ`l ntZ cvŕi, A_ŕv vix ntZ cvŕi | G aiŕYi bgbvŕbi gvaŕg cZwbaZkxj Zv wboZ Kiv hvq bv Ges mgMK gvŕŕKl cŕ`j b Kiv hvq bv| G aiŕYi bgbv wbePŕbi dtj, th áwš-nq Zvl wbiŕŕY Kiv hvq bv| mæavRbK bgbvŕŕK accidental sampling I ej v ntq _vtK|

Dŕŕk`gj K bgbvqb (Purposive Sampling): Dŕŕk`gj K bgbvŕbi gvaŕg GKRb MtelK Zvi B`QvqZ bgbv wbePb Kŕi _vtKb| Dŕŕk`gj K bgbvqb MtelŕKi AwfÁZv ev wetePvri Dci cZwŕZ| KLtbv KLtbv MtelŕK Zvi wŕŕi AwfÁZv mgMKi Dci Ávb, Ges MtelYvi Dŕŕk`i Dci wŕŕŕ Kŕi bgbv wbePb KiŕZ nq| wŕŕkl Kŕi, cKŕj v

wbgfYi cūwgK chf, MtelKtK Zvi cūmgfni cūqwmK DcthwMZv cixfYv Kivi Rb` G aiYi bgbvqb c×wZ AbyniY KiZ nq| A_ev AtbK mgq GKw epEi RbtMvöxi GKw AsktK wbePb Kivi cūqvRb nq, tmB RbtMvöxi Dci GKw avi Yv tbevi Rb`|

hw` MtelK gtb Ktib th, wekl GKw RbtMvöx ev wekl wQye`w³ Zvi MtelYvi j`f ARfb mnvqK nte, Zte wZwb tmB wekl RbtMvöx ev wekl e`w³ eMfK MtelYvi bgbv GKK wnmvte wbePZ KiZ cvtib| msiké-bgbv GKK wbePbi hf³ wnmvte MtelK avi Yv KiZ cvtib th, wbePZ bgbv GKK, tjv Zvi MtelYv mgMkKtK cūZwbazj Ki te| wKš' G aiYi hf³ tZgb KvRi bq| KviY, wefbaMtelKtKi wePbvi weqW wefbaentq _vK| thtnZi wePbwW m`úYfite MtelKtKi wR`^ wššcñZ Ges weqMZ (subjective), e`MZ (objective) bq, tmtnZiGK MtelK t`tK Ab` MtelKtKi bgbv GKK wbePbi wfwEw wfbenZ cvti| Ggb cw`wZtZ MtelYvi djvdj wfbente Ges Zj bvtwM`Zv nwi tq tdj te| mteveW, GKB mgMkK t`tK bgbv wbePb Kijl mgMkKi Aššf³ mKj Dcv`vbtK bgbvq wbePZ Kivi mgv mthwM _vK bv| Zte mjeavRbK bgbvqbtbi Zj bvq Dti k`gj K bgbvqb wQyDv DbzZi GB At`th, Dti k`gj K bgbvqbtbi MtelYvi Dti k`gi wfwEz GK aiYi cūZwbazjxj Zvi weq wePbvq _vK, hw` l tmB cūZwbazjxj Zvi weqW MtelKtKi wR`^ wššcñZ|

tKvUv bgbvqb (Quota Sampling): mjeavRbK bgbvqb l Dti k`gj K bgbvqbtbi t`fT t`Lv tMq th, th bwZgvi wfwEz bgbv GKKtK wbePb Kiv nq, Zv mgMkKi mKj `enkó`K cūZdwj Z Kti bv| tKvUv bgbvqbtbi bgbv GKKtK Ggbfite wbePb Kivi tPov Kiv nq, hvtZ Kti bgbvW mgMkKi gZ `enkó` aviY Kti| tm KviY, tKvUv bgbvqbtK KLbl KLbl fj Kti cūZwbazjxj bgbvqb0 ejv ntq _vK| th mgMkK m`úK` MtelK mavi YxKiY KiZ Pvb, wZwb Zvi bgbvK tmB mgMkKi úeú GKB ifc w`tZ Pvb Ges Gi gva`tg cūZwbazjxj Zvi avi YwUtK cūZwöZ KiZ Pvb| thgb, hw` GKw mgMkKi gta` 10 kZvsk gvbl 60 eQtii AwaK eq` nq, Zte MtelK wbowZ KiZ Pvb th, Zvi bgbv gta` thb 60 eQtii tekx eqtmi 10 kZvsk gvbl Aššf³ nq| A_ev hw` mgMkKi gta` 48 kZvsk bviq _vK, Zte MtelK Zvi bgbvq 48 kZvsk bviq Aššf³ Kivi weqW wbowZ KiZ Pvb| hw` tKv bviq bgbvq Aššf³ bv Kiv nq, ev Lp Aí msL`K bviq Aššf³ Kiv nq, mgMkK m`úK`tmB bgbv GKw ávš-avi Yv t` te| KvRb, tKvUv bgbvqbtbi gva`tg MtelK mKj `fi RbtMvöxKtK cūZwbazj Kti, Ggb GKw bgbv wbePb KiZ Pvb|

AvcvZt`wóZ cūZwbazjxj gtb ntj l tKvUv bgbvqb gj Zt mjeavRbK ev Dti k`gj K bgbvqbtbi gZB| cfiv bgbv wfbaw Dcv`vbtjv mgMkKi msiké- Astki Dti k`gj K bgbvqb Qvov Ab` wQy bq| tKvUv wbePbi t`fT áwš-nl qv `vfwK| KviY, th bgbv KvVtgv t`tK bgbv wbePb Kiv ntqtQ, tmUtZ nvj -bvW` (up-to-date) Z` bv _vKtZ cvti, A_ev GKw wekl Ask DtcwZ ntZ cvti| thgb, wmo tetq DVtZ Kó nte etj GKw 10 Zjv fetbi mteP Zjvq emevmKvix e`w³ i m`vrvKvi MhY Kiv AtbK t`fT DtcwZ ntZ cvti|

tm`ej bgbvqb (Snow-Ball Sampling): Aapv tm`ej bgbvqb c×wZi e`envi e`w` tctqtQ, wekl Kti tm mKj MtelKt`i KvQ, hviv chfeyYgj K MtelYv Ges m`cúvq MtelYv Ktib| hw` l tm`ej bgbvqbtK maviYfite Am`ebv bgbvqb tKškj wnmvte wePbv Kiv nq, GwUtK m`ebvgj Kfite wbePb Kivi tKškj Awe`KZ ntqtQ| GB tKškj e`envi i gva`tg bgbv áwš-cwi gvc Kiv hvq|

tmæej bgbvbq chiqumgKfvte cwiPwj Z nq| cŭg chiq, cŭqvRbxq `enkó`mæúbewKQz e`w³tK wPwýZ Kti mvŋvrKvi MhY Kiv nq| bgbvbq Ašfŋ Kiv hvq, Ggb Ab` e`w³t`i wPwýZ Kivi Rb` G me e`w³tK mŪvb`vZv (informants) wmwte e`envi Kiv nq| wŪZxq chiq, G me e`w³i mvŋvrKvi MhY Kiv nq| ZZxq chiq, Avtiv wKQze`w³tK bgbvbq Ašfŋ Kti mvŋvrKvi MhYi Rb` G mKj e`w³tK e`envi Kiv nq| Gfvte hZŋY bv cŭqvRbxq msL`K bgbv msMh Kiv tkl nq, ZZŋY chŋ-GB chiqumgK cŭqv Pj tZ `vtK| Ōtmæej Ō kãwJi e`envi Kiv ntqtQ eitdi tMvj vi mvf_ Zj bv Kti, hv cŭtg`i`i` nq GKwU tŌvU tMvj v wmwte Ges hZB GwU Dci t`tK bxtPi w`tK MovtZ `vtK, axti axti Zv ZZB eo ntZ `vtK|

mvæcŭZKKvtj, wKQz MtelK tmæej bgbvbqtK `chain referral sampling` etj AwfvwZ KtiŋQb| Gi AšubŋZ hŋ³wU tmæej bgbvbqtbi gZB| tmæej ev chain referral sampling cæwZwU ŌŋwJ Z Dc-ms`wZŌ (deviant sub-cultures) MtelYvi tŋŋt LpB DcthwMx, thLvfb DEi`vZvt`i mvaviYfvte t`Lv hvq bv Ges cŋwJ Z bgbvbq cæwZ`tj v Kvhŋi nq bv| thgb, gv`Kvm³t`i Dci MtelYvi tŋŋt, GB bgbvbq cæwZ tek dj chŋ nq| cŋwJ Z mvaviY cæwZtZ, gv`Kvm³ e`w³t`i wekymthvM`Zv ARŋ Kiv mæe bq| Ggb wKQz e`w³tK mŪvb`vZv wmwte wbeŋb Kiv nq, hviv gv`Kvk³ e`w³t`i tŋtbb| wKš` mvŋvrKvi MhYi Rb` Zvt`i tek wKQz w`b e`q KiŋZ nq| KviY, Av`v ARŋbi welqwu G tŋŋt `i`ZcYŋ gv`Kvm³ e`w³iv hZŋY chŋ`bv wŋwŌZ nteb th, mŪvb`vZv e`w³t`i w`tq Zvt`i tKvb ŋwZ nte bv, ZZŋY chŋ-Zviv tKvb Z`B cŭvb Ki te bv|

mvivsk

eZŋvb cvtV Amæebv bgbvbqtbi thšw³KZv I Amæebv bgbvbq cæwZi aiY wbtq Avtj vPbv Kiv ntqtQ| tKvb aitYi bgbvbq tKvb aitYi MtelYvi tŋŋt cŭhvR` nte, Zv wbfŋ Kti MtelYv mgm`vi aiY I cwii cwkwŋ Ae`vi Dci | thgb, Av`mvgwRK Ae`v Rvbvi Rb` tmæej bgbvbq tKšktj i Zj bvq Ab` tKškj AwakZi hŋ³hŋ³ nte| Zte, bgbvbqtbi tŋŋt th welqwu `i`tZj mvf_ MtelKtK gtb ivLtZ nte Zv ntjv cŭZwŋwZkxj Zv| D`Nwubgj K MtelYv Ōrov Ab` MtelYvq cŭZwŋwZkxj Zvi welqwu AwakZi `i`Zj`enb Kti |

cvřVvĚi gj ıvqb

ıbe⁹³ K cġke

mıVK DĚti i cvřk ıJK (√) ıPıy ı` b –

1| bgřvqřbi mdj Zv ıbfP Kti :

- K. bgřvi msL ıvi Dci
- L. bgřv KřVřřgv MVřbi Dci
- M. mgMġKi cġZıbıaZřřj Zvi Dci
- N. Dcři i me|

2| bgřv ıbePřb cġZıbıaZřřj Zvi ıel qıU ZZ ıı "ZřY⁹ ıřK bv, hLb:

- K. Mřel Yvi Dřı k ıı mıvřřgj K nq
- L. Mřel Yvi Dřı k ıı eYřvgj K nq
- M. Mřel Yvi Dřı k ıı D ıNıUbgj K nq
- N. Mřel Yvi Dřı k ıı msi řıYgj K nq|

3| _____ bgřvqb cıřřıııgKřřte cıı Pııj Z nq|

- K. mıeavRbK
- L. Dřı k ıı gj K
- M. řKıUı
- N. řmıej

mıřřıB cġke

UıKı ııj Lıb:

- K. Dřı k ıı gj K bgřvqb
- L. ıeřePıvgj K bgřvqb

i Pıvgj K cġke

1| D ıvni Ymn Dřı k ıı gj K bgřvqb Ges řKıUı bgřvqřbi ıı "Zı Avřj vPıv Ki ıb|

2| Avıbıvı gřZ, řhŠZK cġıvi Dci GKıU Mřel Yv cıı Pıj bv Ki řZ řMřj řKıv bgřvqb cııZıU h_vh_ dj ř` ře eřj Avıbıv gřb Křııb| DĚti i ıcřřı hı⁹³ ı` b|

m^otebv bgbvqb c^xwZ - 1
Probability Sampling Procedure - 1

GB cW tk^tl hv Rvbn hvte —

- m^otebv bgbvq^tbi th^sw³KZv
- m^otebv bgbvqb c^xwZi c^kvi^tf^o
- mij %e bgbvqb
- w^bqgZw^sk bgbvqb

m^otebv bgbvq^tbi th^sw³KZv (Logic of Probability Sampling)

BwZnmv ch^oj vPbv Kitj t^o Lv hvq th, mvgwRK Rwi^tci gva^otg cwi Pwⁱj Z M^tel Yvi dj v^dj e^u t^oq^to^l GB h^ovh^o l w^bf^o dj v^dj c^{ve}vi Rb^o h^to mZK^oZvi m^vt^o bgbv w^be^oPb KitZ nq| GKwU mgM^oKi mKj m^o m^o h^w GKB iKg nq, Zte mZK^obgbv w^be^oP^tbi tKvb c^oqvRb nq bv| G ai^tYi cwi w^oZ^tZ, mgM^oKi ^oenk^o m^ou^tK^oRvbi Rb^o mgM^oKi GKwU Dcv^o v^tbi w^be^oPb h^to^l c^oKwZK we^oAv^tbi t^oq^to^l, G iKg avi Yvi w^ove^otZ M^tel Yv cwi P^vj bv Kiv m^oe^ol Kvi Y, c^oKwZK we^oAv^tbi A^os^of^o mgM^oKi Dcv^o v^b t^oj v mg^oifc| GB mg^oifcZvi Kvi^tY i³ cix^oq^o Kivi Rb^o GKRB w^oPwKrmK^tk kix^oii me i³ tei K^ti cix^oq^o KitZ nq bv, GK t^odu^ov i³B h^to^l GKBFvte, h^w GKRB we^oAv^ox bvB^tU^tRb M^ov^tmi ^oYej x cix^oq^o K^ti t^o L^tZ Pvb, Zte Zv^tK c^ow^oexi me bvB^tU^tRb M^ovm cwi gv^tci ci, tmLvb t^ot^oK bgbv w^be^oPb K^ti cix^oq^o cwi P^j bv KitZ nte bv|

mvgwRK ev^o eZvq, mgM^oKi A^os^of^o Dcv^o v^b t^oj v GKwU t^ot^oK Ab^owU w^ofbentq ^ov^tK etj M^tel Yvi t^oq^to^l w^oq^os^oZ bgbvqb c^xwZ e^oenv^ti i c^oqvRb n^tq c^oto| tm Kvi^tY, M^tel Yvi c^ote^o mvgwRK t^oM^ox^o t^oj vi Amg^oifcZv m^ou^tK^ow^ok^o f^oite Rvbn c^oqvRb, hv^tZ K^ti m^owK bgbv w^be^oPb Kiv m^oe^o nq| Rwi^oc bgbvq^tbi P^ovs^o-j q^ol^o n^tj v, GKwU mgM^oK t^ot^oK GK tmU Dcv^o v^tK Ggb^of^ote w^be^oPb Kiv, hv^tZ K^ti H Dcv^o v^b t^oj vi we^oei Y (cwi msL^ovbgj K) tmB mgM^oK^tk m^owK f^oite c^oZw^ovaZ^o K^ti | Avgiv B^tZv^og^o t^oR^tbi^o th, m^otebv bgbvqb Avg^ov^o i GB j^oq^o AR^obi m^ote^o Zv^tK ewo^otq t^o evi GKwU ^oe^oAv^obK c^xwZ c^ovb K^ti | i^oayZvB bq, GB j^oq^o AR^obi m^ote^o mdj Zvi gv^ov^ot^oK cwi gv^ot^oci c^xwZi w^ot^o R K^ti | bgbvqb c^oq^ovi gj w^ove^oU n^tj v ^oo^ovePqb^o (random selection), hv m^otebv bgbvq^tbi mdj Zvi gv^ov^ot^oK w^obo^oZ K^ti |

GKRB M^tel K tKvb we^otkl c^ok^oq^oY QvovB GKwU Ri^ox^oci Rb^o bgbv w^be^oPb KitZ cv^oib| w^oK^os^o mgm^oU n^tj v, tKvb ^oe^oAv^obK c^xwZi Ab^oyni Y Qvov bgbv w^be^oPb Kitj, M^tel^oKi w^oR^o-^o c^oq^ocvZ tmB bgbv^ot^oK c^of^oweZ KitZ cv^oi | dj^o t^ofc, bgbvU mgM^oKi c^oZw^ovaZ^ok^oxj nte bv| Rwi^oci bgbv^ot^oK Aek^oB mgM^oK^tk c^oZw^ovaZ^o KitZ nte| mgM^oKi w^ofb^oZvi we^otePbvq c^oZw^ovaZ^ok^oxj bgbvq^tbi t^oq^to^l ^oo^ovePqb Kv^oh^oRi f^owgKv cvj b K^ti | ^oo^ovePqb c^oq^ovi ^oU c^ovb ^oenk^o i^ot^oq^ol c^ogZt, GwU mgM^oKi mKj Dcv^o v^tK bgbvq A^os^of^o nevi mgvb m^othvM c^ovb K^ti | h^wl GB gj b^ow^oZi w^ove^otZ m^otebv bgbvqb KLbB w^obi^ok c^oZw^ovaZ^ok^oxj Zv c^ovb K^ti bv, w^oK^os^o m^otebv bgbvqb c^xwZ Ab^ovb^o c^xwZi Zj bvq Aw^okZi

cŰZwbaZkxj bgbv ubePb Kti | wŰZxqZt, ŰePqti gva`tg bgbv wePwZ wbyŰ Kti ubePZ bgbvW KZUKzmWKfite cŰZwbaZkxj ntqŰ, Zv wbiŰY Kiv hvq|

m`vebv bgbvqb c`wZi cKvi t`f` (Types of Probabilty Sampling Procedure)

%ŰePqb cŰµqv AbmiY Kti m`vebv bgbvqti wefbc`wZ i`qŰ| MtelYvi cKwZ, DŰi k` I m`Zvi gvŰvi Dci wbfP Kti GKRB MtelK KLtbv GKwU ev GKwAK c`wZ e`nvi Kti b| th c`wZ `tjvi ga` t`tK MtelK Zvi bgbvqb c`wZ ubePb Kti b, tm`tjv ntjv:

- mij `Űe bgbvqb (simple random sampling)
- wŰqgZwšK bgbvqb (systematic sampling)
- `t`wqZ bgbvqb (stratified sampling)
- `wŰ bgbvqb: GK chŰx I eŰ-chŰx (multi-stage sampling: single-stage and multi-stage)

GB cŰtV, mij `Űe bgbvqb I wŰqgZwšK bgbvqb c`wZtK we`wi Zfite AvtjvPbv Kiv ntjv|

mij `Űe bgbvqb (Simple Random Sampling): cwi mSL`wbK cŰqvMi w`K t`tK mij `Űe bgbvqb ntjv GKwU tgšij K m`vebv bgbvqb c`wZ| KviY, Ab` me RŰUj bgbvqb c`wZtZ Gw AšfP Kiv nq| mij `Űe bgbvqtb mgMŰKi cŰZw Dcv`v`bi bgbv GKK wnmvte PwqZ nevi mgvb m`hvM `v`K| mgMŰKi tKvb GKwU GKtKi ubePb Ab` GKwU GKtKi ubePZ nevi m`vebv`K Avt`š cŰweZ Kti bv| Ges cŰqvRbxq mSL`K bgbv ubePtb Dcv`vbm`gni m`ve` mKj cKvi w`kYtK bgbvq AšfP nevi mgvb m`hvM cŰvb Kti | thgb, 500 RŰbi GKwU mgMŰK t`tK bgbvq cŰZtKi AšfP nevi m`vebv ntjv 500 fivMi 1 fivM| GKRB Ab`Rb`K ubePZ nevi e`vcv`i cŰweZ Kti bv| Zte hw` DŰi k`g`j Kfite tKvb Dcv`v`b`K mgMŰK t`tK ev` w`tq bgbvqb Kiv nq, Zte tmwU Avi `Űe PwqZ bgbv `v`K bv|

cwi mSL`wbK cŰqvMi w`K t`tK mij `Űe bgbvqb ntjv GKwU tgšij K m`vebv bgbvqb c`wZ|

`Űe bgbvqti t`ŰtŰ, MtelK mgMŰKi cŰZw GKtKi Dci GKwU µw`K gvb cŰvb Kti b Ges tmLvb t`tK `Űefvte mSL`v Pqb Ki`Z `v`Kb, hZŰY bv wZwb Zvi Kw`ŰZ bgbvi AvKvi cvb| hw` mgMŰKi AvKvi tŰvU nq, Zte MtelK mgvb AvKwzi KwMŰRi UKtivi Dci b`Ű`tjv wj tL fivR Kti GKwU ev` ivL`Z cvtib| Zvici KwMR`tjv fivtjv gtZv w`k`q wZwb jUvixi gva`tg bgbvqb Ki`Z cvtib| GKwU D`vniY t`qv hvK| aiv hvK, cvPRb e`w`i GKwU mgMŰK t`tK mij `Űe bgbvqb c`wZi gva`tg `ŰRb e`w`i`K ubePb Ki`Z nte| mgMŰKi cvPRb e`w`i `k tRvov m`ve` w`kY n`Z cvti| thgb, KL, KM, KN, KO, LM, LN, LO, MN, MO Ges NO| cŰZw w`kY KwMŰR wj tL GKwU cvtŰ fivtjv fivte w`k`q Gi th tKvb GKwU tZvjv th`Z cvti | cŰB KwMŰR th tRvovU cvlqv hvte, tm tRvovUB nte Avgv`i cŰqvRbxq `ŰRb e`w`i ubePZ bgbv| Zte, G c`wZtZ cŰi cŰwZ I mgvqi cŰqvRb nq| G Űvov, ev`- i g`a` ivLv b`Ű m`Űj Z KwMR`tjv fivtjvgtZv w`k`v`Z bv cvitj, tKvb tKvb GKtKi PwqZ nevi m`vebv nwm tctZ `v`K| thgb, tKvb KwMŰRi UKtiv MtelKti AmveavbZvekZt ev`K` t`qv`i Mv`q tj`M `vK`Z cvti, dtj tmB b`Ű m`Űj Z GKKwU PwqZ nevi m`hvM nvivq|

`Űe bgbvqti t`ŰtŰ, MtelK mgMŰKi cŰZw GKtKi Dci GKwU µw`K gvb cŰvb Kti b Ges tmLvb t`tK `Űefvte mSL`v Pqb Ki`Z `v`Kb, hZŰY bv wZwb Zvi Kw`ŰZ bgbvi AvKvi cvb|

bmZMZfite, GB cxiZtZ th tKvb AvKviti i mgMk t_tK bgbv vbePb Kiv thtZ cvti | wKŠ' cKZcTq, mgMk eo ntj, KwqZ msLvi bgbvi Rb" wgy_tjv ^Zwi Kiv nqtZv GKU Amxg mgqti Abkxj b ntq cotel | G cwiwZtZ, ^De bgbv GKK wbyqti Rb" mvaviYfite %De msLvi mviwY (table of random numbers) e'envi Kiv nq (mviwY cwi-1 `be") |

De msLvi mviwYtZ msLvi_tjv ^cI mwi_tZ mvrvtbv _vtK Ges G_tjv e'enviti i gva'tg ^e bgbv vbePb mnR nq | cU_gK chq, mgMki cUzU GKKtK GKU mugK msLvi vvi vPwYz Kitz nq | thgb, aiv hvK, 3000 QvI-Qvixi GKU mgMk t_tK Avgiv 30 Rtbi GKU bgbv Pqb Kitev | thtnZi Avgvt' i mgMKU Pvi msLvi, tmtnZi cUtg Avgvt' i De msLvi mviwYi th tKvb GKU covi PviU mugK ^q GKU mwi vbePb Kitz ntel | De msLvi mviwYtK Dj ^fite ev AbfugKfite e'envi Kiv hvq Ges th tKvb msLvi t_tK ii" Kiv hvq | th tKvb GKU msLvi t_tK ii" Kti hZqY bv 30U bgbv vbePb tkl nt"Q, ZZqY chS' Avgiv De msLvi mviwY AbniY Kti msLvi Pqb Kitz _vKteV | 30U msLvi wbyqti mgq j q" ivLv `iKvi th, mgMki tkl msLwU (G tqt 3000) PvBtZ eo msLwewko msLvi_wj vbePb t_tK ev `w'tZ ntel | hw' vbePtb GKB msLvi `jevi cvl qv hvq, Zte cUgevi vbePtb ci cieZpcpi "w3gj K msLvi_tjv tK ev `w'tZ ntel |

mij De bgbvqti mjeav I Amjeav (Advantages and Disadvantages of Simple Random Sampling)

mij De bgbvqb cxiZi KZ_tjv mjeav itqtQ | mij De bgbvqb cxiZU Abvb" mKj mDebv bgbvqb cxiZi Zj bq metPtq mnR cUqM Kiv hvq | GU metPtq mij mDebv bgbvqb cxiZ | mij De bgbvqb cxiZ Ab" me mDebv bgbvqb cxiZi wfvE wmvte KvR Kti etj GUtK Abvb" cxiZi mvt_ mvsj Zfite cUqM Kiv hvq | GB cxiZtZ, mgMki cUzU Dcv'tbi bgbvi ASfP nevi mDebv mgvb _vtK | GB cxiZtZ, bgbvi mvt_ msukE- awst' gvvtK mnR cwi gvc Kiv hvq | mij De bgbvqb cxiZtZ MtelKtK ce^t_tKB mgMki `ewko'tK RvtZ nq bv etj GtZ tkYxKiy awst-nq bv |

mjeavi cvkvcwk, mij De bgbvqb cxiZi wKQz AmjeavI itqtQ | mij De bgbvqb GKU tgsj K bgbvqb cxiZ ntj | GU gvS gvSB Avgvt' i Rb" Aev_e I e'qma" ntq `vovq | bgbvqti Rb" th bgbv Kvvtgv ^Zwi i ctqvRb, nq Zv Awakvsk tqtT KuWb I kymva" ntq cto | bgbv Kvvtgv ^Zwi i Rb" mgMki GKKmgtni Zwi Kv msMh Kiv tMtj | Zv me mgq MtelYv DcthmX nq bv | thgb, tKvb GKU Gj vKvq mKj Awavmxi h_vh_ Zwi Kv bvl cvl qv thtZ cvti | hw' I ev cvl qv hvq, Zv Awakvsk tqtTB AmuY^ev cti vtbv ntZ cvti | G Qvovl , wKQz mgvRK tMvxi m`m", ev mgMki wKQz Dcv' vbtK bgbvq vbePZ Kiv KuWb nq | KviY, Zviv Lp `^Z GK `vb t_tK Ab" `vb Pj vPj Kti, ev tKvb Kvi tY Zvt' i Kvto tctv vtbv hvq bv |

wbqgZwsk bgbvqb (Systematic Sampling)

ev_e Abkxj tb, mij De bgbvqb K`wPr e'eUZ nq | KviY, mvaviYfite G cxiZU metPtq Kvhrki bgbvqb cxiZ bq Ges GU Lp kymva" | mij De bgbvqb cxiZ e'enviti i Rb" Dcv'tbi GKU wLyZ Zwi Kv cUqvRb | hw' G iKg GKU wLyZ Zwi Kv cvl qv hvq Ges mgMki AvKvi Lp tekx eo nq, tm tqtT MtelKMY mij De bgbvqti cwi etZ^cUqkt Aci GKU bgbvqb cxiZ cUqM Kti _vtKb, hvtk wbqgZwsk bgbvqb ej v nq | GtK mij De bgbvqti B LwbKUv cwi ewZ ms`diY ej v hvq | Zte, Gi mvt_ mij De bgbvqti gj

cv_ŕ`uW ntjv th, mij `ŕe bgbvqtb %ŕe mSL`vi mviwY e`envi Kiv nq, Avi wbgqZwšK bgbvqtb µgubmvti mrvrtbv mgMŌKi Zvj Kv t_ŕK cŕZ k-Zg Dcv`vbŕK bgbv GKK wnmvte wbeŕPb Kiv nq| wbgqZwšK bgbvqtb Lp tekr e`eüZ `ŕu c` m=ütK`Rvbn cŕqvRb| GKwU ntjv, bgbv e`wß (sampling interval) Ges Ab`uW ntjv, bgbv AbjcvZ (sampling ratio)| bgbv e`wß ntjv wbeŕPZ bgbvi GKwU Dcv`vb t_ŕK Avti KwU Dcv`vbi gta` cwivgZ `ŕZi (standard distance) Ges bgbv AbjcvZ ntjv mgMŌKi gta` Dcv`vbmgnni AbjcvZ|

wbgqZwšK bgbvqtb mŕt_ mij `ŕe bgbvqtb gj cv_ŕ`uW ntjv th, mij `ŕe bgbvqtb %ŕe mSL`vi mviwY e`envi Kiv nq, Avi wbgqZwšK bgbvqtb µgubmvti mrvrtbv mgMŌKi Zvj Kv t_ŕK cŕZ k-Zg Dcv`vbŕK bgbv GKK wnmvte wbeŕPb Kiv nq|

aiv hvK, GKwU we`vj tqi Qvŕ-Qvŕxt`i epxbv¼ (IQ score) hvPvBtqi Rb` GKwU bgbvi cŕqvRb| ŕmB we`vj tqi Qvŕ-Qvŕx mSL`v iŕtqŕ 2000| bgbv wnmvte 200 Rb Qvŕ-QvŕxtK wbevŕŕbi wmxvš-tbqv ntjv| G ŕŕŕŕ, wbgqZwšK wbevŕŕbi Rb` Avgvŕ`iŕK cŕŕg bgbv AbjcvZwU wYŕ Kŕi wŕZ nŕe| Avgvŕ`i D`vniY Abhvqx, mgMŌKi AvKvi ntjv 2000 Ges KwŕŕZ bgbvi AvKvi ntjv 200| AZGe, bgbv AbjcvZwU nŕe $(200 \div 2000) = \frac{1}{10}$ ev

0.10| A_ŕ, cŕZ 10Zg Qvŕ-Qvŕx nŕe Avgvŕ`i bgbv GKK Ges GwB Avgvŕ`i bgbv e`wß| cŕg 20 Rŕbi gta` KZZg Qvŕ-QvŕxtK cŕg bgbv wnmvte wbeŕPb Kiv nŕe, Zv %ŕefvte wbarPY Kiv nq| thgb, cŕg 20 Rŕbi gta` hw` 11Zg Qvŕ ev QvŕxtK `ŕefvte wbeŕPb Kiv nq, Zŕe cieZŕZ 21, 31, 41, 51Zg Gfvte 200 Qvŕ-Qvŕxi wbeŕPb ŕkl bv nI qv chŕ-cŕµqvW Pj tZ _vŕK|

wbgqZwšK bgbvqtb cŕvj xtK AwakZi mŕfvte cwivPj bv Kivi cŕµqv ntjv, GKwU bgbvqtb e`wßi Ašŕŕ bgbv GKK ŕjvi gta` `enkŕŕi wŕŕŕZ mgifcZv Avbqŕbi cŕPŕv Kiv Ges wŕfŕbe bgbvqtb e`wßi gta` `enkŕŕMZ w`K t_ŕK cv_ŕ` eŕx Kiv| mgMŌKi Ašŕŕ GKK ŕjvŕK AbjnÜvbMZ `enkŕŕ Abjvŕi mrvrtbv gva`ŕg GB Dŕŕk` mvab Kiv hvq|

wbgqZwšK bgbvqtb mŕeav I Amŕeav (Advantages and Disadvantages of Systematic Sampling)

wbgqZwšK bgbvqtb mŕeav ntjv, GwU mnŕR e`envi Kiv hvq| GwU mgMŌKi mKj Dcv`vbŕK wbeŕŕbi ŕŕŕŕ `ŕe mSL`vi mviwY e`enviŕi ŕŕŕ mnR c×wZ| GB c×wZŕZ cŕZwU k-Zg Dcv`vb Ašŕŕ nŕtqŕ wK bv, Zv mnŕR cixŕv Kiv hvq| fj MYbvi dtj ŕ`wU ŕjv mnŕR wŕvŕZ Kiv hvq| mij `ŕe bgbvqtb c×wZi Zj bvq wbgqZwšK bgbvqtb c×wZi meŕŕŕŕ ŕ`ZŕYmŕeavwU ntjv, Gi mij Zv Ges mŕeav| GKRb cŕkŕYnxb ev `ŕ cŕkŕYcŕß Dcv`E mSLŕKvixi cŕŕŕ ŕKvb GKwU mŕbw`ŕ bgbv GKK (aiv hvK 251Zg eww) LŕR cvl qv hZ mnR, `ŕe mSL`vi mviwY e`envi Kŕi bgbv GKK LŕR ŕei Kiv ZZ mnR bq|

Zŕe G c×wZi wKŕAmŕeavI iŕtqŕ| cŕgZt, hw` ŕUj ŕdvb WwBŕi±ix, ev bMi WwBŕi±ix bgbv Kvŕŕgv wnmvte e`eüZ nq, ŕmLŕb 791Zg ev 1,081Zg ev 15,321Zg e`wßŕK LŕR cvl qv mwZ`B GKwU KwB KvR| thŕnZi Awakvsk Zvj KvB `Zwi nq eYŕvj vi µg Abhvqx, ŕmŕnZi `ŕx Ges `ŕ wŕfŕfŕbe`vŕb Zvj Kvex nb Ges Gi dtj, `ŕŕŕbi GKŕŕ bgbvq Ašŕŕŕ nevi ŕKvb mŕhvMB _vŕK bv| wŕZŕqZt, hw` Avgiv 2000 Rŕbi GKwU mgMŌK t_ŕK 200 Rŕbi GKwU bgbv mSLŕ Kwi, Zŕe cŕg bgbv wbeŕŕbi ce`chŕ-cŕZwU Dcv`vbi bgbvq Ašŕŕŕ nevi mgvb mŕvebv _vŕK| wKŕ`thB gvŕ cŕg bgbv wŕefvte wbeŕPb Kŕi dtjv nq, ZLb cŕg bgbv t_ŕK wŕZŕq bgbvi ga`w`Z Dcv`vb ŕjvi bgbvq Ašŕŕŕ nevi Avi ŕKvb mŕhvMB _vŕK bv| A_ŕ, wbgqZwšK bgbvqtb mŕe` mKj wgvŕŕK bgbvq Ašŕŕŕ nevi mgvb mŕhvM cŕvb Kŕi bv| ZZŕqZt, G c×wZŕZ bgbv wbeŕPb äwŕŕBk (deceptive) nŕZ cvŕi,

hw` Dcv`vb,tjv wbgqZwšKfvte GKwU μtg ev Ptu mVRvrbv_vtK| hw` Dcv`vb,tjv
c`ghP`v ev `R`o`Zvi wfvE`Z mVRvrbv_vtK, tm t`f`f`i `0e wbeP`tbi gra`tg Ae`vbgjK
GKwU c`f`cvZ `Zwi n`Z cvti | hw` c`g bgbvWU D`P c`ghv`vm`ub`enq, Zte c`ZwU bgbv
GKKB D`P c`ghv`vm`ub`ente | hw` c`g bgbvWU wbgæc`ghP`vm`ub`enq, Zte c`ZwU bgbv
GKKB wbgæc`ghv`vm`ub`ente | G t`f`f`i, bgbvq c`ZwvwaZ`kxj w`gkY cvlqv hvte bv |
AZGe, GKwU Zvuj Kv t`_tK wbgqZwšK bgbvq`tbi c`e`Mtel K`kK bgbv KwvrtgwU fvj vfvte
wbix`f`v Kti wbtZ nte |

mvisk

m`ebv bgbvqb c`xwZ`Z mKj bgbv c`ZwvwaZ`kxj nl qvi m`ebv_vtK | Gi A`GB bq th,
mKj bgbvB c`ZwvwaZ`kxj | eZ`gvb cvtV m`ebv bgbvq`tbi thšw`KZv l c`Kvif` wbtq
AvtjvPbv Kiv n`q`f`Q | G Qvovl, mij `0e bgbvqb Ges wbgqZwšK bgbvq`tbi m`eav l
Am`eav,tjv`Kl AvtjvPbv Kiv n`q`f`Q | GwU gtb ivL`Z nte th, bgbv hw` h_vh_fvte
c`ZwvwaZ`kxj bv nq, Zte Zv`Z fj Dcmsv`ti t`c`Qv`tbi m`ebv_vKte A`tbK tekx |
m`Zivs, Mtel K`kK Mtel Yvi D`f`k` Ges c`KwZi Dci wbfP` Kti bgbv c`xwZ m`ut`K`m`xvš-
wbtZ nte |

cvfVvEi gj`vqb

`be³K cke

mWVK DEti i cvfk WJK (v) WPy w` b -

1| mZK³bgbv wbePti tKvb c⁰qvRb nq bv:

- K. hw` mgM⁰Ki mKj m`m` GKB iKg nq
- L. hw` bgbv wbePti mgq Mtel K Dcw`Z`_vfkB
- M. bgbv KvWtgv h_vh_ nq
- N. Dcti i me|

2| mgM⁰Ki c⁰ZW GKK bgbv wnmvte PwqZ nI qvi mgvb mthvM`_vfk:

- K. mi j`⁰e bgbvqtb
- L. wbgZwšK bgbvqtb
- M. `+wqZ bgbvqtb
- N. „Q bgbvqtb|

3| GKRB Mtel K tKvb bgbvqb c^xwZ e`envi Ki teb, Zv wbfP Kti:

- K. Mtel Yvq ei vI KZ At`P cwi gvtYi Dci
- L. Mtel Yvq RwoZ tj vKetj i Dci
- M. Mtel Yvi cKwZ, Dti k` Ges`vftbi Dci
- N. Mtel Yvi cKwZ, Dti k` I m⁰Zvi Dci |

msw⁰B cke

cv`R` vj Lp:

- K. mi j`⁰e bgbvqb I wbgZwšK bgbvqb
- L. `+wqZ bgbvqb I „Q bgbvqb

iPbvGj K cke

1| m⁰ebv bgbvqb c^xwZi cKvi f` Avtj vPbv Ki`b|

2| Dbš wekte` j` tq Aa`qbi Z wk⁰v`⁰ i epxgEv cwi gvtc tKvb bgbvqb tKškj w Avcbv h_vh_ etj gtb Kti b? Avcbvi DEti i `ct⁰ h³ c⁰k⁰ Ki`b|

მანქანი ბგბვბ c×wZ - 2
Probability Sampling Procedure - 2

GB cW tkfi hv Rvbn hrte —

- ობიექტი ბგბვბ c×wZ
- „Q ბგბვბ c×wZ — GK-ჩიფი I ეუ-ჩიფი
- მანქანი I ამანქანი ბგბვბი wky

cW 3-G Avgi v მანქანი ბგბვბ c×wZi ობიექტი Avtj vPbv KtiwQ — მიჯ ობიექტი ბგბვბ c×wZ I wbggZwšK ბგბვბ c×wZ | მიჯ ობიექტი ბგბვბ I wbggZwšK ბგბვბ ntjv, GKwZ Zvjv Kt tšK ბგბვბ wbePšbi ობიექტი c×wZ | A_P, ბგბვბი mgq მიჯ ობიექტი ბგბვბ c×wZ Ges wbggZwšK ბგბვბ c×wZ MtelYvi mgMKwšK GKwZ cY°GKK wnmvte wetePbv Kti | wKš' wKQz ბგბვბ c×wZ itqtQ th,tjv ბგბვბ wbePšbi cteB mgMšKi GB cY°GKKwšK KZ,tjv DctMvōx ev,tšQ wef³ Kti | GiKg ობიექტი ბგბვბ c×wZ ntjv, ობიექტი ბგბვბ c×wZ I „Q ბგბვბ c×wZ | GB cvtV, G ობიექტი c×wZšK wewi Zfvte Avtj vPbv Kiv nte |

ობიექტი ბგბვბ c×wZ (Stratified Sampling Procedure)

ობიექტი ბგბვბი გრატიგ მანქანი ბგბვბ ანქანი ნმ Kti
AwaK გრვი
cšZwšKzšKj ZvtK ARB
Kiv hvq, hv mij ობიექტი
ბგბვბ c×wZ ev
wbggZwšK ბგბვბ c×wZi
გრატიგ ARB Kiv mae bq |

Avgi cteB Dšj KtiwQ th, ობიექტი ბგბვბ c×wZ მიჯ ობიექტი ბგბვბ c×wZ I wbggZwšK ბგბვბ c×wZi tkvb weki bq | მიჯ ობიექტი ბგბვბ I wbggZwšK ბგბვბ c×wZ ობიექტი cšZwšKzšKj Zvi გრვი wšZ Kti Ges ანქანი cwi გრვი Kti | AbwšK, ობიექტი ბგბვბი გრატიგ მანქანი ბგბვბ ანქანი ნმ Kti AwaK გრვი cšZwšKzšKj ZvtK ARB Kiv hvq, hv mij ობიექტი ბგბვბ c×wZ ev wbggZwšK ბგბვბ c×wZi გრატიგ ARB Kiv mae bq |

ბგბვბ Zšj Abhvqx, gj Zt ობიექტი Dcv`vb ბგბვბ ანქანი ნმ ewšK cšwšZ Kti | cšgZt, GKwZ eo AvKvšii ბგბვბ memgqB GKwZ tōvU AvKvšii ბგბვბ tšq Kg ბგბვბ ანქანი Rbš t`q | wšZxqZt, GKwZ mgifc mgMK tšK ბგბვბ wbePšb memgqB GKwZ Amgifc mgMK tšK wbePšbi Zj bvq Kg ბგბვბ ანქანი Rbš t`q | thgb, hw GKwZ wšq 99 kZvsk e`w³ GKgZ tcvY Kti, Zte tm tššš ბგბვბ ანქანი mšhvm všK Lš Kg | A_P hw 50 kZvsk e`w³ GKgZ tcvY Kti, Zte ბგბვბ ანქანი cwi გრვი AšbK tekx všK | ბგბვბ Zšj GB wšZxq Dcv`vbw ობიექტი ბგბვბი wšwš wnmvte Kiv Kti | ობიექტი dtj, cšZwšK Dc-bგბვბ AwaKZi mgifc nq etj, მიჯ ობიექტი ბგბვბ c×wZšZ wbePšZ GKwZ wšwš ბგბვბ AvKvšii Zj bvq ობიექტი ბგბვბ c×wZšZ wbePšZ GKB AvKvšii ბგბვბ ანქანი Kg ntq všK | Zte Gwš gšb ivLv cšqvRb th, ობიექტი ბგბვბ ანქანი ნმ Kti | Gi cšwšwš nq cwiwšZ, ev გრვი aišyi | ობიექტი ბგბვბ c×wZ th cwi გრვი ბგბვბ ანქანი ნმ Kti, Zvi Zj bvq მიჯ ობიექტი ბგბვბ c×wZ mvavi Yfvte 10 tšK 20 kZvsk Kg nwm Kti |

ობიექტი ბგბვბი Pevš j ობიექტი ntjv, mgMKšK KZ,tjv mgifc mve-tššU mvRvšbv Ges cšZwšK mve-tššU tšK h_vh_mšL`vi Dcv`všK ბგბვბ wnmvte wbePšZ Kiv |

ობიექტი ბგბვბი Pevš-j ობიექტი ntjv, mgMKšK KZ,tjv mgifc mve-tššU mvRvšbv Ges cšZwšK mve-tššU tšK h_vh_mšL`vi Dcv`všK ბგბვბ wnmvte wbePšZ Kiv | thgb, wšwš wšq Qvš-Qvšš`i Dci cwi Pwšj Z GKwZ MtelYvq, MtelK cšg Zvi mgMKšK tkYx Abhvqx mvRvšq šbb Ges Zvi ci, cšg el°wšZxq el°ZZxq el°Ges PZL`el°tšK

h_vh_ msL`vi QvT-QvT`K bgbv wmvte wbePb Kti b| Duj w-Z Mtel K Avti v RuUj `+vqb c0uqv AbyniY KiTz cvtib| tkYxi wfwEz mgMKtK mrvtovi ci, wZub wj tzi wfwEz, ciXqVq c0B b`ti i wfwEz, Ggb wK, wZv-gvZvi wKqVwZ thvM`Zvi wfwEzI Zvi mgMKtK mrvtZ cvtib| Gfite wZub wvDZ nTz cvtib th, Zvi bgbvq h_vh_ cwi gvTY D`P wkvqZ wZv-gvZvi c0g tkYx c0B PZL`e tI P QvT-QvT`x AšfP nTqtQ| mve-tmU ,tj v GKwU `+vqb Pj tKi (stratification variable) wfwEz mgjfc nTj, Ab` Pj tKi wfwEzI mgjfc nTz cvtib| thgb, thtnZi QvT-QvT`x i tkYxi mvt_ eqtmi GKwU m`uK`i tqtQ, tmtnZi tkYxi wfwEz `+wqZ bgbv, eqtmi wfwEz `+vqtbI c0Zwvaz`kxj nte| Zte GLvtb gtb ivLv c0qvRb th, GKwU mgjfc mve-tmU t`tK Avti KwU mgjfc mve-tmtUi gta` wfbvZv `vKtZ nte|

`+vqb wKfite Kiv nte, tmB wmvšwU `šU weltqi Dci wbfP Kti | c0guU nTj v, `+vqtbI mgm`v Ges w0ZxquU nTj v, bgbvq c0ZuU AwZwi³ Dcv`vb AšfP`i Rb` gj` c0vb| A_vf, h` tKvb Pj tKi Dci DcvE msM0ni Rb` mnRMg`Zv I mnRj f`Zv bv `vK, Zte H wtkl Pj tKi Dci GKwU bgbvT K `+vqb Kiv KwB nTz cvtib| thgb, wekte` vj tqi QvT-QvT`x i GKwU bgbvT K Zj bvgj Kfite tkYxwfwEK `+vqb Kiv hZ mnR nte, H bgbvT K thšb nqivbxi wfwEz `+vqb Kiv ZZ mnR nte bv| Kvi Y, wekte` vj tq QvT-QvT`x i tkYxwfwEK ti wR0i i qv Kiv nTj I thšb nqivbxi Dci tKvb Z` msi qY Kiv nq bv| AZGe, t`Lv hv`Q th, `+vqtbI Rb` GKwU bgbv Kvvtgv c0qvRb, thLvtb mntRB `+vqb Pj K ,tj vi DcvE cvl qv hvte, ev `+vqtbK mntRB wbaP Y Kiv hvte|

`+vqb wKfite Kiv nte, tmB wmvšwU `šU weltqi Dci wbfP Kti | c0guU nTj v, `+vqtbI mgm`v Ges w0ZxquU nTj v, bgbvq c0ZuU AwZwi³ Dcv`vb AšfP`i Rb` gj` c0vb|

GKwU bvtgi Zwj Kv t`tK mntRB wj t`tK wbaP Y Kiv hvq| wKš` wKqV AtbK Pj tKi mvt_ m`uK`nTj I `+vqtbI Rb` AtbK mgq Zv mnRj f` bq| tKvb `enk0`i wfwEz Avgiv mgMKtK `+wqZ Ki tev, Zv wbeP`bi mgq gtb ivLz nte th, `enk0`w ev `enk0`mgn thb Mtel Yv mgm`vi mvt_ c0mwiK nq| A_vf, `+wqZ bgbvqtbI t`qT Avgv`i gtb ivLz nte th, `+wqZ bgbvqtb `+ ,tj v cvi `uwi Kfite Abb` (mutually exclusive) nTz nte| A_vf, mgM0Ki GKwU GKK tKej gvT GKwU `fi B AšfP nte| GKwU GKK GKB mgTq GKwaK `fi AšfP nTz cvi te bv| mvgwMKfite, c0ZuU `fi i mgw0B m`uY`mgM0Ki mgvb nte|

mgq, e`q I wbfP Zvi w`K t`tK `+wqZ bgbvq c0uqv mij `0e bgbvqtbI tPtq mjevRbK| wtkl Kti, thLvtb mgM0Ki GKK ,tj vi gta` Awak gvTq AmgijcZv w`gvb, tmLvtb GB bgbvq c`wZ wtkl fite DcthvMx| Kvi Y, `+web`v`mi gva`tg AmgijcZvi mgm`v `xfZ nq| th me t`qT mgM0Ki web`vm ewAg nq, tm me t`qT, `+wqZ bgbvq LpB mjevRbK| D`vni Y`tfc, Avq web`v`mi t`qT mij `0e bgbvq c0uqv e`envi Kij D`P gvTvi Avtqi gvb ,tj vi c0Zwvaz`kxj bvl `vKtZ cvtib| `+web`v`mi gva`tg Avgiv c0šK Avtqi gvb ,tj vi c0Zwvaz`kxj wvDZ KiTz cwi | `+wqZ bgbvqtbI Avti KwU eo mjev nTj v, GLvtb GKwaK `fi i gta` Zj bv Kiv m`e nq|

mgq, e`q I wbfP Zvi w`K t`tK `+wqZ bgbvq c0uqv mij `0e bgbvqtbI tPtq mjevRbK|

mgvbcwZK I AmgvbcwZK `+vqb (Proportionate and Disproportionate Stratification)

c0ZuU `fi bgbv wbePb mij `0e bgbvq c`wZ ev w0ggZwišK c`wZtZ nTz cvtib| Zte, tKvb `fi wK nvti bgbv evQv Kiv nte, Zv GKwU `i`ZcY`weteP` wclq| c0ZuU `+ t`tK evQvBKZ bgbvi msL`v wbaP`Yi `šU c`wZ i tqtQ| GKwU nTj v mgvbcwZK eUv (proportionate distribution) Ges Ab`wU nTj v AmgvbcwZK eUv (disproportionate distribution)|

c0ZuU `+ t`tK evQvBKZ bgbvi msL`v wbaP`Yi `šU c`wZ i tqtQ| GKwU nTj v mgvbcwZK eUv Ges Ab`wU nTj v AmgvbcwZK eUv |

mgvbcwZK eUtb, tgvU GKtKi msL'vi AbjvtZ GKuU -, ev Dc- -i t_tK bgjv GKK wbePb Kiv thtZ cvti | A_@, G t_tK GKuU -i t_tK evQvBKZ bgjvi AvKvi wbfP Kti -i i AvqZtbi Dci | aiv hvK, tKvb GKuU MtelYvq tKvb Mtgi Awaevmt` i mgMK wnmvte aiv ntqtQ | tmLvtb atgP wfwEtZ Mtgevmt` i tK Pvi fvM fvM Kiv ntqtQ | thgb, gmnj g - 75 kZvsk, wny - 20 kZvsk, Ltovb - 3 kZvsk Ges tesx - 2 kZvsk | atgP wfwEtZ wef3 Mtgevmt` i cZuU tMvxB nt`Q GtKKuU -i | cZuU -i t_tK mgvbcwZK fite bgjv Pqb Kiv thtZ cvti | tmLvtb hw` KwqZ bgjvi AvKvi 100 nq, Zte bgjvi gta` 75 Rb gmnj g, 20 Rb wny 3 Rb Ltovb | 2 Rb tesx _vKteb |

AmgvbcwZK eUtb, -i i AvqZb wetePbv bv Kti, cZuU -i t_tK mgvb msL`K bgjv wbePb Kiv nq | Gi cZuU Dtk`uU nt`Q, bgjvi msL`v wbePb i t_tK AmgvbcwZK bgjvqb cxwZ e`envi Kti bgjv bKkvi KvhrvixZv epv Kiv | wfwbcwU wZtZ, G aitYi bgjvqb cxwZi e`envi cqvRbxq ntq cto | ctiv mgMKi cwitZ`KLtbv Avgv` i AvMh wfbwfbwDc-mgMKi Dci tK`tFZ ntZ cvti | thgb, Avgiv hw` wZbuU cZuU agv RbtMvxi (gmnj gvb, wny | Ltovb) wkvvi nvti gta` Zj bv KitZ PvB, tm t_tK ctiv mgMK Ltovb agvej xti msL`v Kg _vKvq, mij `oe bgjvqb Ges mgvbcwZK -i wqZ bgjvqb cxwZ Lp Ai msL`K Ltovb agvej xtk bgjvq AšfP Kite | GB Ai msL`K bgjv w`tq Zj bgjv K wtkv Kiv hvq bv | AZGe, A_en Zj bgjv K wtkv Yi Rb, cZuU tMvxi ga` t_tK mgvb msL`K bgjv wbePb i wvš-wtZ nq | Gi dtj, wny RbtMvxi Zj bvq Ltovb agv cZuU e`v3 i bgjvq AšfP nevi mtebv _vK KtqK_Y tekx | cZuU bgjvi wfwEtZ ctiv mgMKi Dci mvariYxKiY KitZ ntj GKU fihv3 cwimsL`vb wbyq Kti GB AwZbgjvqbwtk (oversampling) cvl tq w`tZ nte |

„Q bgjvqb cxwZ: GK-chq | eU-chq (Cluster Sampling: Single-Stage and Multi-Stage)

-i wqZ bgjvqtb Avgiv mgMKtK cUgZt KtqKwU `j ev Mtvc fvM Kw, hvtk 0`-0 ejv nq Ges cZuU -i t_tK mij `oe bgjvqb cxwZtZ, ev wqgZwšK bgjvqb cxwZtZ bgjv GKK wbePb Kw | wš` tKvb tKvb t_tK, wtklZt th mKj t_tK, mgMKi Dcv`v`tj v w`Z GjvKv Rto Ae`vb Kti, tmLvtb mij `oe bgjvqb ev -i wqZ bgjvqb cxwZi cqvM tek e`qma` ntq cto | G aitYi cwitZ`Z, mgMKtK KtqKwU eo „Q wef3 Kiv nq Ges wbePZ „Q,tjv t_tK cUtg KtqKwU „QitK bgjv GKK wnmvte wbePb Kiv hvq | Zvici, bgjv wnmvte wbePZ cZuU „Q t_tK DcvE msMh Kiv nq | thgb, XvKv kniti 90uU IqvWPK GtKKwU „Q wnmvte wetePbv Kti, tmLvtb t_tK 9uU IqvWPK bgjv wnmvte wbePb Kiv thtZ cvti | Gici 9uU IqvWPK cZuU GKK, ev wKQv wbePZ GKK t_tK DcvE msMh Kiv thtZ cvti | bgjvqtb GB cxwZtK „Q bgjvqb ejv nq | GB bgjvqb cxwZtZ Ggbfite „Qvqb Kiv nq, hvZ cZuU „Q AšfP GKK,tjvi gta` mtevP gvIvi AmgijcZv w`gvb _vK Ges GKwU „Q t_tK Aci „Qit gta` epEg gvIvi mgijcZv w`gvb _vK | mvariYZt, tšMwj K Ae`v`bi wfwEtZ MyQ cZuU Kiv nq etj G cxwZtK AtbK mgq 0`t_tK bgjvqb0 ejv nq |

-f e`q „Q bgjvqtb metPtq eo mjev | mgMK hw` w`xY`fšMwj K GjvKv Rto Qwotq _vK, Zte tm t_tK e`q mstKvPb GKwU „iZcy`wvq ntq `wvq | KviY, w`xY`GjvKv Rto mvqvrKvi MhYKvix cvv`v Awak e`q mvtc` Ges mgq mvtc` | mij `oe bgjvqtb Zj bvq „Q Pqb cZuU Kg mgq mvtc` etU | tKvb tKvb t_tK, mgMKi AšfP GKKmgtni m`uY`Zwj Kv bv _vKvi KvitY, mij `oe bgjvqb m`eci nq bv | G t_tK,

weKí e`e`v`nmvte c0`ugK bgjv GKKmgšni „Q Zwj Kv t`tk bgjv mšMh Kiv nq| A_ŕ,
„Q bgjvqtb Avgiv mgMhKi Dcv`vbtk mi vmi bgjv nmvte ubePb Kwi bv| Gi cwietZ,
Avgiv „QtK ev Dcv`vtbi MhctK bgjv nmvte ubePb Kwi |

metPtq mnRZg „Q bgjv bKkvq, „Q ubePbtbi mgq Avgiv %ePqb Kti ubePZ
„Q,tjvi gta`Kvi c0Zw Dcv`vb t`tk DcvE msMh Kitz cwi | GB aitYi bgjv bKkvK
GK-chŕq „Q bgjvq e jv nq| KviY, GB c0uqv GKgvĪ GKevi bgjvq Kiv nq|
„t`Qi AšFš c0Zw Dcv`vbtk e`envi Kiv nq etj GLvtb bgjv aššit`tkvb mthvM `vtK
bv| wKš`Avtiv RuUj bgjv bKkvq, GKRb MtelK c0tg lqvW,tjv t`tk bgjv vbtq ubePZ
lqvW,tjvi AšFš gnj`vtjvtK Zwj Kve× Kitz cvtib| Zvici, gnj`vtjv bgjvq Kti
ubePZ gnj`vtjvi AšFš c0Zw ewotK Zwj Kve× Kitz cvtib| ewoi bgjvq Kti
c0Zw ewoi m`m`ti Zwj Kv c0Z Kitz cvtib| metktl, DcvE msMhni Rb` ewoi
m`m`ti ga` t`tk KwŕqZ bgjv ubePb Kitz cvtib| GB c0uqv Avni Z bgjvq
cxwZtk eü-chŕq „Q bgjvq etj | G aitYi bgjvqtb, cŕtcb`ŕw cxwZ e`envi Kiv
ntq `vtK — Zwj Kve×KiY Ges bgjvq|

eü-chŕq bgjvqbtK KvhRix (efficient) bgjvq cxwZ nmvte mcvwi Kiv thZ cvti |
wKš` GB KvhRixZvi webgq MtelKtK GKw eo gj` w`tZ nq Ges tmB gj`w ntjv
mivKZv (accuracy) | mij`ŕe bgjvqtb mgMhKi Zwj Kv t`tk bgjv ubePb Kiv nq etj,
tmLvbt gvĪ GKevi bgjv ašš-NtU| wKš`ŕ-chŕq „Q bgjvqtb`ŕevi Ges wZb-chŕq
bgjvqtb wZbevi bgjv ašš-NtU| Gfite bgjvqtb chŕq hZ evotZ `vtK, bgjv aššit`
cwi gvY ZZ evotZ `vtK| „t`Qi msL`v ubePb c0uqv gta` GB mgn`v mgvvtbi tkb Dcvq
wbnZ itqtQ| hw` GKRb MtelK 2000 e`w`i mŕŕvrKvi MhYi wvš-tbb, Zte wZwb
GKw „Q ubePb Kti tmB „Q t`tk 2000 Rb e`w`i mŕŕvrKvi MhY Kitz cvtib|
A_ev, wZwb 2000 „Q ubePb Kti c0Zw „Q t`tk GKRb Kti e`w`i mŕŕvrKvi MhY
Kitz cvtib| tKškj`ŕwĪ tKvbwB h_v`ŕq| KviY, G`ŕwB ntjv Pig tKškj | G aitYi
cwi w`wZtZ, bgjvi AvKvi l Dcv`vtbi mgifcZvi welqul gtb ivLv metPtq „i`ZcYŕ hw`
„t`Qi AšFš Dcv`vb,tjv mgifc nq, Zte tekx „Q ubePb Kti c0Zw „Q t`tk Kg
Dcv`vb ubePb Kiv hvq| Avi hw` „Q,tjv mgifc nq, Zte Kg „Q ubePb Kti c0Zw „Q
t`tk tekx Dcv`vb ubePb Kiv hvq| „Q bgjvqtb mvariY bwxZgvj wU ntjv, „t`Qi msL`v
tekx tišL ubePZ „t`Qi Af`šš Dcv`vtbi msL`v Kgvvbt| KviY, GtZ Kti mgMhKi
Dcv`vbtk AwaK cwi gvY Zwj Kve× Kitz nq bv, hv „Q bgjvqtb KvhRixZvtK ewotq
tZvtj |

„Q bgjvqtb mvariY
bwxZgvj wU ntjv, „t`Qi
msL`v tekx tišL ubePZ
„t`Qi Af`šš Dcv`vtbi
msL`v Kgvvbt|

m`tebv l Am`tebv bgjvqtb wgvY (Combining Probability and Non-Probability Sampling)

hw` wefba`chŕq bgjvqtb c0qvRb nq, Zte GKw bgjv bKkvq m`tebv l Am`tebv
bgjvqbtK wgvY Kiv m`te| A_ŕ, GKw ev`ŕw chŕq m`tebv bgjvq Ges Ab`
chŕq,tjvtZ Am`tebv bgjvq cxwZ e`envi Kiv thZ cvti | thgb, „Q m`tebv bgjvq
cxwZ e`envi Kti GKRb MtelK „Q,tjvtK ubePb Kitz cvtib| wKš` Pevš-chŕq,
Dcv`vb,tjvtK tKvUv bgjvq cxwZ e`envi Kti ubePb Kiv thZ cvti | AZGe, c0qvRbxq
msL`K MhgtK m`tebv cxwZtZ ubePb Kti, tmB ubePZ Mhgt,tjv t`tk LvvtKI
(household) m`tebv bgjvq cxwZ e`envi Kti ubePb Kiv hvq, Ges ubePZ Lvvt,tjvi
ga` t`tk wj ½ l eqtmi AbcvvtZi wfvEtZ tKvUv bgjvq cxwZ e`envi Kiv hvq|

ugukZ bgbr bKkvi mjeawU
ntjv th, bgbvi Rb" wbaWi Z
bgbr GKK, tjv wbePtb
tqit e'vcK A_ qmvtq nq|

wecixZfvte, c0tg Gj vKv, tjvK mjeavRbK ev Dti k'gj K bgbrqb cxwZi gva'ig wbePb
Kiv thZ cvti | tmB wbePZ Gj vKv, tjv t_tK mtebv bgbrqb cxwZ e'envi Kti Povš-
Dcv'vb, tjvK wbePb Kiv thZ cvti | G iKg GKwU ugukZ bgbr bKkvi mjeawU ntjv th,
bgbvi Rb" wbaWi Z bgbr GKK, tjv wbePtb t'qit e'vcK A_ qmvtq nq| G Qovl, GtZ
mavi YxKiY I c0ZwbaZkxj Zvi gviv wKQlv ntj I epv cvq| Zte, djvdj wtkHYi tqit,
djvdj i tKvb Askw Ges wK gviv mavi YxKiYthM" nte, Zv MtelKtK uofvte Dti
KtZ nte|

mvisk

eZgPb cvtV`wU bgbrqb cxwZ — t'wqZ bgbrqb I „Q-bgbrqb — wbtq Avgiv
AvtjvPbv KtinQ| t'wqZ bgbrqtb gva'ig mte" bgbr awstK nvm Kti Awak gviv
c0ZwbaZkxj ZvtK ARB Kiv hvq| | Ab'w tK, „Q bgbrqtb metPiq eo mjeav ntjv th, G
c0uqvq e'q Kg nq Ges mgq| Kg jvtM| „Q bgbrqtb bgbr awst mthvM vtK Kg|
KviY, „Q bgbrqtb „t'Qi AšfP c0Zw Dcv'vbtK e'envi Kivi mthvM vtK| mtebv Ges
Amtebv bgbrqtb wgtY bgbr GKKtK wbePb Kti I MtelYv Kiv mte| G aiYi bgbr
bKkvi mjeawU ntjv th, GtZ t' e'q nq|

cvfVvEi gj`vqb

`be⁹³K cċæ

mVVK DĒti i cvfk WJK (√) vPy w` b –

- 1| AvZ bgbvqbtK cvl tq t` qvi Rb`:
 K. msL`vi Dci vfwĒ Kti vm×vš-wbtZ nte
 L. Mo wbyġ Ki tZ nte
 M. fi hß cwi msL`vb e`envi Ki tZ nte
 N. Mo Ges fi hß cwi msL`vb e`envi Ki tZ nte|

- 2| tġġ bgbvqbtbi metPtq eo mjeav nt`Q:
 K. `f e`q
 L. `f msL`v
 M. `f mgq
 N. `f Rbej |

- 3| „Q bgbvqbtbi mavi Y bwiZgyj wU ntj v:
 K. „t`Qi msL`v tekx ivLv
 L. „t`Qi Af`šfi Dcv`vġbi msL`v tekx ivLv
 M. „t`Qi msL`v Kg ti tL wbePZ „t`Qi Af`šfi Dcv`vġbi msL`v tekx ivLv
 N. „t`Qi msL`v tekx ti tL wbePZ „t`Qi Af`šfi Dcv`vġbi msL`v Kg ivLv|

msvġB cċæ

- 1| `+wqZ bgbvqbt c×wZ wK?
- 2| „Q bgbvqbt c×wZ wK?

iPbvġj K cċæ

- 1| Mġg ersj vi Kw tZ bvix tkv tYi vPġ Ztj aivi Rb` m`tebv I Am`tebv bgbvqbtbi wġkY KZUKzDc`hvMx etj Avcb gtb Kti b? Avtj vPbv Ki`b|
- 2| `+wqZ bgbvqbtbi mġgve×Zv tj v Avtj vPbv Ki`b|

bgpvi AvKvi wbaŋŋY
Determination of Sample Size

GB cW tktl hv Rvbn hvte —

- bgpvi AvKvi KZ eo nte
- bgpvi AvKvi wbaŋŋY „i“ZcY©Dcv`vbmgn
- mgvbcvŋZi Rb` bgpvi AvKvi wbyŋ
- Mtoi Rb` bgpvi AvKvi wbyŋ

bgpvi AvKvi KZ eo nte (How Big a Sample Size Should be)?

*Mtel Yvi aiY, Dŋŋk`
ZwEŋK Kvvtgv, cZ`qmgŋni
Kvhŋi msAv Ges cwi gvc
cŋŋqv wbaŋŋY ci GKRb
Mtel K cŋŋ th cŋŋŋi
mŋŋŋnb nb, tmiU ntjv,
ŋbgpvi AvKvi w KZ eo
ntel?*

th tKvb Mtel Yvi Ab`Zg „i“ZcY©ŋel q ntjv bgpvi AvKvi | Mtel Yvi aiY, Dŋŋk`, ZwEŋK Kvvtgv, cZ`qmgŋni Kvhŋi msAv Ges cwi gvc cŋŋqv wbaŋŋY ci GKRb Mtel K cŋŋ th cŋŋŋi mŋŋŋnb nb, tmiU ntjv, ŋbgpvi AvKvi w KZ eo ntel? tKD ej tZ cvŋi b th, GwU wK GKwU RwUj mgm`v ntjv? Mtel Yvi Rb` hZ eo cŋŋqvRb, bgpvi AvKvi ZZ eo nte | G aiŋYi eŋŋe`i graŋŋ mgm`wUi tKvb ev`emŋŋZ mgvavb ntjv bv | Zte, eŋŋe`wŋŋK Mfxi fvte chŋŋŋvPbv Kiŋŋ wKQymŋ cvl qv hvte, hv bgpvi AvKvi wbaŋŋYi RwUj Rvj wU Lj tZ mnvh` Kiŋŋ |

hLb ejv nt`Q th, ŋMtel Yvi Rb` hZ eo cŋŋqvRb, bgpvi AvKvi ZZ eo nteŋ, ZLb gŋbi gŋa` KZ „tjv „i“ZcY©cŋŋ½ tŋŋm DŋŋV | thgb, Mtel Yvi Dŋŋŋk`wU wK? Mtel YwU Kvŋ` i Rb` cwi Pwŋ Z nte? Mtel Yvi cŋŋwZ wK? BZ`w` | tkl cŋŋw w`ŋq`i`i` Kiv hvK | hw` Mtel Yvi cŋŋZwU ev`L`vgj K bv ntq eYŋŋvgj K nq, tm tŋŋŋŋŋ bgpvqb cŋŋZ Ges bgpvi AvKvi i wcl qwU wKQŋŋw wKw`j fvte t` Lv thŋZ cvŋi | mnRfvte Mtel Yv Kvh`cwi Pŋj bvi Rb`, Amŋŋebv bgpvqb cŋŋZ e`envi Kŋi th tKvb AvKvi i bgpv wbeŋŋb Kiv thŋZ cvŋi | th mgMŋŋKi Dci Mtel Yv cwi Pwŋ Z nq tmB mgMŋŋwU hw` mgŋŋc nq, Zte `ŋ msL`K bgpvi wŋŋEŋZ tmB mgMŋŋ mŋŋŋK mŋŋŋvavi YxKiY Kiv hvq | Mtel Yvi Dŋŋŋk` hw` Mfxi Zj bvgj K wŋŋkŋŋ nq, Zte bgpvi AvKvi eo nte | Avi hw` Dŋŋŋk`wU mgMŋŋKi mŋŋŋvavi eYŋŋ nq, Zte tQvU bgpv wŋŋŋ B Dŋŋŋk`wU mŋŋZ nte |

G chŋŋ-AŋŋŋvPbvq t`Lv hvŋ`Q th, bgpvi AvKvi wbaŋŋŋY cŋŋE eŋŋe`wUi chŋŋŋvPbv t`ŋK tek wKQymŋ cvl qv hvq, hvi wŋŋEŋZ bgpvi AvKvi wbaŋŋŋY wŋŋŋvŋŋ-MŋŋY Kiv hvq | wKŋ mgm`v ntjv, Dcŋi th cŋŋ½ „tjv i DŋŋŋKiv ntqŋŋQ tm „tjv hw` Mtel ŋŋKi Abŋŋŋŋ bv `ŋŋK, Zte ŋbgpvi AvKvi KZ eo ntel? G cŋŋŋe` mŋŋŋó Reve cvl qv hvte bv | hw` cŋŋ½ „tjv Mtel ŋŋKi Abŋŋŋŋ `ŋŋK, tm tŋŋŋŋŋ bgpvi cŋŋZ AvKvi wK nte, Zv Rvbn hvq bv | A`ŋŋ, GLbI Avgiv mŋŋŋŋŋŋZfvte ej tZ cvŋŋŋQ bv th, Mtel Yvi Rb` cŋŋZcŋŋŋ KZRb e`wŋŋŋK wbeŋŋb Kiv nte | KviY, Dcwi wŋŋŋZ cŋŋ½ „tjv Qovl Avŋŋŋ wKQy „i“ZcY©Dcv`vb iŋŋŋŋQ, th „tjv wŋŋePbvq Avbn cŋŋqvRb |

bgjvi AvKvi vbaŷi ŷY „i“ZcY©Dcv` vbmga (Important Factors in Determining Sample Size)

bgjvi AvKvi KZ eo nte, Gi msL`v wbyŷqi welqul wbfP Kti cvbZt wZbuJ welŷqi Dci | tm, tjv ntjv: mgMKi gvb cj tbi Rb` Kw`ŷZ mZvI gvŶv, mnbŷhM` Ŷ`wi gvŶv, Ges mgMKi cwimgZ e`eavtbi c`wj Z gvb |

bgjvi AvKvi KZ eo nte, Gi msL`v wbyŷqi welqul wbfP Kti cvbZt wZbuJ welŷqi Dci | tm, tjv ntjv: mgMKi gvb cj tbi Rb` Kw`ŷZ mZvI gvŶv, mnbŷhM` Ŷ`wi gvŶv, Ges mgMKi cwimgZ e`eavtbi c`wj Z gvb |

cg `ŷu kZ©AwZ mnŷRB ciY Kiv hvq | KviY, tm, tjv MŷelŷKi ōviv vbaŷi Z nq | wKŠ` ZZxq kZŷu ciY Kiv KwB | hŷ Avgiv mgMKi cwimgZ e`eavtbi gvb RvbŷZ cwii, Zvnŷ Avgvŷ i bgjv wbeŷPb Kti MŷelYv cwii Pjv bvi tKvb cqvRb nq bv | mgMKi gvb ARvbv vŷK etj B Avgiv bgjvi gvŷbi wŷŷŷZ mgM mŷŷK©RvbŷZ PvB | G aiŷYi cwii wZŷZ, Avgvŷ i ARvbv mgMKi cwimgZ e`eavb mŷŷK©GKuU ōAvbw Ţ Abgvbō (enlightened gress) KiŷZ nq | mgMKi cwimgZ gvb mŷŷK©ōAvbw Ţ Abgvbō KiŷZ ntj, Avgvŷ i nq ce©cwii Pwj Z MŷelYv tŷŷK cB cwimgZ e`eavbŷK, bZev MŷelK KZŷ cwii Pwj Z cvBj U MŷelYv tŷŷK cB cwimgZ e`eavtbi gvŷŷK MŷY KiŷZ nte | GB wZbuJ Dcv` vbŷK GKul mŷŷ cqvM Kti Kw`ŷZ bgjvi AvKvi wbyŷ Kiv hvq | Gevi, Avgiv mgMKi mgvbŷvZ ev MoŷK cj tbi Rb` wŷgZ mŷ, tjv e`envi i gvaŷg Kw`ŷZ bgjvi AvKvi wbyŷ Kti Ŷ`ŷev |

Zte GuJ gŷb ivLv cŷqvRb th, bgjvi AvKvi wbyŷqi welqul i agvŶ mŷŷi gŷa` msL`v cqvŷMi tLjv bq | ev`e Ae`vi cwii cŷŷŷZ, mŷŷi gvaŷg bgjvi AvKvi wbyŷqi cŷe©Avŷiv wKŌy „i“ZcY©welq wetePbvq ivLv cqvRb | Avgiv cŷe©Dŷŷ KtiwŌ th, mgMKi Dcv` vb, tjvi gŷa` hŷ Lp tekx wŷbZv vŷK, Zte mŷŷi gvaŷg wbyŷZ msL`vi bgjv AvKvi ht_ō bvŶ ntZ cvŷi | Avevi hŷ mgMKi Dcv` vb, tjv mgifc nq, Zte wbyŷZ bgjv AvKvŷi i tPŷq Kg msL`K bgjv wbeŷPb Kti GKB DŷŷK` mvab Kiv hvq | mgMKi Aŷŷŷ Dcv` vb, tjvi gŷa` AwZ gvŶvq wŷbZv vKvi A_©nt`Q, cwimgZ e`eavtbi gvb ewx cvlqv | Avi cwimgZ e`eavtbi gvb ewx cvlqv i A_©nt`Q, bgjvi AvKvi ewx cvlqv | A_ŷ, AwZ gvŶvq Amgijc mgMKi Rb` enŷi AvKvŷi i bgjv wbeŷPb KiŷZ nte |

bgjvi AvKvi wbyŷqi welqul i agvŶ mŷŷi gŷa` msL`v cqvŷMi tLjv bq |

AwZ gvŶvq Amgijc mgMKi Rb` enŷi AvKvŷi i bgjv wbeŷPb KiŷZ nte |

wK aiŷYi Dcv`E weŷkŷYi cwii Kiv nŷqtŌ, Zvi Dci l wbfP Kti bgjvi AvKvi wK nte | hŷ Rulj cwii msL`wŷk weŷkŷYi cwii Kiv vŷK, Zte enŷi bgjvi AvKvi A_©n djvdj t`te | KviY, AŷbK tekx Pj K GKBmŷŷ weŷkŷYi gŷa` Aŷŷŷ Kiv hvq | A_ŷ, hŷ mvaviYfvŷe GK Pj Kwekō cwii msL`vŷbi e`envi nq (thgb, Mo, mgvbŷvZ, kZKiv, BZ`w`), Zte AŷcŷŷKZ `ŷ msL`K bgjv weŷkŷYi Rb` ht_ō ntZ cvŷi | Ab`w`ŷK, hŷ eŷ-Pj Kwekō cwii msL`vŷbi e`envi nq (thgb, wbfŷŷ, Dcv` vb weŷkŷY, ŷŷvŷŷi weŷkŷY, BZ`w`), Zte enŷi AvKvŷi i bgjv Acwi nvh`ntq cto |

wK aiŷYi Dcv`E weŷkŷYi cwii Kiv nŷqtŌ, Zvi Dci l wbfP Kti bgjvi AvKvi wK nte |

mŷevŷwi, mgq, A_©Ges `ŷŷ Rbkwi³ i chŷŷZv bgjvi AvKviŷK AŷbKvŷŷk cŷŷŷZ Kti | thgb, mŷ cqvM Kti Ŷ`Lv tMj th, GKul wŷŷ MŷelYvi Rb` 1000 Rb e`wŷŷK bgjvq Aŷŷŷ KiŷZ nte | wKŠ` A_©mgq ev cqvRbxq msL`K tjvKeŷj i Afvŷe Avgiv gvŶ 500 Rŷbi mvŷŷŷvKvi MŷY KiŷZ cwii | G aiŷYi cwii wZŷZ, Avgiv wK mZvŷŷK wemRŷ w`ŷq 500 Rŷbi mvŷŷŷvKvi MŷY Kiŷev, bv wK hZŷŷY bv 1000 Rŷbi mvŷŷŷvKvi MŷY Kivi gZ mgq, A_©ŷ tjvKej cvŷev, ZZŷŷY chŷŷ-AŷcŷŷY Kiŷev | GB wŷxŷŷ-MŷelKŷKB vbŷZ nte | Zte, tKvb welq mŷŷK©GŷKevŷi tKvb Avb bv vKvi tPŷq wKŌz Avb vKvi fvŷjv | mŷŷŷŷŷ ejv hvq th, h_vh_ bgjvi AvKvi vbaŷi ŷYi tKvb mij mŷ tbB | GKw`ŷK, h_vh_ bgjvi

mŷevŷwi, mgq, A_©Ges `ŷŷ Rbkwi³ i chŷŷZv bgjvi AvKviŷK AŷbKvŷŷk cŷŷŷZ Kti |

AvKvi wbañY thgb „i“ZcY©, Ab“w“ ðK, bgpvi AvKvi m“úúK©w×vš–MòúY m“ú` I còqvRtbi mhZogj“vqb Ges Mtel ðKi fvúj v wePvi eyxi wel qvU tZgb „i“ZcY©

mgvbcvúZi Rb“ bgpvi AvKvi wby© (Estimating Sample Size for Proportions)

Avgiv bgpvi mgvbcvZ t_úK mgMòKi mgvbcvZ cò° j tbi Rb“ bgpvi AvKvi wbañY KiúZ cwi | G tñúúI, Mtel KúK mZúvi gvúv Ges mnbúhvM“ Î“wú gvúv wbañY Kú wúZ nte | aiv hvK, Avgiv RvbúZ PvB th, GKúU Gj vKvq wetqi ci thšZúKi `vex tgvúúZ bv cvivi dtj KZ kZvsk bvi xi weevn wet“Q` ntuúQ | Avgiv hw` 95 kZvsk mZúvi gvúvq 3 kZvstki tekx fj KiúZ bv PvB, Zte bgpvi AvKviúU wK nte? wúgwe³ mŕ e`envi Kú Avgiv cŰ`wúZ msL`wú tctZ cwi |

$$N = \frac{z^2(P_s)(Q_s)}{E^2}$$

thLvúb, N = Kw“ñúZ bgpvi AvKvi

$$z^2 = mZúvi gvúvi eM©$$

$$E^2 = mnbúhvM“ Î“wú eM©$$

$$P_s = Zvj vKcòBv bvi xi mgvbcvZ$$

$$Q_s = Zvj vKcòBv bq Ggb bvi xi mgvbcvZ$$

mZúvi gvúv wbañY Kiv ntuúQ 95 kZvsk Ges mnbúhvM“ Î“wú gvúv wbañY Kiv ntuúQ 3 kZvsk | P Ges Q-Gi gvb bgpvi t_úK AvniY Kiv ntuúQ | gvb„új vK mŕ còqvM Kiú Avgiv Kw“ñúZ bgpvi AvKvi cvB |

$$\begin{aligned} N &= \frac{z^2(P_s)(Q_s)}{E^2} \\ &= \frac{(1.96)^2(0.42)(0.58)}{(0.03)^2} \\ &= \frac{(3.8416)(0.2436)}{0.0009} \\ &= \frac{0.9358}{0.0009} \\ &= 1040 \end{aligned}$$

∴ Kw“ñúZ bgpvi AvKvi ntuú 1040

A_ñ, hw` 3 kZvsk Î“wú gvúvq 95 kZvsk mZúv PvB, Zte thšZúKi `vex tgvúúZ bv cvivi KviúY weevn wet“Q` ntuúQ Ggb bvi xi cwi gvY cwi gvúci Rb“ Avgvú` i 1040 Rb bvi xi bgpvi wbePb KiúZ nte |

Mtoi Rb` bgbvi AvKvi wbyq (Estimating Sample Size for Means)

mgvbcvzi Rb` bgbvi AvKvi wbaftiYi tfti th hys e`envi Kiv ntqtQ, tmB GKB hys e`envi Kti Mtoi Rb` bgbvi AvKvi wbaftiY Kiv hvq| aiv hvK, GKRB MtelK Acivaxt` i Mo ekbv¼ (mean IQ) cwi gvc Kitz Pvb| wmvš-ntjv th, MtelK Zvi MtelYvq 95 kZvsk mZ Zv Pvb Ges c0w Z gvbw Mo ekbv¼i tftq 1 Kg ev tekx ntj , Zv MhYthvM nte| Avgiv Rwb th, tkb Avbw B Abgvbw ce`cwi Pwj Z Mtel Yv ev cvBj U Mtel Yv t_tK AvniY Kitz nte| MtelK GKw cvBj U Mtel Yv, cwi Pvj bv Kti cwi wZ e`eavtbi gvb tctqtQb 12.18| GB gvb_tj vK wbgwj wLZ mft c0qM Kti Avgiv KwqZ bgbvi AvKvi w tctZ cwi | AZGe,

$$N = \left[\frac{(z)(\alpha)}{E} \right]^2$$

- thLvtb, N = KwqZ bgbvi AvKvi
- z = mZ Zvi gvTv
- α = mgM0Ki cwi wZ e`eavtbi Rb` AbwZ gvb
- E = mnbxq t`wLi gvTv

AZGe, gvb_tj v mft c0qM Kti Avgiv KwqZ bgbvi AvKvi w cvB|

$$\begin{aligned} N &= \left[\frac{(z)(\alpha)}{E} \right]^2 \\ &= \left[\frac{(1.96)(12.18)}{1} \right]^2 \\ &= \left[\frac{23.8728}{1} \right]^2 \\ &= [23.8728]^2 \\ &= 569.91 \end{aligned}$$

∴ KwqZ bgbvi AvKvi ntjv 570

A_vp, 95 kZvsk mZ Zvi gvTv ±1 t`wLi mnbxq gvTv Acivaxt` i ekbv¼ cwi gvc Kitz ntj , Mtel KtK 570 Rb AcivaxtK bgbv wmvte wbePb Kitz nte|

mvivsk

hw l bgbvi AvKvi wbaftiYi tKvb mij mft tbB, Zey mgq, A_0 cwi wZi wePvti bgbv msL`v wbaftiY Acwvnh`ntq cto| e`Ztctq, Mtel Yvi Dtik, mgq, A_0msKj vftbi welq_tjv bgbvi AvKvi tKgb nte, Zv wbaftiY Kti | bgbvi AvKvi wbaftiYi Rb` th welq_tjv wePbvq ivLtz nq, tm_tjv ntjv mZ Zvi gvTv, mnbtthvM t`wLi gvT l mgM0Ki cwi wZ e`eavtbi c0w Z gvb| G Ovovl , DcvE wefkH`Yi cwi Kí bv bgbvi AvKvi wbaftiY , i`ZcY`wKv cvj b Kti |

cvfVvEi gj`vqb

be³K cke

mVK DEti i cvfk WJK (v) wPy w`b -

1| mgM³Ki cwi wgz gvb m³utK³Avbw`B Abgvb⁰ Ki tZ ntj :

- K. Abgvb Kti cwi wgz gvb wK Ki tZ nte
- L. c³e³cwi Pwj Z Mtel Yv t³tK c³B cwi wgz e³eavtK e³envi Ki tZ nte
- M. Mtel Yvq c³B Z³ t³tK cwi wgz e³eavtbi gvb e³envi Ki tZ nte
- N. Dcti i me|

2| bgpvi AvKvi wbafti Yi Rb` Mtel KtK th`U wclqtK wetePbv Ki tZ nte, tm³tj v ntj v:

- K. bgpvi Mo I e³eavb
- L. bgpvi msL³v I Mo
- M. m³Zvi gv³v I mnbthvM³ t³U³ gv³v
- N. m³Zvi gv³v I cwi wgz e³eavtbi gv³v|

3| Mtel Yvi Ab`Zg³ i`ZcY³welq ntj v:

- K. Mtel tKi thvM³Zv
- L. Mtel Yvi `vb
- M. bgpv av³s-
- N. bgpvi AvKvi |

msw³B cke

1| mnbthvM³ t³U³ gv³v wK?

2| bgpvqtb cwi wgz e³eavtbi Ae³vb tKv³vq?

i Pbvqj K cke

1| bgpv AvKvti i³ i`ZjD³ vni Ymn Avtj vPbv Ki`b|

2| bgpv AvKvi wbafti Y³ i`ZcY³Dcv`vbmgn³i fvgKv Avtj vPbv Ki`b|

DcvĚ msMĚni tKŠkj
Data Collection Strategies

wbfPthvM I h_v_©DcvĚ msMĚni mwK c×wZ I tKŠkj wbePb GKwJ MtelYvi mdj Zvi Rb" i"ZpYŕ mvgwRK MtelYvq, DcvĚ msMĚni PviwJ cāvB tKŠkj iŕqŕ0 — chŕeŕY, ^cŕYKZ WwK cĕgYv, mvŕŕvrKvi Ges`wjjcĪ wetkŕY| eAwbK AbymŪvŕbi GKwJ tgšwJ K tKŠkj ntjv chŕeŕY| chŕeŕYgJ K c×wZ AskMĚYgJ K nŕZ cvŕi, Avevi b-AskMĚYgJ K nŕZ cvŕi | MtelK hLb miwmi chŕeŕYi gvaŕtg DcvĚ msMĚ KiŕZ cvŕib bv, ZLb wZwb DĚi`vZvŕ`i KvQ ŕ_ŕK nq ^cŕYKZ WwK cĕgYv, ev mvŕŕvrKvi AbymPxi gvaŕtg miwmi cĕwRÁvmv Kŕi Z_ msMĚ Kŕi _vŕKb| wKš`hw` cZ`ŕŕfvŕe Z_ msMĚni mŕhvm bv _vŕK, ev cŕqvRb bv cŕo, tm ŕŕŕŕ wŕfbae`wjjcĪ I HwZnwMk Drŕm cŪB wŕlqe`e`envi Kŕi DcvĚ msMĚ Kiv hvq| hw` I MtelYvi Rb" eivŕKZ A_©mgq, MtelYvi Dŕŕk", cZ`wKZ DcvĚi aiY I wetkŕYi cĕwZi Dci wbfP Kŕi DcvĚ msMĚni c×wZ wbePb Kiv nŕq _vŕK, Zŕe m² I mŕavi YxKiYŕhvm" DcvĚ Drcv`ŕbi Rb" eŪ-c×wZi msŕgkY AwakZi Kvŕŕi djvdj cŪvb Kŕi |

GB BDwbŕU Avgiv th cvW_ŕjv Aa`qb Kiŕev, tm_ŕjv ntjv:

- ◆ cvW - 1 : DcvĚi Dm I DcvĚ msMĚni c×wZ
- ◆ cvW - 2 : chŕeŕY
- ◆ cvW - 3 : ^cŕYKZ WwK cĕgYv
- ◆ cvW - 4 : mvŕŕvrKvi
- ◆ cvW - 5 : `wjjcĪ wetkŕY

DcvĒi Dm I DcvĒ msMĦni c×wZ *Sources of Data and Methods of Data Collection*

GB cV tkĦI hv Rvbn hvĦe —

- DcvĒ wK
- DcvĒi aiY I Dm
- DcvĒ msMĦni c×wZ
- gvaĦgK DrĦmi eĦenvi
- eŰ-c×wZi msĦgkY

DcvĒ wK (What is Data)?

Ħh tkvb MĦelYvB DcvĒ msMĦ Ges Gi weĦkĦYi mvĦ_ msĦkĦ, Zv tmwJ AaĦqb, chĦeĦY, cwiĦgvc, mvĦĦvrKvi MĦY, ev AbĦ th tkvb tkĦkĦj i gvaĦgB Kiv tnvK bv tkb| mvavi YfvĦe, DcvĒ nĦjv Z_ ev msLĦvivk, hv Ħ_ĦK Dcmsnvi Uvbn mĦe| G mKj Z_ ev msLĦvivk MĦelKĦi Ŧviv MĦelYvi DĦĦkĦi wĦwĦĦZ weĦvbmĦZ DcvĦq msMĦ Kiv nq| wKĦ' cĦKZcĦĦ, DcvĒ th tkvb AwĦeĦw³, ev NUbvi Dci Z_, ev msLĦvivki AwZwi³ GKwJ weĦq| MĦelYv I weĦkĦYi wĦwĦĦ wmvĦe KvR KĦi, Ggb AZxZ Ges eZĦvĦbi me cĦmwĦK DcvĦvbB nĦjv DcvĒ| mvĦwĦRK evĦeZvi ĦĦaĦ, eĦw³ i ĦvbmK I AvĦeMĦĦZ cĦmwĦK AwĦeĦw³, KgĦvŰ, ĦĦbvĦve I ĦĦĦevĦai mvĦ_ RwoZ RxeĦ-DcvĦvb_ĦjvĦK DcvĒ eĦj AwĦwĦZ Kiv nq| ZĦe ĦwJ ĦĦb ivLv cĦqvrB th, DcvĒĦK AekĦB GKwJ DĦP ĦvĦvi mĦZvĦq cwiĦgvcKZ nĦZ nĦe Ges msLĦvmPK DcvĒ ZLbB_ iZĦYŦI ZvrchĦYŦntĦq DĦv, hLb Zv GKwJ mgvRZwĦĦK KvWĦĦvi cwiĦcĦĦĦZ weĦePbv Kiv nĦe|

MĦelYvi RbĦ msMĦxZ DcvĒ MĦelYvi mgqI ĦewkĦMZ w K Ħ_ĦK weĦfĦæcĦKvi nĦq_ĦĦK| thĦb,

- DcvĒ msLĦvmPK nĦZ cvĦi, kĦ Ŧviv MwZ nĦZ cvĦi, ev ĦĦUvi mgĦĦq MwZ nĦZ cvĦi |
- DcvĒ ĦĦĦj K nĦZ cvĦi, hv cĦeĦmsMĦxZ nq vb, ev tMĦY nĦZ cvĦi, hv AtbĦi Ŧviv cĦeĦ msMĦxZ nĦqĦQ Ges hv MĦelĦKi Ŧviv cĦteĦeŰZ nĦZ cvĦi |
- DcvĒ tkvb cĦĦĦjv ev mvĦĦvrKĦi DĒi, UxKv, ev AbĦ chĦeĦY, ev cixĦĦYi cĦZĦeĦb, ev ĦĦj j, ev meĦKŦi mgĦĦq MwZ nĦZ cvĦi |

DcvĒi aiY I Dm (Types and Sources of Data)

DcvĒ cĦvbZt ĦĦaiĦYi nĦq_ĦĦK — cĦ_wĦK I gvaĦgK DcvĒ| hLb DcvĒĦK miĦwvi DĒiĦvZvi KvQ Ħ_ĦK msMĦ Kiv nq, ZLb tm_ĦjvĦK cĦ_wĦK DcvĒ eĦj| GKwJ DĦniY ĦĦqv hvK| aiv hvK, hvĦ GKRB MĦelK tkvb GKwJ weĦkĦ ĦĦMĦj K ĦjvKvi wĦi ĦZi nvi mĦĦĦKĦRvbĦZ Pvb, tm ĦĦĦĦ MĦelK miĦwvi ĦmB ĦjvKvq hvĦeb Ges mĦĦb RbĦvĦb mĦĦg bviĦĦi weĦfĦæcĦkĦRĦvĦv KĦi ZĦĦi MĦĦĦRbĦMĦYKvi x mĦĦĦbi ĦĦaĦ KZRb cvĦ eŦi eqm

*hLb DcvĒĦK miĦwvi
DĒiĦvZvi KvQ Ħ_ĦK msMĦ
Kiv nq, ZLb tm_ĦjvĦK
cĦ_wĦK DcvĒ eĦj |*

cY®nevi cte®gZieiY Kti tQ, tm msµvš-Z` msMñ Kti wki gZi nvi wby® Kiteb| wki gZi nvi wby®qi weKí DcvqW ntj v, tmB Gj vKvi we`gvb RbfgZi wbeÜb Z` e`envi Kti wki gZi nvi wby® Kiv| hLb tKvb cÖZte`b ev msMpxZ Drm t_ tK DcvE e`envi Kiv nq, ZLb tm_ tjt vtK gva`wgK DcvE etj |

mi KviX ev temi KviX cÖZÖtbi Øviv msMpxZ DcvEi cKvKZ cÖZte`b, AcKvKZ KgEÍ (worksheets), U`wj -tUc, BZ`w` tK DcvEi cÖ_wgK Drm etj wetePbv Kiv thtZ cvti | wKfvte DcvE msMñ Kiv ntqtQ, DcvEi mwKZvi gvÍv KZUKz Ges cÖZte`bw wKfvte msMwZ Kiv ntqtQ, cÖZte`tbi welqe`í gta` G me welq ewYØ _vKtZ cvti | cÖ_wgK DcvE tK e`envi Kti wefbaeYØvgj K ev wefkHvgj K welqe`l cÖZte`tb Dc`wvZ ntZ cvti | G Qvovl , tj LvPÍi gva`tg DcvEi wefbae`enkó`tK Ašfß Kiv ntq _vtK| Zte cÖ_wgK Drtm Dc`wvZ DcvEi wKQz wbeßPZ cwi msL`vb wefbae`gva`wgK Drtm (thgb, Z`veei Yx, cwi msL`vbMZ mvi -mst`c, cwi msL`vbMZ el`Ax, BZ`w`) cptcKvKZ ntZ cvti | Ab`vb` th mKj gva`wgK Drtm G aitYi wKQz cwi msL`vb Dc`vcb Kiv nq, tm_ tjt v ntjv Mtel Yv cwÍ Kv, Mtel Yv Mšs, Mtel Yv cÖZte`b, BZ`w` | Rbš, gZi l` `vbs`i i nvi, Rxeb mvi wY, cÖ`j b, cÖ`cY, BZ`w` ntjv cÖ_wgK DcvEi wfvE tZ wby®Z G aitYi wKQz cwi msL`vb |

gva`wgK DcvE l DcvEi gva`wgK Drm wPvYz Kiv mnR| wKš` cÖ_wgK DcvE l DcvEi cÖ_wgK Drtmi gta` cv`R` wby® Kiv KLtbv KLtbv tek Kwvb ntq cto| gva`wgK DcvE e`envi i t`tÍ, Mtel KtK j`q` i vL tZ nte th, wZwb th DcvE e`envi KitZ Pvb, Zv Zvi Mtel Yvi DfÍ tK`i mvt_ m`wZcy`wK bv| hw` DcvEi _YMZ gvb MñYthvM` nq, tm t`tÍ A_` mgq, l kty mvk`qi Rb` gva`wgK Drm t_ tK DcvE e`envi Kiv evÄYxq| gva`wgK DcvEi wefbae`DrM itqtQ| thgb, Av` gi gvix cÖZte`b, bgbv Rwi c cÖZte`b, ágY eEivš, cÍ -cwÍ Kv, e`w³MZ tivRbvPv, HwZnwMk` wj j cÍ, BZ`w` | Zte GKwaK Drm t_ tK DcvE e`envi Kti l Mtel Yv KgRvÜ cwi Pvj bv Kiv thtZ cvti | thgb, Mtel K cÖ_wgK Drm t_ tK DcvE msMñ Kti tmB DcvE tK gva`wgK Drm t_ tK cß DcvEi mvt_ Zj bv Kti t` L tZ cvti b th, Zvi DcvEi wfvE thvM` Zv l h_v`Zv KZUKz |

DcvE msMñni CxwZ (Methods of Data Collection)

cÖ_wgK DcvE msMñni Rb` wefbae`cxwZ itqtQ Ges GKwU Mtel Yvq A tBk mgq GKwaK cxwZ e`eüZ ntq _vtK| Zte, mvgwRK Mtel Yvq mvari YZt Pvi w` tššj K cxwZ e`eüZ nq| Ab`vb` th mKj cxwZ itqtQ, tm_ tjt v GB Pvi w` cxwZi B wefbae`ms`i Y| tmB Pvi w` cxwZ ntj v:

mvgwRK Mtel Yvq mvari YZt Pvi w` tššj K cxwZ e`eüZ nq/

- ch`e`qY
- `Ac`YKZ WwK cKgyj v
- mv`qvrKvi
- `wj j cÍ wefkH

GB Pvi w` cxwZi gta` cv`R` hZUv bv ntj v ØGwU ev l wUí gZ mY`úó, Zvi tPtq tekx ntj v DcvE msMñni wov` tKšktj i Dci _i`Zi Avtív Kivi welqW| ch`e`qYvgj K cxwZ tZ GKw` tK thgb Mtel K NUgvb mvgwRK KgRvÜ tK ch`e`qY Ktib Ges Zv wj wce`x Ktib, Ab`w` tK tZgb wZwb AskMñYKvix` i mv`qvrKvi l MñY Ktib| GKbfvte, `Ac`YKZ WwK

chfeyjv I mvrkvi cxwzt AskMhYkvix Mteltki chfeyji Aaxb_vtkb| chfeyji gva'ig c0b G mKj Z_ PoiS-wetkH I e'vL'vq_i "Zcy'fmgkv cvj b Kti | mtevwi, chfeyj, mvrkvi I ^c+ykz Wk chfeyjv cxwzt `wj cfi wetkH memgq e'euZ ntq_vtk|

DcvE msM0ni cxwz wbePb gj Zt cZ'wkZ DcvEi aitYi Dci wofP Kti | aiv hvK, KZ_tjv NUBvi cvi'uhfK AbmUvtbi Rb Ges NUBv_tjv NUevi mgq, cteI cfi AskMhYkvix ev Ab'vb chfeyjKti tm mKj NUBvi A_fK e'vL'vi Rb, chfeyjYgj K cxwz, wetkl Kti AskMhYgj K chfeyjv cxwz, DcvE msM0ni metPtq DEg cxwz etj gtb Kiv nq| wKs' hw MtelK tkv GKw wetkl tMv0xi gj t'eva, iwz bwz Ges ghP_vtk MtelYv KitZ Pvb, Zte tmB tMv0xi wFZti i ev evBti i Z_ c0vbKvix_i "Zcy'e'w3i wbeo mvrkvi MhY Kiv nte metPtq DEg cxwz|

chfeyj, mvrkvi I `wj cfi wetkH cxwz AbKí I c0vebv cYqtb Rb h_vh_ Ges G_tjv tkv tMv0x I NUBvtK eY0vi cvkvcwk, ZmEjK Avtvtni Rb' I e'euZ nq| wKs' ZmEjK Aetvtni Rb, ev tkv ZmEjK Kvvtgv t_tk Avwi Z wv'0 AbKí cix'vi Rb, Kvvtgvx mvrkvi I ^c+ykz Wk chfeyjv cxwz DcvE msM0ni Rb h_vh_ cxwz wmvte wetePZ nq| MtelK hLb GKw MtelYvq e'w3i wetkl ^enk0, gZvgZ, wekjm, I Ab'vb wclq m'utK'msL'v, AbcvZ, mgvbcvZ, ev Ab'vb cw gVMZ Z_ wbaFy KitZ Pvb, ZLb mvrkvi I ^c+ykz Wk chfeyji e'envi ntjv DcvE msM0ni metPtq DEg cxwz| GB cxwztZ GKw c0gZ DcvE msM0ni nwiZqvti gva'ig c0ZwbaZkxj bgbv t_tk msMnxZ DcvE wewfbepj tki gta m'uk'wetkH'Yi m'hm c0vb Kti | wKs' hLb MtelK KZ_tjv wofPkxj Pj tki Dci wKQz wv'0 ^vaxb Pj tki cfi ve cwigvc KitZ Pvb, ZLb mvrkvi I ^c+ykz Wk chfeyjv ntjv DcvE msM0ni tk0 cxwz| e'vL'vgj K MtelYvq Pj Kmgfni Dci wqsy ^vcb MtelKtk ^vaxb Pj K_tjvtK D'k'gj Kfite e'envti m'hm c0vb Kti |

gva'wgK Drtmi e'envi (Use of Secondary Sources)

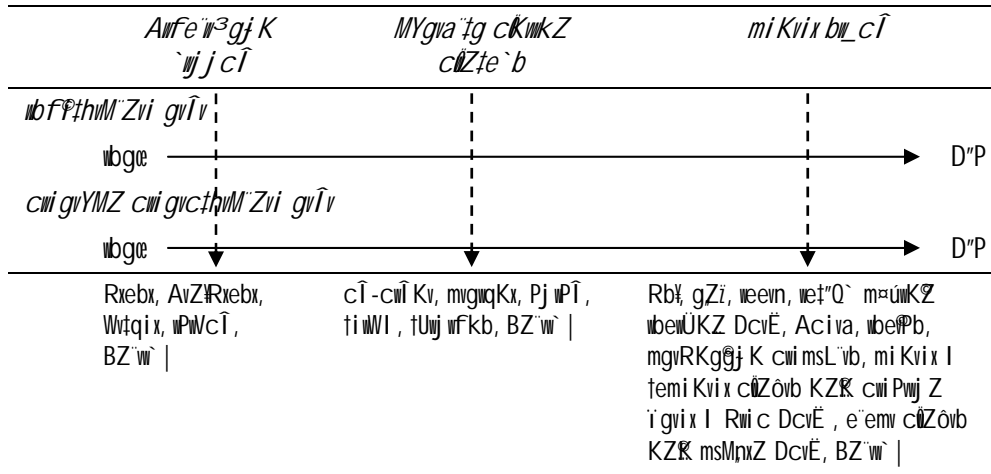
Avgiv Rwb th, ce't_tKB we'gvb, ev cte'wj wceX Kiv ntqt0 Ges hv GKRb mvgwRK Mteltki m'w'0 e'envti i Rb msMnxZ nq wb, Ggb DcvEtk gva'wgK DcvE etj msAwqZ Kiv nq| gva'wgK DcvEtk wZbwU c0vb tkYtZ wef3 Kiv hvq:

- Awfe'w3gj K `wj cfi (Expressive Documents)
- MYgva'ig cKwKZ c0Zte`b (Media Reports)
- mi Kvi x bw_cfi (Official Records)

mvgwRK weAvbiv DcvEi gva'wgK Drm_tjvtK wZbfvte e'envi Kti_vtkb| c0gZt, GKw MtelYi Rb c0qvRbxq mKj DcvEi mieivkvix wmvte| wZxqZt, GKw MtelYi Rb Avs'kK DcvE wmvte| A_f, th mKj Pj tki Dci MtelK DcvE msM0n Kiteb bv etj wmvS-tbb, tm mKj Pj tki Rb m'uj K DcvE wmvte e'envi Kiv ntq_vtk| ZZxqZt, MtelK Zvi MtelYi Rb msMnxZ c0'wgK DcvEi e'vL'v, h_v_Zv I cix'vi Rb gva'wgK DcvEtk e'envi Ktib| GB wZb aitYi gva'wgK DcvEtk woget_tk D'P gvIvi wofP'hm'Zv Ges ce'cw gVMZ gvcbx gta ^vcb Kiv hvq| woget_tk D'P gvIvi wofP'hm'Zv ej tZ DcvEi mwKZv I cpivei Rb c0ZwbaZkxj Zvi gvIvtK tevSv'bv ntqt0 Ges

ce[©]cwi gvYMZ gvĪv ej tZ, DcvĒ wK gvĪvq mvi wYe× Kivi Rb` cwi gvc Kiv hvq ZvĪK tev SvĪbv ntqtQ| gva`wgK DcvĒEi DrmĪ mvt_ ZvĪ`i wbfPthM`Zv I cwi gvYMZ cwi gvc thM`Zvi gvĪvi m=úK@ QK 8.1.1 - G t` LvĪbv ntj v|

QK 8.1.1: gva`wgK DcvĒEi Drm I ZvĪ`i wbfPthM`Zv I cwi gvYMZ cwi gvc thM`Zvi gvĪvi m=úK[©]



GB gvcbx Abhvqx, Awfe`w³gjK `wj cĪ tKvb welq ev NUbv m=úK[©]tj LtKi wR`^ `wofwz I e`L`vĪK cĪZdwj Z Kti | G mKj DcvĒEi wbfPthM`Zvi gvĪv LpB wbgentq _vĪK| KviY, tj LK G mKj Awfe`w³gjK `wj cĪ i gta` tKvb welq ev NUbvĪK thfvte Dc`vcb Ktib, Ab` GKRb GKB NUbv GKB i Kgfvtē eYθv Kižeb bv| dj`Īfc, G, tj vi cwi gvYMZ cwi gvc I Lp wbgēchĪqi ntq _vĪK| MYgva`tg cKwkZ cĪZte`b G mKj Ī`w t_ĪK wKQwv gž _vĪK| MYgva`tg cKwkZ cĪZte`b, tj LK ev cĪZte`ĪKi wKQwv cĪcwZZ; _vKtj I tmB tj LK ev cĪZte`KĪK m=úv`K, mnKgx`I RbgĪZi Pvtci KviĪY wKQwv ntj I e`wō ntZ nq| KvĪRB, Awfe`w³gjK `wj tj i Zj bvq MYgva`tg cKwkZ cĪZte`b AwakZi wbfPthM` ntq _vĪK| wKs` GwJ gtb ivLv cĪqvRb th, mvsew`K e`wō `bwZKZvi gvb`Ū AbniY KiĪj I tKvb NUbwJ cĪmĪzK nte, Zvi wbePK I e`L`vKvix _vĪKb wZwb wĪRB| Ab`w ĪK, mi Kvix bw_cĪ ntj v meĪPtq tekx wbfPthM` Ges e`w³MZ B`Q-Awb`Qv I cĪcwZgjK wj wce×KiY t_ĪK gž | G mKj Drm t_ĪK mslmrxZ DcvĒ AĪbK tekx wbfPthM`, mwK Ges cwi gvYMZfvte cwi gvc thM`|

eŪ-c×wZi msigkY (Multi-Method Mix)

Avgiv Rwb th, th tKvb Mtel Yv cKĪi i kj`tZB Mtel KĪK th mKj welĪqi Dci`i`Zcy[©] w×vš-wĪZ nq, tm, tj vi gta` GKwJ ntj v DcvĒ mslmni h_vh_ I DcĪwMx c×wZ wbaĪY Kiv| A_Ī, DcvĒ mslmni Rb` wK chĪĪY c×wZ e`envi Kiv nte, bv wK WwK cKĪvj v e`envi Kiv nte, bv wK mvĪĪvrKvi AbmPxi gva`tg mvĪĪvrKvi c×wZ e`envi Kiv nte, tm welĪq Mtel KĪK w×vš-wĪZ nte, Zvi bgbv wbePb I DcvĒ mslmni nwwZqvi wbgĪYi cĪēB| c×wZwK`YMZ nte, bv wK cwi gvYMZ nte, DcvĒ wK cĪ_wgK Drm t_ĪK mslmrxZ nte, bv wK gva`wgK Drm t_ĪK mslmrxZ nte, tm welĪqI w×vš-tbevi cĪqvRb i tqtQ|

Zte GmU gtb ivLv c0qvRb th, DcvE msM0ni cxiZ wbePb mvaviYZt MtelYvi Rb eivl KZ mgq, A_ Mtel Yvi wel qe i cKwZ Ges Mtel Yvi Dti k 0viv wba0i Z nq| thgb, Avgiv hw Mpnxbt i AwfAZvi Dci Mtel Yv Ki tZ PvB, Zte tm tqtT YMZ Mtel Yv cxiZ tekx DcthvMx nq| tmLvfb Mtel K Mfvi I evcK mvqrKvti i gva tg RvbtZ cvtib th, Mpnxbtiv c_ NvtU emevm Ki tZ wltq wK fvtv Rxeb cwi Pvj bv Ktib| wKs Avgiv hw XvKv knii Dbqb LvZ mi Kvti i A_e tqi wel tq RbMtYi gtbvfv RvbtZ PvB, Zte tm tqtT cwi gvYMZ cxiZ nte h_vh_ | A_ P, WvK ckgvj v wKsev mvqrKvi AbmPx e envtii gva tg msMpxZ DcvE w tq msL vZwE K Mtel Yv cxiZ c0qvM KivB tm tqtT AwAKZi mgxPxb nte| Kvi Y, G cxiZ GKwU eo AvKvti i c0ZwbaZkxj bgbv c0vb Kite, hv w tq Mfvi Zi cwi msL vbMZ wetk Kiv mae nq, Ggb DcvEi Rbt te|

DcvE msM0ni gj j qwU ntjv, DcvE Drcv b Kiv, hv GKw tK, Pj gvb KgRvUtK c0Zdwj Z Kti Ges Ab w tK, Zteji gj vqb I cixqv wbiqvvi Rb metPiq ht_vchp tKSkj wnmvte KvR Kti | AZGe, tKvb Dti tk i Rb tKvb cxiZwU e envi ht_vchp nte, Zv Mtel KtK Lp mZKZvi mvt_ wetepbv Ki tZ nte| mvaviYZt, AwAKvsk Mtel YvtZB cwi gvYMZ Ges YMZ Dfq cxiZ c0qvM Kiv ntq vtK| thgb, iitZ msnZ j Avtj vPbvi gva tg Mtel Yvi wvfbac0m0K welq I tkYx wbaftYi ci gj Z vZvi mvt_ wbeo mvqrKvi tbcv nq, Ges metktl, WvK ckgvj v ev mvqrKvi cxiZ e envtii gva tg GKwU enr bgbvi Dci Rwi c cwi Pvj bv Kti c0qvRbxq DcvE msM0n Kiv nq|

Mtel Yvi Dti k tK AR0 Kivi Rb eu-cxiZi e envtik Mtel tKi wetepbvq ivLv DwPr| GKwaK cxiZ e envtii mjeawU ntjv th, hw c0ZwU cxiZtZ GKB aitYi DcvEi Rbt tq, Zte tmB DcvE tK w00vq w0fPthvM I h_v_ej c0Zcbekiv mae nte Ges Zv w tq GKwU ZwE K Kvvtgvi h_v_Zv c0vYZ nte| cxiZ tjv hZ wfbente Ges mgi fc DcvEi Rbt te, Mtel K DcvEi Dci ZZtekx Av vkxj nteb| AZGe, m2 I mvavi YxKi YthvM DcvE msM0ni Rb eu-cxiZi wgykY memgq Kw qZ| Zte, th mKj Mtel Yvi cKwZ eu-cxiZi wgykY tK mae Kti bv, tm tqtT GKwU cxiZtZKB e envi Kiv evAbxq|

mvivsk

Mtel Yvq DcvE ntQ eY0v I evLvi c0Y| DcvE tK msLvi wfvE tZ thgb cKvk Kiv hvq, tZgub msL v Ovovl cKvk Kiv hvq| Zte, thfvteB DcvE tK Avgiv Dc vcb Kw bv tKb, hw DcvE mgvRZwE K Kvvtgvi cwi t0qtZ ch0j wPZ bv nq, Zvntj Zv i Zpxb ntq cotel DcvE cavbZt 0aitYi ntq vtK - c0wgK DcvE I gva wK DcvE | c0wgK DcvE msMpxZ ntq vtK mivmii DEi vZvi KvQ t tK | AtbK mgq mi Kvix I temi Kvix c0Z0vb KZK msMpxZ DcvE Ges cKvKZ I AcKvKZ c0Zte bl c0wgK DcvE wnmvte wetepZ ntq vtK | cqvst, Mtel Yv cw Kiv, M0s, c0Zte b, BZ w tZ th DcvE cKvKZ nq, Zv gva wK DcvE wnmvte wetepZ ntq vtK | eZ0vb cvtV, Avgiv DcvE ej tZ wK tevSq, DcvEi ai Y I Drm m0utK Avtj vPbv Kti wQ | Mtel Yvi aitYi Dci w0fP Kti tKvb aitYi DcvE tKvb w0v 0 welqtK evL v Ki tZ h_vh_ fvgKv cvj b Kti, Zvl Avtj vPbv Kiv ntqtQ|

cvfVvEi gj`vqb

`be⁹³K cċæ

mWVK DĒti i cvfk WJK (√) WPy w` b –

- 1| msL`vmPK DcvĒ ZLbB „i“ZcYċnte, hLb:
 - K. DcvĒ msL`vq tekx nte
 - L. DcvĒ msMċn A_ċKg LiP nte
 - M. DcvĒ GKWJ mvgwRK KwVtgv i cwi tċċtZ weteiPZ nte
 - N. DcvĒ mgvRtK Zj bvi Rb` e`eüZ nte|

- 2| mvgwRK Mtel Yvq mavi YZt:
 - K. GKWJ tğšij K c×wZ e`eüZ nq
 - L. `ŋW tğšij K c×wZ e`eüZ nq
 - M. wZbWJ tğšij K c×wZ e`eüZ nq
 - N. Pvi WJ tğšij K c×wZ e`eüZ nq|

- 3| DcvĒtK wbfPthvM` ej v hvte ZLbB, hLb:
 - K. mŋjvrKvi Ges chċeŋtYi gva`tg cċß DcvĒ GK nq
 - L. cċZwJ c×wZ GKB ai tYi DcvĒi Rbft`q
 - M. i agvĪ chċeŋY I `wj j cĪ wtkċtY cċß Z_` GK nq
 - N. Dcti i me|

mswŋB cċæ

- 1| cċ_wgK DcvĒ I gva`wgK DcvĒ wK?
- 2| gva`wgK Drtmi e`envi wK?

iPbvj K cċæ

- 1| D`vni Ymn eü-c×wZi msugkŋYi „i“Zi Avtj vPbv Ki`b|
- 2| ew`-Gj vKvi Awævmx` i Av_ċmvgwRK Mtel Yvq DcvĒ msMċni tKvb c×wZwJ Avctb Awak hŋ³hŋ³ etj gtb Ktib| DĒti i `ċtŋ hŋ³ w` b|

chfeŋŋY
Observation

GB cW tkŋI hv Rvbr hvte —

- chfeŋŋYi „i“Zi
- chfeŋŋYgj K c×wZ wK
- chfeŋŋYgj K c×wZi mjeav I Amjeav
- AwbqŋšZ AskMŋYgj K chfeŋŋY
- AwbqŋšZ AskMŋYgj K chfeŋŋYi mjeav I Amjeav
- b-AskMŋYgj K chfeŋŋY
- wbggZwšK chfeŋŋY

chfeŋŋYi „i“Zi (Importance of Observation)

chfeŋŋY i ayAvgvŋ`i
 ``bŋ`b Rretbi GKwU
 Ab`Zg cwi e`vcK KgRvÜB
 bq, %eÁwbK AbmÜvtbi
 Rb` GwU GKwU tgsŋj K
 tKškj I etU/

wEÁvtbi `ii" nq chfeŋŋY w`tq Ges tkI chš-chfeŋŋYB wdti AvmŋZ nq, Gi Pevš-
 h_v_Zv cŋvtYi Rb`| chfeŋŋY i ayAvgvŋ`i ``bŋ`b Rretbi GKwU Ab`Zg cwi e`vcK
 KgRvÜB bq, %eÁwbK AbmÜvtbi Rb` GwU GKwU tgsŋj K tKškj I etU/ Avgvŋ`i Pvi cvŋki
 RMr m=útk©Z_` msMŋni Rb` GKwU tgsŋj K tKškj wnmvte chfeŋŋY ZLbB GKwU `eÁwbK
 c×wZŋZ cwi YZ nq, hLb GwU GKwU

- Mtel Yvi wKQzmpbw`ŋ Dŋŋ`k` mvab Kŋi ,
- wbggZwšKfvte cwi Kwí Z nq,
- wbggZwšKfvte chfeŋŋYKZ wel q_ŋj v wj wce× Kŋi maviY cŋvebvi mvŋ_ m=úwKZ
 nq, Ges
- chfeŋŋYmZ dj v d j hvPvB-Gi Rb` wbfŋkxj Zv I h_v_Zvi Dci wbgšŋ cŋZŋv KiŋZ
 cvŋi |

Avgvŋ`i Pvi cvŋk hv NUŋQ, Zv Avgiv cŋZwbqZ chfeŋŋY Kwí | wKš` Avgvŋ`i chfeŋŋY me
 wKQyav cŋo bv| Avgvŋ`i cQ` , mZKZv, Ávtbi cwi wa I Mfxi Zv Ges Avgiv th mKj j ŋŋ`
 ARŋ KiŋZ PvB, Gi me wKQz wgvj tŋ Avgvŋ`i chfeŋŋYi wel qe`-` wbaŋni Z nq| Lŋ Kg
 chfeŋŋKB iŋtŋQb, hviv mŋPZbfvte cŋiv mvgwRK AvPiYŋK cŋZ`ŋ KiŋZ cvŋib| thgb,
 Avgiv GKwU wKí Kvi Lvbr cwi` kŋbi ci hw` Avgvŋ`i chfeŋŋYi Dci i wPZ cŋZte`bwU hZŋ
 mnKvŋi wtkŋY Kwí , Zte mvgwRK AvPiYŋi KZUKz Ask Avgiv chfeŋŋY KiŋZ tŋcti wQ, Zv
 ešŋZ cvŋte v | t` Lv hvte th, Lŋ Kg msl`K cŋZte`ŋbB mgvRZwŋEK „i“Zm=úbwewl q_ŋj v
 Dvj w-Z nŋqŋQ| thgb, Kvi Lvbrq KgŋZ kŋgKŋ`i cvŋ`úwí K thwMvŋhvŋMi tKškj , kŋgŋKi
 cŋZ tŋdvigvŋbi AvPiY, wewfbœc`ghŋvi kŋgKŋ`i eqm I wj ŋwŋŋEK wewvm, tŋZvŋ`i
 mvŋ_ wemq mnKvixi wgvŋŋŋv I Ab`vb` e`w³ŋ`i mvŋ_ Zvi AvPiYŋi wfbŋZv, BZ`wŋ |

Zte GwU wK th, Avgiv Aek`B wKQz bv wKQz mvgwRK m=úKŋK chfeŋŋY KiŋZ cwi Ges Zv
 cwi etj B Avgiv cŋZwbqZ bZb bZb mvgwRK cwi w`wZi mvŋ_ wbtŋŋ`iŋK AwZŋKiY Kŋi
 _wK| wKš` GwU wK th, mvgwRK cŋÄ ev m=úKŋŋŋni Dci Avgvŋ`i chfeŋŋY_ŋj v nŋj v

wbZvšB `bwgñEK, mþPZbfvte cwí Kwí Z bq| thgb, Avgiv wefwbæw³i gta` msNI@j K mæútkP j qY_tj vtK eštZ cwi, ev GKwU mæcúvtqi gta` AvMZ AvMštki Dti k`tk Abgvb KižZ cwi, wKš` tm_tj vtK Avgiv mþPZbfvte mfx Kwí bv| AZGe, mvgwRK AvPiYi KZUKz Avgiv chfeqY KižZ cvižev, Zv wbfP Kite chfeqYi mgq Avgiv KZUKzhZkxj ntev, Zvi Dci| hZkxj chfeqYi Rb` mgvRueÁvbtK Aek`B mçúkvqY nžZ nte| hw` wZwb GKRB fvtjv chfeqYK nžZ cvtib, Zte wZwb Zvi nžZ AþK tekx Z_` wbtq Abm×vb Kvñ`ri` KižZ cvižeb| wZwb KLtbvB fvtj hvteb bv th, Zvi chfeqYi welqe` nž`Q mvgwRK AvPiY Ges wZwb hw` Zv h_vh_fvte AbmiY Ktib, Zvtj mntRB Zvi Dcmsnvti Dci wqšY ivLžZ mñg nteb|

chfeqYgJ K c×wZ wK (What is Observational Method)?

mvgwRK weÁvbi Awakisk MtelYv cZ`q chfeqYi gva`tg cwi Pwuj Z nžq AvmtQ Ges fueI žZi Zv Ae`vnZ_vKte| KviY, tkvb GKwU cčĀ, NUbv ev welqtK Dcj wā KižZ nžj, MtelKtk Zv t`Lv I tkvbi gva`tg Abfe KižZ nq Ges tm Rb` MtelKtk chfeqYthvM` NUbv ev e`i KvQ thžZ nq| tmwU nžZ cvti Lp mvaviY, Acwi Kwí Z, `bwgñEK I AwbqvšZ aiYi chfeqY, A_ev DEi`vZv GKwU cčkvjv wKfvte cjY KižQb, tmwU t`Lv Ges cčZwU `dv mæútkP gše` KižQb, Zv tkvbv, A_ev mñvrKvti mgq DEi`vZvi cčZwqv j`q Kiv, Ges mñvrKvti mgq, ev cti MtelYi welqe` mæútkP DEi`vZvi gše` tkvbv, A_ev cixqYi cufwgtZ AskMñYKvix`i AvPiYtk mZKZvi mvt_ cixqY Kiv| welqU AþKUV ūNvovi eqm eštZ nžj žNvovi KvQ wmtq Zvi `wZ_yžZ nteŃ cčPbiUi gZ|

Zte, chfeqYi `vZšjtk mwKfvte gj`vqtbí Rb`, AbmÚvtbi DcRvZ wnmvte Acwi Kwí Z chfeqY Ges DcvĒ msMñi c×wZ wnmvte e`eüZ weÁvbmæšZ chfeqYi gta` GKwU cv`R` wbiçY Kiv cčqvRb| DcvĒ msMñi Ab`vb` c×wZi Zj bvq chfeqY c×wZi Abb` Dcv`vbwU nžjv th, GwU MtelKtk NUbv hLb žfvte NžU, wK ZLb tmfvte wj wce× Kivi mñhvM cčvb Kti| A_ŕ, DcvĒ msMñi c×wZ wnmvte weÁvbmæšZfvte cwi Pwuj Z chfeqY,

- e`w³i AvPiY th cčKuzK I mvgwRK tčqvcžU cčwñkZ nq, tmB tčqvcžU aviy Kti;
- th mKj Zvrchey`NUbv AskMñYKvix`i mvgwRK mæútkP cřvweZ Kti, tm mKj NUbvtK AvqĒ Kti;
- hv` i chfeqY Kiv nq Zvt` i `wófwz, `kŃ ev Rxebteva Abhvqx ev`eZv wK Zv wbañY Kti; Ges
- GKwU MtelYv t_žK cčB DcvĒtk Ab` MtelYvq cčB DcvĒi mvt_ Zj bv I chñj vPbvi gva`tg mvgwRK Rxežbi `bwgñEK NUbvej vtK wPwYž Kti |

weÁvbmæšZ chfeqY, MtelKtk Zvi chfeqY cčwqvq AšfP mKj welqtK mæúv`bv I mñvov ŃKtiYi gva`tg wbePb KižZ nq| KviY, wK welq wbePb Kiv nte, wK žšw³KZvi wfvĒž Zv Kiv nte, wK PjK e`envti gva`tg DEi`vZvtK DĪwcz Kiv nte, wK wK welq wj wce× Kiv nte, wKfvte Kiv nte, DcvĒ tkYexKiY, mvtKZxKiY I mswñBKtiYi tkvb c×wZ e`envi Kiv nte Ges DcvĒ t_žK wK wmvššgJ K Dcmsnvi Uvbv nte, Gi memKOB GB wbePb Ńviv cřvweZ nq| G welq_tj vtK wežepbvq tižL ejv hvq th, chfeqYgJ K c×wZ nžjv, AwfÁZvgj K j`q`i mvt_ mžwZcy`tkvb e`, NUbv, ev e`w³ thLvtb Awakisk mgq

chfeqYi `vZšjtk mwKfvte gj`vqtbí Rb`, AbmÚvtbi DcRvZ wnmvte Acwi Kwí Z chfeqY Ges DcvĒ msMñi c×wZ wnmvte e`eüZ weÁvbmæšZ chfeqYi gta` GKwU cv`R` wbiçY Kiv cčqvRb|

chfeqYgJ K c×wZ nžjv, AwfÁZvgj K j`q`i mvt_ mžwZcy`tkvb e`, NUbv, ev e`w³ thLvtb Awakisk mgq Ae`vb Kti, NžU, ev AwZemnz Kti, tmB tčqvcžU I AvPiYi mvt_ mæútkP wefwbæw³i wbePb, DĪwBKiy, wj wce×KiY, mvtKZxKiY Ges wmvšš-MñYi cčwqv|

Ae`vb Kti, NtU, ev AwZevnZ Kti, tmB tcdjvU I AvPitYi mvt_ m`uikZ wefbaelqj
wbePb, D`i xBKiy, wj wce`Kiy, mvtKZxKiy Ges wv`vS-MthYi cL`uqj|

chfe`Yi AtbK iKgti itqtQ| Gw GKw`tk, thgb metPiq c`jv`v GKw c`wZ,
Ab`w`tk, Gw GKw metPiq AvajbK c`wZi etU| GB c`wZtZ `b`uikE, mviY, AvKw`SK
I AwbqisZ NUbvi cvkvcwk, w`bqisZ cix`YiMvtii cix`YI I chfe`YI Kiv nq| wefbae
iKtgi chfe`Yigj K c`wZi wefbae`envi itqtQ| mviYfvte, chfe`Yigj K c`wZtk
`YfvM fvM Kiv hvq – AwbqisZ mviY chfe`YI I w`bqisZ chfe`YI|
AwbqisZ mviY chfe`YitK Avei `YfvM fvM Kiv hvq – AskMhYgj K I
b-AskMhYgj K chfe`YI| chfe`Yigj K c`wZi m`eav I Am`eav, tjv Avtj vPbi ci wefbae
aitYi chfe`YI c`wZ, tj vtK we`wi Zfvte Avtj vPbv Kiv nte|

**chfe`Yigj K c`wZi m`eav I Am`eav (Advantages and Disadvantages of
Observational Methods)**

DcvE msMthi tKskj wnmvte chfe`Yigj K c`wZi tek wKQz m`eav itqtQ| cL`gZt, GKw
NUbv hLb, thfvte Ges thLvtb NtU, tmB NUbv m`utK`WK ZLb, tmfvte Ges tmLvtbB Z`
msMth Kiv nq etj h_v`DcvE msMth Kiv m`e nq| wZiqZt, hLb Mtel K I DEi`vZvi
gta` cL``fvte tgsLk, ev wjwLZfvte thvMthvM cL`Zov Kiv m`e nq bv, ZLb
chfe`Yigj K c`wZ Lp KvhKi fvgKv cjb Kti| KviY, GB c`wZtZ hv`i chfe`YI Kiv
nq, Zvt`i Z` t`evi `fgZv, ev B`Ov bv `vKtj I chfe`YI K Zvt`i KvQ t`tk i`agv
chfe`Yi gva`tgB Z` msMth Ki`Z cvtib| ZZiqZt, th mKj DEi`vZv, ev DcvE
mieivnKvix Z` mieivn Ki`Z Pvb bv, ev hv`i KvQ t`tk Z` msMth Kiv KwB ntq cto
(thgb, gvbmKfvte AcKwZ`, gv`Kvm` I Acivax e`w`), tm aitYi DEi`vZvi KvQ t`tk
chfe`Yi gva`tg Z` msMth Kiv mnRZi nq| KviY, tm aitYi cw`w`wZtZ, Mtel Ktk Z`
mieivnKvixi B`Ov Awb`Ovi Dci w`b`P Ki`Z nq bv| PZi`Zt, chfe`YI c`wZ Ggb me we`
wi Z Z` msMth m`vvh` Kti, hv Z` msMthi mgq Zvrch`Y`gfb bv ntj I tm, tjv
cieZ`Z NUbvi w`tk`Y I e`vL`vq AtbK `i`ZcY`Ae`vb ivtL|

Zte chfe`YI c`wZi m`gve`Zvi itqtQ| cL`gZt, fweL`OvYx Kiv hvq bv, Ggb NUbvi Rb`
chfe`YI c`wZ e`envi Kiv ev`em`S nq bv| thgb, m`v`cL`wqK `v`v, fvgK`u, ev
AwMsthvMti gZ NUbvi t`q`i`i cw`Kw`Z chfe`YI Lp KwB ntq cto| wZiqZt, hv`
chfe`Yi `jwU AtbK eo nq, ev NUbwU AtbK cw`e`vB nq, tm t`q`i`i chfe`YI c`wZi
gva`tg tmB NUbv, ev `tji Dci me`Z`Kfvte Z` msMth Kiv KwB ntq cto| wKs` hv`
`jwU, ev NUbwU Lp tOvU nq, tm t`q`i`i chfe`YI c`wZ c`q`cvZgj K I AcL`ZvwaZ`xj
DcvEi Rb` t`q| ZZiqZt, hv` Gw Mtel YvMvi cix`Yi gZ Lp Abgbxq GKw w`bqisZ
Kivvtgvi gta` cw`Pwj Z bv nq, Zte ZwE`K cL`vebv w`b`Yi Rb` chfe`YI GKw Dc`thvMx
c`wZ ntj I ZEj t`tk Avnwi Z AbK`i cix`Yi Rb` Gw h_vh` bq| KLt`bv KLt`bv, GKB
iKg e`w`³, ev NUbvi Rb` Dcmsv`igj K wv`vS-MthY Kiv m`e ntj I tm mKj Dcmsv`i
tKej gvL` ZwE`K cL`vebv w`b`Yi Rb` MthY Kiv hvq, ZEj cix`Yi Rb` bq|

AwbqisZ AskMhYgj K chfe`YI (Uncontrolled Participant Observation)

m`gwmRK m`utK`P Dci gvbtli Awakisk AvbB AwRZ nq mviYzt AwbqisZ chfe`Yi
gva`tg| GB AwbqisZ chfe`YI AskMhYgj K (participant), ev b-AskMhYgj K (non-

participant) Dfqb ntZ cvti | G tñtñ, wqšy ej tZ chfeñYgj K tšktj i cwigZKiY, ev tKvb tKvb tñtñ, GKwU cixñYgj K cwiwñZtZ, Pj Kmgñi Dci wqšy tK tevSvbtv ntqtQ| A_ñ, Avgiv tmB cwiwñZ tñtñ mvgwRK AvPiY mñútkRvbtZ cwi, th cwiwñZtZ Avgiv tm,tjv tñL, ev th cwiwñZtZ Avgiv wbtRiv AskMñY Kw | G tñtñ Avgvt` i chfeñY,tjv Ab` tKvb chfeñK, ev tKvb wbañi Z` dv, ev tKvb cixñtYi iñZ cñvZ ðv iv cptciññZ nq bv|

HwZnmKfvte, mgvñeÁvbx | bñeÁvbx` i KvQ AskMñYgj K chfeñY metPñq MñYthñM` GKwU chfeñY cñvZ wñvte wteñPZ ntq AvmtQ| G cñvZtZ, hv` i Dci MtelYv cwi Pñ bv Kiv nq, Zvt` i mvt_ MtelK GKwU Ašñ½ mñútkRvcb Kñi Zvt` i gvtS Ae`vb Kñib| e`w³ th epñi mvgwRK cwi tetk evm Kñib, tmB cwi tetk e`w³ i mvgwRK mñútkR AvPiY tK tevSvi Dñtñk` MtelK cñZw tñi KgñvñÚ Zvt` i AvPiY tK chfeñYtYi Rb` wbtRñK wbtqñRZ Kñib| A_ñ, AskMñYgj K chfeñY ntjv, hv` i chfeñY Kiv nte, Zvt` i mvgwRK cwi tetk, Zvt` i mvt_ MtelñKi GKwU `ññmgñtqi Rb` wñveo mvgwRK wñvñvñi gva`tg Dcvñ msMñni cñvZ|

AskMñYgj K chfeñY ntjv, hv` i chfeñY Kiv nte, Zvt` i mvgwRK cwi tetk, Zvt` i mvt_ MtelñKi GKwU `ññmgñtqi Rb` wñveo mvgwRK wñvñvñi gva`tg Dcvñ msMñni cñvZ|

G cñvZtZ, chfeññKi fñgKwU metPñq `i`ZcYñ KvY, wbtRi Dñtñk` mñútkRvbtZ bv w`ñq chfeñK th tñvñ, ev `ñtñ chfeñY Kiñeb, tmB `ññ wñv GKRb cñvñ`ñm` cwiYZ ntZ tñvñ Kñib| AskMñYgj K chfeññY, hv` i chfeñY Kiv nte, MtelK Zvt` i mvt_ Ašñ½ mñútkRvñto Zñ tZ wñtñq MtelKñK Zvt` i fvñv, mvgwRK cñv, wñvñm, AvPiY, AvKvi, BññZ, BZ`w` wñLñZ nq| MtelKñK tmB mvgwRK cwi tetk GKwU fñgKv MñY KiñZ nq, thB fñgKvñ AeZñvññtñq wñvñ tmB mgvtR wbtRñK GKRb MñYthñM` m`ñm` cwiYZ Kñib| Dcvñ msMñ KiñZ wñtñq MtelKñK wñvñvññtñKñj Aeñvñvñ KiñZ nq| thgb, tñvñ NUbñK cñvññ Kiv, cñvññRÁvñvñ Kiv, NUbñvñ KvY mñútkRvbtZ Pñvñ, BZ`w` | MtelK mPñvñPñ AskMñYKvix m`m`ñ` i AvñvñPñi, chfeññYi ci ciB Zv jM eB, Wñtñqix, ev tñvñvñ eBñq wññL tñtñ b, ev tñvñ hšñe`ñvñi Kñi tm,tjv tñtñ KiñvñKñib|

Dcñi AvñvñPñvñ, t`Lv hv`ñQ th, hLb chfeñK, ev MtelK wbtRB chfeñYKZ `ññ i m`m` wñvñte cwiñvñZ nb, ZLb tñvñ nq AskMñYgj K chfeñY| Zñe, `ññi Ab`vñ` m`m`ñ` i gñZvñ MtelKñK th GKB KvR KiñZ nte, Zv bñ| AskMñYKvix chfeñK nevñ Rb` wñvñ H`ññ MñYthñM` th tñvñ fñgKvñ cvñ b KiñZ cvñb| Zñe mñvñvñZt, Zvi Avñj Dñtñk`ñwU tñvñvñ `ññK| A_ñ, wñvñ Ggb GKwU fñgKvñ cvñ b Kñib, hvñZ Kñi `ññi `ññvñeK Kvñññ ev Avñññ e`ñvñZ bv NñU| AskMñYgj K chfeñK `ññi cñvññvñvñ ev LÉKñvñvñ th tñvñ i Kñiñ m`m`ñ` ntZ cvñb|

AvñvñññZ AskMñYgj K chfeññYi mñvñvñ | Avñvñvñ (Advantages and Disadvantages of Uncontrolled Participant Observation)

AvñvñññZ AskMñYgj K chfeññYi GKwU eo mñvñvñ ntjv th, hv` `ññi m`m`iv MtelñKi Dñtñk` mñútkRvññvñZ `ññKb, Zñe MtelñKi AskMñYñi dññ Zvt` i Avññvñ ev Kvñññ cñvñvñZ nevñ mñvñvñ `ññK bv ejññ B Pññ | dññ, MtelñKi cñññ `ññi `ññvñeK Kvñññ wññvñvñ Kiv mññ nq| AskMñYKvix chfeññKi Avññvñ ev Avññvñ chfeñYKZ `ññi mñvññvñ Kvñ m`m`ñ` i gñZvñ ntZ cvñi | tm tñtñ, chfeñK chfeñYKZ `ññi AññK Mññi Zi Z`ññ tññZ cvñb, hv` i avññvñ mñvñvñ chfeññYi gva`tg cvñvñ mñvñvñ bñ| GññvñB, Zvt` i cññZ Avññvñ wññvñvñ Kivi gva`tg MtelK e`ñvñK Avññvñ ARññ Kñib| thññZñ Zvi AskMñYñi mgñKñj `ññmgñtqi Rb` nq, tñññZñ G mgñq Zvi mñvññvñZ Z`ññvñ AññK `ññvñ

mvjvrKvi Rwi c 0viv c0B Z_w` Atcqvl AwaKZI e'vcK nq| tKvb m`m` tKvb tclvctU tKvb gZvgZ w`t`Qb, Zv wj wceX Kivi AskM0Ygj K chfeqlyi gva'tg mae| dtj, AskM0Ygj K chfeqly mavi Y ckgvj v Rwi tci tPtq AwaKZI mgX nq|

GB cXwZi wKQz Amjeavl itqtQ| AskM0Ygj K cXwZ c0qvMi cteqtm,tj v chfj vPbv Kiv c0qvRb| MtelK chfeqlyKZ `tji GKRb cKZ m`m` ntq hvevi dtj, wZwb Zvi AwfAZvi mxgv msKxYqKti tdjtj b| wZwb th `tj AskM0Y Ktib, tmLvtb Zvi wKQzeUyMto DfV| dtj chfeqlyi mgq wZwb tm mKj eUyev wetkl Dc-`tji ctq Ae'vb wbtq _vtKb| `tji c0vb AvPiY ev KvhEug AbmiY Kiv MtelKti c0vb Df'k` _vtK etj, AtbK mgq `tji c0SK m`m'iv Zvi chfeqlyi evBti t`tk hvb| chfeqly AtbK mgq Ggb `i"Zcy` fvgKv wbtZ cvtib th, Zvi c0vte `tji cKZ AvPiY e`tj thtZ cvtib| GKBFvte, chfeqlyKZ `tji mvt_ AvteMvce`ntq mXU,3 nevi dtj, wZwb Zvi e'w0Zv nwi tq tdj tZ cvtib| MtelK `tji m`m` ntZ wbtq `tji gta` wbtRi mXyb I AvZmSio wbtq MtelK e`-ntq thtZ cvtib| `tji gta` NtU hvI qv tKvb `jLRbK NUBvq mrvbfwZkxj ntZ wbtq wZwb Zvi mvt_ Nwb0 m`m't`i Dci tmB NUBvi c0vteK c'qcvZgj Kfite wj wceX KitZ cvtib| mtevevi, MtelK thtnZi chfeqlyKZ `tji cKZ AvPiYw AvqZi Ktib, tmtnZi tm,tj vtK wZwb c0KwZK Ges mWV etj ati tbb| MtelK th chfeqly AskM0Y Ktib, tmLvtb Zvi AwRZ AwfAZv Zvi wBR`q w0Zxq tKvb MtelK GKB NUBv GKBFvte Dcj w0 KitZ cvtib bv etj DcvfEi c0gZKiY mae nq bv| mZivs, GK K_vq ej v hvq th, c0'q AskM0Yi dtj chfeqlyK mrvte MtelKti fvgKv mxgvX ntq hvq|

b-AskM0Ygj K chfeqly (Non-Participant Observation)

AskM0Ygj K chfeqlyi t'qit Duj wEZ mgm'vi AtbK,tjviB mgvavb w'tZ cvti b-AskM0Ygj K chfeqly| Zte, cKZ b-AskM0Ygj K chfeqly Avmtj B GKwU KwWb KvR| GKRb chfeqlyK, wub GKwU wbw`0 cwi teik mveqlywKfite Dcw`Z _vtKb, wKŠ` KLtbvB AskM0YKvix nb bv, Zvi Rb` `tji gta` tKvb mjbw`0 mXUk, ev fvgKvi ifc wbaqY Kiv _vtK bv| mZivs, chfeqlyKZ `j Ges chfeqlyKvix DfqB A`w`-teva KitZ cvtib Ges `rfweKfiteB, AtbKti Dci MtelYvi t'qit, GKRb evBti tjtvtKi ctq cKZ AskM0YKvix nI qv Amae ntq ct0| thgb, Acivax `tji Dci MtelYvi Rb` GKRb mgvRweAvbx Acivax ntq thtZ cvtib bv, ev tKvb wKtkvi Acivaxi `tj, ev tKvb c'j k t`vqW, wKsev G i Kg tKvb `tji m`m` ntq thtZ cvtib bv|

b-AskM0Ygj K chfeqly
cKZctq, GKwU Avav-
AskM0Ygj K chfeqly
cXwZ|

Ab`w`tk, MtelKtk tKvb `tj th mXUYfite AskM0Yi gva'tg mjbw`0 fvgKv ivL'tZ nte, Ggb tKvb K_v tbb| GtKevtiB AskM0Y bv Kivi A`w`Ki cwi w`wZ Govtvi Rb`, MtelK GKwU `tji tKvb tKvb KvR Ask wbtZ cvtib| tKvb tKvb t'qit wZwb ntZ cvtib chfeqlyK, Avevi tKv_vl ntZ cvtib mvjvrKvi M0YKvix| GuUB mgvWRK MtelYvi GKwU a'c`x ifc| b-AskM0Ygj K chfeqly cKZctq, GKwU Avav-AskM0Ygj K chfeqly cXwZ| wbtRtk mXUYq0teteK ivLvi tPtq eis MtelKti ctq `j Kg fvgKv cvj b Kiv AwaKZI mnR| gvV chfqi MtelYvq t`Lv tMq th, c0_wgK chfqi cwi wPwZ I e'vL'vi ci chfeqlyKZ mXc0vq, ev `tji m`m'iv gvV Kgxv Dcw`wZtk Zvt`i gta` M0YthvM` etj `fKvi Kti tbb| wZwb cwi w`wZi mvt_ AvteM ZwoZfite RwoZ nb bv etj `tji m`m'iv Zvt`i AtbK RvUj wel q I mgm'v wbtq MtelKti mvt_ mntrB Avj vc KitZ cvtib, hv Zviv Zvt`i AvcbRbt`i mvt_ I nqtZv Avtj vPbv Kiteb bv|

wbqgZwšK chfeŋY (Controlled Observation)

AbmÜvbgj K Mtel Yvi Rb` mvariY chfeŋYB metPŋq tekx DcŋhMx | wKŠ' Mtel K µtgB ešŋZ cvtib th, mZKZvi mvŋ_ cŋZKZ cŋgŋj v, mvŋŋvrKvi AbmPx, cixŋY, ev chfeŋY c×wZi Dci AwakZi wbqšY cŋZŋvi gvaŋg Zvi msMpxZ tUvKv,tjvi NvUwZ cŋY Kivi cŋqRb itqŋQ | ŋhgb, kvixwi K MVŋbi AvbgwbK avi Yvi cwi etZ`bZwEŋK cwi gvc e`envi Kivi cŋqRb nq, ev ŋKvb Gj vKvi `ŋZj m=útK`AbŋgZ avi YvtK cŋKZ g`vc-Gi gvaŋg i`ati tbqvi cŋqRb nq | Kvi Y, Avgvŋ` i avi Yv,tj v hZ tekx Mfxi | Zx² nte, Avgiv ZLb AwbqšZ chfeŋŋYi Dci ZZ Kg wbfŋ Kiŋev | Gfŋte, Mtel Yv cŋKŋi i wZxq chŋq Gŋm Avgiv wbqgZwšK chfeŋŋYi K_v fveŋZ cwi | G ŋŋŋŋ, GKw AvbŋwbK mvŋŋvrKvi , GKw mŋP, ev gvbwŋŋ AwbqšZ chfeŋŋYi Dci wbqšK wmwŋte KvR KiŋZ cvti |

AwbqšZ chfeŋŋYi gZ wbqšZ chfeŋŋYi Mtel K chfeŋŋYKZ e`w³ i KgRvŋŋK wbqšZ Kŋib bv | eis wZwb chfeŋŋYi cŋµqvŋK cŋŋvj xex KiŋZ tPŋv Kŋib | Avgiv Rvb th, chfeŋŋK ŋKvb bv tKvbŋte chfeŋŋYŋK cŋfweZ KiŋZ cvtib | tm ŋŋŋŋ, Mtel K hv KiŋZ cvtib, Zv ntjv GB cŋfveŋK hZUKz m=ŋe KgŋZ cvtib, ev Kgctŋŋ GB cŋfveŋK cwi gvc KiŋZ cvtib | AZGe, chfeŋŋYi cwi w`wZw wK cŋKwZK nte, bv wK Kwŋ g nte Ges hvŋ` i chfeŋŋY Kiv nte, Zviv wK chfeŋŋY m=útK`Rvbŋeb, wK Rvbŋeb bv, tm mKj wŋtq Mtel KŋK w×vš-MŋY KiŋZ nte | KLB, wKŋte Ges tKvb Ae`vq chfeŋŋY KŋŋŋQb, G msµvš-Z`w` cŋZŋte`ŋb wj wce× Kŋi GKRB mgvRwEÁvbx Zvi DcvŋEi mxgve×Zv | chfeŋŋYi cŋpiveŋEi c×wZ Ab`vb` Mtel KŋK AwwZ KiŋZ cvtib |

Awakvsk AwbqšZ chfeŋŋY, cwi tekw cŋKwZK _vtK Ges hvŋ` i chfeŋŋY Kiv nq, Zviv chfeŋŋY m=útK`mŋPZb _vtKb bv | wbqšZ chfeŋŋYŋK cŋKwZK cwi ŋetkl cwi Pwŋ Z Kiv ŋŋZ cvti | wKŠ' G aiŋYi wbqšZ chfeŋŋY, chfeŋŋYKZ e`w³ iv Rvŋbb th, Zvŋ` i chfeŋŋY Kiv nŋ`Q | chfeŋŋYKZ e`w³ ŋ` i cwi ŋetkŋK cŋKwZK wmwŋte Abŋfe Kivi gvaŋg wbqšZ chfeŋŋY cŋŋcvZŋK AvsŋKŋfŋte mxgZ Kŋi _vtK | wKŠ' gj wbqšYw NŋU _vtK chfeŋŋYKZ e`w³ ŋ` i Dci wbqšY cŋZŋvi gvaŋg | GB wbqšY KiŋZ wŋtq th tKŠkj Aeŋ =b Kiv nq, tm,tj v ntj v, hŋMcrŋte hwšK tKŠkj , `j xq chfeŋŋY, AbmPx i e`envi Ges chfeŋŋYKZ AvPiYŋK `Z mvsŋKZxKiŋYi gvaŋg w`wii Z tkYve×KZ `dvi wbgŋŋ | Gfŋte, axŋi axŋi Mtel K GKw cwi i× chfeŋŋY cwi ŋek t_ŋK Mtel Ywvi wbqšZ cwi ŋetki w`ŋK DŋEviY NUvb | tm ŋŋŋŋ, cwi tekw nq GKw Kwŋ g | Dŋŋ`k`gj Kŋfŋte e`envŋi i Rb` Dchŋß, thLvŋb mwŋw`ŋ DŋxcK e`envŋi i gvaŋg chfeŋŋYŋK hZUKz m=ŋe cŋgZKiY Kiv nq |

mvi vsk

mwgwiRK Mtel Yvq, chfeŋŋY GKw „i`ZcY`c×wZ | chfeŋŋY c×wZ AbmY KiŋZ ntj , cŋŋŋB Mtel KŋK gj bwZgŋj vi Avŋj vtK `vb Ges mgq tŋŋ` Mtel Yvi avc,wj wK Kŋi wŋŋZ nq | chfeŋŋY c×wZŋK gj Zt `ŋŋŋŋM fŋM Kiv hvq — AwbqšZ mvariY chfeŋŋY | wbqgZwšK wbqšZ chfeŋŋY | chfeŋŋY c×wZŋZ e`w³ i AvPiY, mgvŋR msNwZ ZvrcheY` NUbvej x, BZ`w` ŋK wEÁvbm=šZŋte Aa`qb Kiv ntq _vtK | mvariYZt, Mtel Yvi aiŋYi Dci wbfŋ Kŋi chfeŋŋYi avc,wj ŋK wbaŋŋY Kiv nq | eZŋvb cvŋV, chfeŋŋYi „i`Zi Gi mwŋeav | Amŋeav, aiY, BZ`w` wŋŋq Avŋj vPbv Kiv ntqŋQ |

cvW - 3

^cîYKZ WwK cġvj v
Self-Administered Mailed Questionnaire

GB cvW tkłl hv Rvbn hrte —

- ^cîYKZ WwK cġvj v wK
- WwK cġvj vq cġve we`vi Kvi x Dcv` vbmgn
- WwK cġvj vi mjeav I Amjeav

^cîYKZ WwK cġvj v wK (What is Self-Administered Mailed Questionnaire)?

MtelK th me welq I NUBvtK mivmwi cġ`ŋ KiłZ cvtib, tm me welq I NUBvtK wbtq MtelYvi Rb` chġeŋYgġK c×wZ ntjv metPtq Dchyß | Zte, mgvtRi me welq I NUBv MtelK cġ`ŋ chġeŋY KiłZ cvtib bv | G aitYi cwiv`wZtZ, MtelK tKvb cġ`Ā m=utK[©] wbtRi AwfÁZv ARġbi Rb`, G wettq hv`i AwfÁZv itqtQ, Zvt` itK cġcemRÁvmv Kti Z` tctZ cvtib | Z` msMŋni Rb` cġcemRÁvmv Kivi gva`guU ntZ cvti tgšŁLK ev vj wLZ | tgšŁLKfvte cġcemRÁvmv Kti Z` msntMŋ Rb` mvŋŋvrKvi AbymPx e`envti i gva`tg wbeŋPZ e`wßt` i mvŋŋvrKvi MŋY Kiv nq Ges wj wLZfvte Z` msMŋni Rb` wbeŋPZ e`wßt` i KvŋQ ^cîYKZ WwK cġvj v tġŲY Kiv nq | MtelYv mgm`vi cġkuz, Gi Rb` eivl KZ A`Ges Rbetji mnRj f`Zvi K_v gv_vq tiłLB MtelK G `ŋU c×wZi gta` Ggb GKwU wbeŋPb Ktib, hvi gva`tg cŲmwzK AwfÁZv itqtQ, Ggb wbeŋPZ bgbv t`tK Z` msMŋ Kiv mæe nq |

hLb GKB mvŋ_ AłbK tekx msL`K e`wßi KvQ t`tK `beŋßKfvte I `ZZvi mvŋ_ tKvb welq Z` msMŋni Rb` cġvj v tġŲYi cŲqvRb nq, ZLb ^cîYKZ WwK cġvj vi gva`tg cwi Pwj Z Rwi c GKwU RbwcŲ c×wZ | ^cîYKZ WwK cġvj vq GKwU mjbw`Ų KvVvtgv AbymY Kti Awakvsk cġġK AvŋM t`tKB mstKZxKiY Kti wbtZ nq Ges MtelYvi mvŋ_ mswkŲ e`wßt` i n`ŋŋŋc QvovB DEi`vZv cŲZwU cŲkæc`E GKwvK DEi` dv t`tK Zvi cQŲ` i DEi`w tetQ tbb | ^cîYKZ WwK cġvj vq cġġtj v Ggbfvte ewŲ`_vtK, hvZ Kti DEi`vZv tm_ tj v mnŋRB eŋtZ cvtib Ges h_vh_ DEi`w tetQ wbtZ cvtib |

^cîYKZ WwK cġvj vq cġġtj v Ggbfvte ewŲ`_vtK, hvZ Kti DEi`vZv tm_ tj v mnŋRB eŋtZ cvtib Ges h_vh_ DEi`w tetQ wbtZ cvtib |

^cîYKZ WwK cġvj vi cġvb mjeawU ntj v th, Gi gva`tg `f e`tq GKwU eo msL`K bgbv t`tK DcvE msMŋ Kiv hvq | KviY, GLvtb mvŋŋvrKvi MŋYKvixi cŲqvRb nq bv Ges ce` mstKZxKiY c×wZ I Kiv=úDUvti i mrvnŋh` mnŋR I `ZZvi mvŋ_ DcvE wetkŲ Kiv hvq | DEi`vZv i Zvt` i mjeavRbK mgtq cġvj v cŲY KiłZ cvtib | ^cîYKZ WwK cġvj v DcvE msMŋni GKwU `beŋßK c×wZ etj, GiU AwakZi e`wbŲ ntq _vtK | WwK cġvj vi cġvb AmjeawU ntj v th, GtZ DEi` tdir cŲBi nvi Kg ntq _vtK | AłbK WwK RwiłcB t`Lv hvq th, hZ cġvj v WvtK cġvŋv ntqtQ, Zvi gvġ 20 t`tK 50 kZvsk tdir GtmtQ | Zte, GB DEi` cŲBi nvi I DcvEi` gvb AłbK_ tj v wettqi Dci wbfŋ Kti | thgb, MtelYvi welqe` ; MtelYvq AskMŋYKvix DEi`vZvt` i _YMZ gvb I `ewkŲ, cġvj wU m=utK[©]DEi`vZvi `wŲwz, cġvj v cŲYi mnRmva`Zv, BZ`w | G mKj wettq wKQwv we`wi Zfvte Avtj vPbv Kiv hvK |

WwK cġvj vi cġvb AmjeawU ntj v th, GtZ DEi` tdir cŲBi nvi Kg ntq _vtK |

WwK cġvj vq cġve we`vi Kvi x Dcv`vbmga (Factors Affecting Mailed Questionnaire)

wm×všġK th mKj Dcv`vb cġveZ Kġi, tm,tj vi gġa` Ab`Zg ,i`ZcY`Dcv`vbmU ntjv Mġel Yv cġġi i Dġ`v`vi cwi i PwZ, MġhYġhvM`Zv, `eaZv, ŲġgZv I ghr`v| Kvi Y, Dġi`vZv vbmŲZ ntZ Pvb th, Mġel Yvq Zvi AskMġhY ġhb ġKvb fġteB ZvġK ŲwZMŲ -bv Kġi | `eÁwġK cĲZŲvb, mi Kvi x cĲZŲvb, weġġe`vj q, ev L`wZevb temi Kvi x cĲZŲvb KZĲ tġŲi Z WwK cġġvj vi Dġi cĲBi nvi mġavi YZt D`P ntq `vġK| Kvi Y, G mKj cĲZŲvbi cwi Ptqi `eaZv vbmġq Dġi`vZvi gġb tZgb tKvb mġ`n `vġK bv| wġš` th mKj cĲZŲvbi AwfwmŲġj K Dġi k` `vġK etj Dġi`vZvi KvtQ gġb nq, tm mKj tŲġġġ mġšH RbK nġti Dġi cĲB tek Kwvb ntq cġŲ| AġbK mgq, Dġi`vZv tKvb fġte mi Kvi x cĲZŲvbi KvtQ evav `vġKġ, ev Mġel Yvi weġġe`i mġġ_ mswġe`_vġKġ, tmB cĲZŲvb KZĲ cwi Pwġ Z Mġel Yvq Dġi`vZv cġġvj v cġY Kġi tdir cvWġZ eva` nb| wefġbġcĲZŲvbi gġa` weġi vagj K m`úĲ`_vġKġ, tm tŲġġġ Dġi cĲBi nvi bvUKxq fġte Kg nġe|

Mġel Yv cġġi i Dġ`v`vi (Sponsorship): Dġi`vZv cġġvj v cġY Kġi tdir cvWġvbi wm×všġK th mKj Dcv`vb cġveZ Kġi, tm,tj vi gġa` Ab`Zg ,i`ZcY`Dcv`vbmU ntjv Mġel Yv cġġi i Dġ`v`vi cwi i PwZ, MġhYġhvM`Zv, `eaZv, ŲġgZv I ghr`v| Kvi Y, Dġi`vZv vbmŲZ ntZ Pvb th, Mġel Yvq Zvi AskMġhY ġhb ġKvb fġteB ZvġK ŲwZMŲ -bv Kġi | `eÁwġK cĲZŲvb, mi Kvi x cĲZŲvb, weġġe`vj q, ev L`wZevb temi Kvi x cĲZŲvb KZĲ tġŲi Z WwK cġġvj vi Dġi cĲBi nvi mġavi YZt D`P ntq `vġK| Kvi Y, G mKj cĲZŲvbi cwi Ptqi `eaZv vbmġq Dġi`vZvi gġb tZgb tKvb mġ`n `vġK bv| wġš` th mKj cĲZŲvbi AwfwmŲġj K Dġi k` `vġK etj Dġi`vZvi KvtQ gġb nq, tm mKj tŲġġġ mġšH RbK nġti Dġi cĲB tek Kwvb ntq cġŲ| AġbK mgq, Dġi`vZv tKvb fġte mi Kvi x cĲZŲvbi KvtQ evav `vġKġ, ev Mġel Yvi weġġe`i mġġ_ mswġe`_vġKġ, tmB cĲZŲvb KZĲ cwi Pwġ Z Mġel Yvq Dġi`vZv cġġvj v cġY Kġi tdir cvWġZ eva` nb| wefġbġcĲZŲvbi gġa` weġi vagj K m`úĲ`_vġKġ, tm tŲġġġ Dġi cĲBi nvi bvUKxq fġte Kg nġe|

Dġi`vZv cwi`Obel mswġġB cġġvj v tekx cŲ` Kġi b|

cġġvj vi AwġK (Questionnaire Format): AwfÁZvq t`Lv wġġġQ th, UvBc Kġi dtUvKwġc Kiv cġġvj vi Zj bvq Ųvcġvġv cġġvj vq Dġi cĲBi nvi tekx ntq `vġK| wġbġcvZvq Ųvcġvġv cġġvj vi Zj bvq cŲ` cġġi Acġi cŲvq Ųvcġvġv cġġvj vq Dġi cĲBi nvi tekx cvl qv hvq| Gi A`ġġj v th, Dġi`vZv cwi`Obel mswġġB cġġvj v tekx cŲ` Kġi b| i wġb KwMġR Ųvcġvġv cġġvj v tKvb tKvb tŲġġġ wKŲv D`P nġti Dġi cĲB NUvġj I Zv Lġ tekx ZvrchġY`bq| Zġe GwU ejv hvq th, wġbġwġbġeÁġġi Rb` wġbġwġbġeġiŲi KwMR e`envi Kiġġ cġġvj v wKŲv AvKl Ųxq ntq Dġv|

mġavi Y wġġġ wġmġte, GKwU cġġvj vi `N`Ggb nġ qv DġPr, hvġZ Kġi Zv cġY KiġZ Dġi`vZvi Avav NŲvi tekx mgq bv j vġM|

cġġvj vi `N` (Questionnaire Length): cġġvj vi `N` KZ eo nġe, Zv wġfĲ Kġi Mġel Yvi Dġi k`, Pj K I mġġġi mġL`v, cĲġġe mġL`v, Mġel Yv c×wZ, weġġġġYi tġKġj Ges m`úġ`i mġRj f`Zvi Dci | GKwU cġġvj vq, cĲġġe mġL`v KġġKwU t`ġK KġġK KZ ntZ cvġi | Mġel Kġi i AwfÁZvq t`Lv wġġġQ th, cġġvj vi `N` tŲvU ivLġZ wġġġ Lġ wġwÁ Kġi tġjġj, Zv Dġi`vZvi AvMġh bó Kġi tġġj | cġġvj vi AvKvi Lġ tekx `xN`ġġj I Zv cġY Kġi tdir cvWġvbi gZ mgq Dġi`vZv e`q KiġZ Pvb bv| mġavi Y wġġġ wġmġte, GKwU cġġvj vi `N`Ggb nġ qv DġPr, hvġZ Kġi Zv cġY KiġZ Dġi`vZvi Avav NŲvi tekx mgq bv j vġM|

`xN`ġġġ w`ġq eYġv Kiv GKwU cġġi Zj bvq GKwU `f`%N`cġġi gġa`ġġ Dġi cĲBi nvi tekx ntq `vġK|

cŲ` cġ (Cover Letter): KvhZt, cĲZwU cġġvj vi mġġ_B Mġel Yvi cġKwZ, Dġi k` I mġġhvMZvi Avnġvb Rwmġġ GKwU cŲ` cġ mġġhvMZ `vġK| cŲ` cġġi `N`ġ, Avnġvġbi cġKwZ, ev tmwU Avj v`v cvZvq tj Lv nġe, bv wġ cġġvj vi mġġ_B tj Lv nġe, G me weġġġi Dci wġfĲ Kġi cŲ` cġ wefġbġcĲvġi ntq `vġK| cŲ` cġ wġ e`w`i bvġġ nġe, bv wġ bvq Ųvov GKwU mġavi Y cġB ġġ_Ų nġe, G wġġġ Mġel Kġi i gġa` gZ cv`Ĳ` iġġġQ| tKD gġb Kġi b th, Mġel ġġi `Ųġġi Dġi`vZvi bvġġ c`Q` cġ cvWġġ Dġi`vZvi KvtQ Zvi Avġe`b wKŲv wġbġġġ Ges Dġi`vZv cġġvj v cġY Kġi tdir cvWġvbi Zwm` Abġfe Kġi b| Aġb`iv gġb Kġi b th, cġwU wġfġte tj Lv nġ`Q Zv ,i`ZcY`Ĳ tmwU wġ Dġi`vZvi bvġġ ntjv, bv wġ Mġel ġġi `Ųġġi ntjv, Zv ,i`ZcY`bq| GKwU Kov I `p fvl vq tj Lv cġġi Zj bvq GKwU Abġġv`bgj K cġ AwakZi D`P gvġvq Dġi cĲB NUvq| `xN`ġġġ w`ġq eYġv Kiv GKwU cġġi Zj bvq GKwU `f`%N`cġġi gġa`ġġ Dġi cĲBi nvi tekx ntq `vġK|

ckgvy v ciY mnRmva`Zv (Ease of Completing the Questionnaire): Avgiv BtZvctē Dtj L-Ktiw th, WwK ckgvy vi gva`tg wbfj I tekx cwi gvY DĒi tctZ ntj, ckgvy vtK mnRteva` nZ nte, hvZ Kti DĒi`vZv`rQb`i mvt_ Zv ciY KitZ cvtib| tm tŋtĪ wbt`Rvej vtK Lp`úófvte eYbV KiZ nte| AtbK mgq j`ŋi Kiv hvq th, ckgvy vi gta` h_vh` wbt`Rvej x`vtK bv Ges`vKtjI Zv Achß`vtK| DĒi`-`dv,tj vtK mý úó tkYweb`vtmi gva`tg Dc`vcb KiZ nte| Lp` tekx Dbjß` ckw_vKv evĀbxq bq| G me wel tq ht_ó hZevb bv ntj, DĒi`vtbi wgonvi mn`āwšhß` DĒi AvmZ cvti |

WwK ckgvy vi gva`tg wbfj I tekx cwi gvY DĒi tctZ ntj, ckgvy vtK mnRteva` nZ nte, hvZ Kti DĒi`vZv`rQb`i mvt_ Zv ciY KitZ cvtib|

DĒi`vtb DŋKiy (Inducements to Reply): ckgvy wU hw` DĒi`vZvtK AvKó bv Kti, ev DĒi`vtb ht_ó cwi gvY DŋK bv Kti, Zte wZwb Zv ciY AvMh cvteb bv| tm j`ŋi, MtelYvi`_i`Zmn dj vdtj i gvb epxi Rb` DĒi`vZvi mnthwMzvi wel quU th Zvrchey`Zv cŌQ` ctĪ`ŋi mvt_ Ztj aitZ nte| DĒi`vZvi mnrvh` Qvov th MtelYwU m`ubæKiv m`e nte bv, Zvl DĒi`vZvtK epStq ej tZ nte| tKb ZvtK Qvov Ab` KvDtK ckgvy v ciY Kivi Rb` wbeßPZ Kiv nq wb, Zvi Rb` weĀvbm`ßZ bgjvqb cxwZtZ Zvi wbeßPZ nl qvi K_wU RvbtZ nte| cŌhr` tŋtĪ, hw` tKvb m`ybx t`evi e`e`v`_vtK, Zte Zvl`_i`tZj mvt_ Dtj L-KitZ nte| AtbK mgq, G mKj tQvULvU wel ql DĒi`cŌBi nvi wbaŋtYi tŋtĪ ht_ó`_i`Zcy`htq cto|

MtelYvi`_i`Zmn dj vdtj i gvb epxi Rb` DĒi`vZvi mnthwMzvi wel quU th Zvrchey`Zv cŌQ` ctĪ`ŋi mvt_ Ztj aitZ nte|

DĒi`vZvi cKwZ (Nature of the Respondents): thtnZi MtelKt`i AwfÁZvq t`Lv hv`Q th, WwK ckgvy vq DĒi`vtbi nvi mvariYfvteB Kg ntq`_vtK, tmtnZi ejv hvq th, me`#i DĒi`vZvi tŋtĪB GwU cŌqvR`| i`agvĪ Af` wkvŋZ, ev Kg wkvŋZt`i tŋtĪB bq, wbeßPZ RbtMvxi DĒi`vZvt`i (thgb, Wv`vi, BwĀvbqvi, Aa`vcK, D`P c`_` miKvi x KgRZp, BZ`w`) tŋtĪI ckgvy v ciY Kti tdir cvVtbvi nvi wgentq`_vtK| Zte, GKwU Amg`enkó`m`ubæbgjvi tŋtĪ t`Lv hvq th, metPtq AvMh e`w`iv metPtq`_Z ckgvy v tdir cvWb Ges MtelYvi wel qe`i cŌZ hviv metPtq tekx D`vmb, Zviv metPtq Kg tdir cvVb| ckgvy v ciY Kti tdir cvVtbvi wel quU wŋwĪK — hviv wel tqi ctŋ, Zviv tekx DĒi`vZvi Ges hviv D`vmb, Zviv Kg DĒi`vZvi cvWb| AZGe, DĒi`vZv hvZ D`vmb bv nb, MtelKtK tm wel tq wtkl hZevb ntZ nte|

ckgvy v ciY Kti tdir cvVtbvi wel quU wŋwĪK — hviv wel tqi ctŋ, Zviv tekx DĒi`vZvi Ges hviv D`vmb, Zviv Kg DĒi`vZvi cvWb|

ckgvy v tŌtYi mgq (Timing of Mailing Questionnaire): ckgvy wU tKvb mgq DĒi`vZvi KvQ tŌY Kiv nt`Q, DĒi`cŌBi nvi wbaŋtYi tŋtĪ tm wel quU wtkl frte`_i`Zcy` tKvb MtelKB Pvbteb bv th, j`ŋi QwU wK AvtM, ev mšvbi ciY Pj vKvj xb mgq, ev agf DrmeKvj xb QwU cŌ`vtj ckgvy wU DĒi`vZvi KvQ tŌQK| KviY, G mgq DĒi`vZv ckgvy v ciYi tPtq AtbK tekx`_i`Zcy`KvR e`_`_vtKb etj, wZwb nqtZv tmuU GK cj K t`tL GK cvtk mwi tq ivLteb, ev tdtj t`teb|

ckgvy wU tKvb mgq DĒi`vZvi KvQ tŌY Kiv nt`Q, DĒi`cŌBi nvi wbaŋtYi tŋtĪ tm wel quU wtkl frte`_i`Zcy`

AbnyiY I`šiy Kwitq t`qv (Follow-up and Reminders): AwfÁZvi gva`tg GKwU wel tq MtelKiv GKgz ntqtQb th, ckgvy v WvtK tŌtYi ci hw` DĒi`vZvtK AbnyiY Kiv nq, ev`šiy Kwitq t`qv hvq, Zte DĒi`cŌBi gvĪv teto hvq cŌq 20 kZvsk| Zte, GwU gtb ivLv cŌqvRb th, Awzvi`³ gvĪvq AbnyiY I`šiy Kwitq t`qv DĒi`vZvi Rb` weiw`Ki ntZ cvti Ges Zv wntZ weciX ntZ cvti | tm tŋtĪ, MtelKti DvPr th, wZwb ckgvy v tdir Avmv eU nevi tkl gŋZ`chß`-Atcŋv Ki teb Ges Zvi ci`šiy Kwitq t`qv Rb` GKwU cĪ w`tq AbnyiY Ki teb| G tŋtĪ,`šiy Kwitq t`evi Rb` tŌiZ ctĪi gta` wK wel qe`_Aš`fß` nte, Zvl`_i`Zcy` GwU j`ŋi` ivLtZ nte th,`šiy Kwitq t`evi cĪwU thb DĒi`vZvi KvQ úgwK`tfc ntq bv`uovq|

ckgvy v WvtK tŌtYi ci hw` DĒi`vZvtK AbnyiY Kiv nq, ev`šiy Kwitq t`qv hvq, Zte DĒi`cŌBi gvĪv teto hvq cŌq 20 kZvsk|

cġġj v cġY Kġi tdir cWvb bv, Ggb DEġi`vZvġi PviWU `tj wef³ Kiv thġZ cvġi | GK`j DEġi`vZv itġtQb, hviv nq WwK Awġtmi fġj i KviġY, bZev fj wKvbi KviġY cġġj v cvb bv etj DEġi `b bv| GB `tj, tm mKj DEġi`vZv itġtQb, hviv nqġZv cġġj v cġY Kġi cWvb, wKŠ`tmWU cġ_ tKv_vl nwiġq hvq| wZxq `tj, Ggb me DEġi`vZv itġtQb, hviv nq kvixi K AġlgZv, ev Amy`Zvi KviġY, bZev fvlv bv tevSvi KviġY, bZev tj Lvcov bv Rvbi KviġY, bZev cġhvR` bq, Ggb e`w³ nevi KviġY, cġġj v cġY KiġZ cvġib bv| ZZxq `tj itġtQb, hviv AtnZK KvġġcY Kġib, bZev fġj hvb, bZev tKv_vl fj Kġi tiġL LġR cvb bv Ggb e`w³ | PZL^o tj itġtQb, hviv tKvbġtgb cġġj v cġY Kġi tdir cWvb bv| Gġi tKD gġb Kġib th, Rwi c Mġel Yv A_ġvb, AġġK Zvġi DbwmKZvi KviġY cġġj v cġY Kġi tdir cWvb bv, Avevi tKD wekġe`vj q, ev miKvġi cġZ Zvġi wei`x gġbvfġei KviġY Zv Kġib bv| `šġY Kviġq t`evi cġWU wZxq `tj i Rb` tKvbfġeB Kvġġi nġe bv| PZL^o j WU nġj v meġPġq Kwvb `j, hviv Rwiġci wei`tx Ae`vb MġY Kġib| tKvb Avġe`bB Zvġi gb Mj vġZ cvi te bv| cġg | ZZxq `j WU nġj v `šġY Kviġq t`evi Rb` Dchġ `j |

WwK cġġj vi mġeav (Advantages of Mailed Questionnaire)

ġf e`q (Low Cost): ġf e`q nġj v WwK cġġj v e`envġi meġPġq eo mġeav| WwK cġġj vi gvaġg Z_` msMġni Rb` cġġġYcġġ mġġvrKvi MġYKvixi cġqvRb nq bv| GB c`wZġZ Dcvġ msMġ Ges weġkġY Kiv Ab` th tKvb c`wZi tPġq mnR | ġf e`qm`ubġ hLb Mġel Yv bgġv GKWU eo tġšMġj K Gj vKv Rġo Ae`vb Kġi, ZLb ġf e`ġqi mġeavW WwK cġġj v e`envġi meġPġq tekx cġZfvZ nq|

mgq mvġġ (Time Savings): WwK cġġj v GKB mgġq mKj DEġi`vZvi KivQ tġġY Kiv m`e nq Ges cġYKZ cġġj v Lġ Aġ mgġqi gġa` tdir cvl qv hvq| Ab`w`ġK, mġġvrKvi MġġYi cġġqv chġġġgKfvġe Pġj etj, Zv m`ubġKġġZ `xN`mgq tj ġM hvq|

cġġcvZRġbZ ġwš-nwm (Reduction in Biasing Error): mġġvrKvi MġYKvixġi e`w³MZ `ewkġ, wKsev Zvġi `ġġZvi cv_ġK`i KviġY, th cġġcvZRġbZ ġwš`Zvi nq, WwK cġġj v e`envġi tmB ġwš`ġj v NUevi m`ġebv _vġK bv| mġġvrKvi MġYKvix wevfġbġvġe DEġġK cġfweZ KiġZ cvġib| thgb, tġġmġnZ Kivi mgq KġŲi AeKġB, DEġi`vZvi KivQ wġġ` aiġYi DEġi cġ`vKvi Abgġv, ev DEġi`vZvġK wġġRi gZvgZ cġvb, fj fvġe cġġKiv, DEġi wġce`KġġY mgm`v, BZ`w` | WwK cġġj v e`envġi GB ġwš`ġj v nevi mġġwM _vġK bv|

bvgnxbZv (Anonymity): Z_` msMġni mgq mġġvrKvi MġYKvixi Abcġw`Zi KviġY DEġi`vZv wġweġNġe Ggb DEġi cġvb Kġib, hv mġġvrKvi MġYKvixi Dcġw`ZġZ DEġi`vZv tKvbfġeB t`ġeb bv| hLb tKvb `ġkġvZi weġq Mġel Yvi weġqe`nq (thgb, thšb Avġi Y ev wġi AZ`vPvi), ZLb GB bvgnxZvi KviġY DEġi`vZv G i Kg `ġkġvZi weġq cġġġ DEġi w`ġZ `ġQ`` teva Kġib|

wġšfveġġj K DEġi Ges Avġj vPvi mġġwM (Opportunity for Considered Answers and Consultation): hLb tKvb cġġġ Rb` GKUwġšfvebv ev weġepbv Kġi Reve w`ġZ nq, A_ev DEġi`vZvġK Ab` Kvġiv mvġ_ Avġj vPbv Kġi cġġġ Reve w`ġZ nq, ZLb WwK cġġj v Dcvġ msMġni GKWU AġġKZi DcġġwMx nwmZqvi nġq DġV| mġġvrKvi c`wZġZ GB mġeavW _vġK bv| KviY, mġġvrKvi c`wZġZ DEġi`vZv ZvrġwYKfvġe DEġi cġvb eva` _vġKb|

cġZ kāvqb (Standardized Wording): th̄nZi DĒi`vZv wbtRB cġvj v cto DĒi t`b Ges mvġvrKvi Mh̄YKvix ZvtK cġwRÁvmv Ktib bv, tm̄nZime DĒi`vZvi Kv̄QB cġtj v GKBf̄te Dc`mcZ nq| cvkvcwk, DĒi`dv,tjv DĒi`vZv wbtRB wPwY Z Ktib etj mvġvrKvi Mh̄YKvixi tKvb cġ|cvZgj K āwš-GLv̄tb cġek Kti bv| AZGe, WwK cġvj vi e`envi mvġvrKviti i Zj bvq AtbK tekx cġZKi t̄Yi m̄thvM cġvb Kti |

mnRMg`Zv (Accessibility): WwK cġvj v `f e`tq e`vcK we`Z GjvKvq M̄tel Yv m̄w`v`tbi m̄thvM cġvb Kti | hLb e`vcK t̄fšMw̄j K GjvKv R̄to we`Z bgbvi Kv̄Q t̄cšQ̄tZ nq, ZLb mvġvrKvi c×wZ AtbK e`qeūj Ges GKBm̄t½ mgqm̄vcġ n̄tq `vovq| m̄vavi Yfv̄te t̄cġv̄tbv hvq bv, Ggb DĒi`vZvi Kv̄Q mn̄tRB i`agv̄t WwKgv̄ij cġvb Kti Aí mḡtqi ḡta` cġvj v t̄cġtQ t`qv hvq|

WwK cġvj vi Am̄jeav (Disadvantages of Mailed Questionnaire)

DĒi cġv̄tbi wbḡm̄vi (Low Response Rate): WwK cġvj vi mēt̄tq eo l ḡvivZK Am̄jeav̄l n̄tj v th, ḠtZ ch̄ß c̄wi ḡvY DĒi cvl qv L̄e Kw̄b| DĒi cġv̄tbi n̄vi ej t̄Z, KZ kZvsk DĒi`vZv cġvj v c̄tY Kti t̄dir cv̄v̄t`Qb, Zvi ḡv̄t̄v̄K tev̄sv̄tbv n̄tq `v̄tK| AtbK WwK R̄wi t̄c, t̄dirc̄ß DĒīi n̄vi e`w̄šMZ mvġvrKviti ḡv̄t̄g c̄ß DĒīi n̄v̄t̄i t̄t̄q AtbK Kg n̄tq `v̄tK| m̄vavi YZt, e`w̄šMZ mvġvrKviti DĒi c̄v̄tbi n̄vi th̄Lv̄tb 95 kZvsk nq, tm̄Lv̄tb WwK R̄wi t̄c DĒi c̄v̄tbi n̄vi 20 t`t̄K 50 kZv̄t̄ki ḡta` `v̄tK| mvġvrKvi c×wZ̄tZ DĒi bv t`evi Kvi Y,tj v R̄vbv hvq, w̄Kš`WwK cġvj vq tm,tj v R̄vbv hvq bv| WwK cġvj vq DĒi bv t`qvi c̄f̄ve M̄tel Yvi dj v̄d̄tj w̄K c̄wi ḡvY cōte, M̄tel K Zv c̄wi ḡvc Ki t̄Z cv̄t̄i b bv|

e`w̄šMZ mvġvrKviti DĒi c̄v̄tbi n̄vi th̄Lv̄tb 95 kZvsk nq, tm̄Lv̄tb WwK R̄wi t̄c DĒi c̄v̄tbi n̄vi 20 t`t̄K 50 kZv̄t̄ki ḡta` `v̄tK|

bḡbxqZvi Af̄ve (Lack of Flexibility): WwK cġvj vi ḡta` cġwGes DĒi`dv th̄fv̄te t`qv `v̄tK, DĒi`vZv̄tK tm,tj v t`t̄K tm̄fv̄teB DĒi w̄t̄Z nq| Gi dt̄j, cġwZi ḡv̄t̄v ep̄x t̄c̄t̄j l bḡbxqZvi ḡv̄t̄v K̄tg hvq| WwK cġvj vq, cġt̄K M̄f̄xi f̄v̄te Ab̄v̄eb Kiv, ev w̄f̄be DĒi`dv w̄bēp̄t̄bi t̄Kvb m̄thvM `v̄tK bv| DĒi`vZvi R̄b` cġt̄K M̄f̄xi f̄v̄te Ab̄v̄eb Kiv, ev w̄f̄be DĒi`dv w̄bēp̄t̄bi t̄Kvb m̄thvM `v̄tK bv| dt̄j, DĒi`vZv h̄w` cġt̄K f̄j tev̄t̄Sb, Z̄te w̄Zv̄b f̄j DĒi w̄t̄eb Ges h̄w` ēš̄t̄Z bv cv̄t̄i b, Z̄te A`úo l Ac̄w̄w̄zK DĒi w̄t̄eb|

mnR cġw̄ej xi cġqv̄Rb (Needs Easy Questions): hLb cġvj vi cġt̄j v L̄e mnR, mi v̄m̄vi Ges cġt̄j v tev̄svi R̄b` cġvj vq cġĒ w̄t̄`R̄bv,tj v h_vh_ nq, ZLb WwK cġvj v Z` ms̄M̄ni GK̄iU t̄K̄skj w̄m̄v̄te c̄Z`w̄kZ dj v̄dj cġvb Kite| cġvj vq R̄w̄j m̄v̄t̄cġ cġk̄e Aw̄zK e`envi GKRb m̄v̄avi Y DĒi`vZvi R̄b` w̄eāw̄š`Z̄wi Ki t̄Z cv̄t̄i | R̄w̄j cġvj v mvġvrKvi c×wZ̄tZ Aw̄kZi Db̄z dj t`q| Kvi Y, tm̄U c̄t̄Y Kivi R̄b` mvġvrKvi Mh̄YKvix̄t̄K h̄t̄ó cġġY t`qv nq| w̄Kš`WwK cġvj vq, DĒi`vZvi tm̄ ai t̄Yi t̄Kvb cġġY `v̄tK bv|

t̄Kej ḡv̄t̄ tḡšw̄L̄K Av̄PiY (Verbal Behaviour Only): WwK cġvj vq, DĒi`vZv th̄ DĒi w̄j L̄teb, tm̄Ūt̄KB P̄ov̄š`et̄j Mh̄Y Ki t̄Z n̄te| mvġvrKvi Mh̄YKvixi Dc̄w̄wZ `v̄tK bv et̄j GLv̄tb A`úo t̄Kvb DĒīt̄K Av̄t̄iv c̄wi`vi Kti R̄vbv, ev t̄c̄ŕm̄w̄nZ Kivi t̄Kvb m̄thvM M̄tel̄t̄Ki `v̄tK bv| DĒi`vZvi c̄ġZw̄p̄qMZ Av̄PiȲt̄K ch̄f̄eġY Kiv hvq bv| DĒi`vZvi Āt̄ḡšw̄L̄K Av̄PiȲt̄i ch̄f̄eġY M̄tel Yvi t̄ġt̄t̄ L̄eB `i`Z̄c̄Yġ Kvi Y, GKRb DĒi`vZv Zvi w̄bR`^ m̄vḡw̄RK Ae`v̄bmn Ab`v̄b` `ew̄kó`t̄K j̄w̄Kt̄q Ggb DĒi cġvb Ki t̄Z cv̄t̄i b, hv dj v̄d̄t̄j i c̄ġZw̄v̄aZ̄k̄j ZvtK LēKi t̄Z cv̄t̄i |

DĒi`vZvi cwi tētki Dci wqšYnxYZv (No Control over Respondents' Environment): WwK cġvj vq, DĒi`vZvi cwi tētki Dci Mtel tKi tKvb wqšY _v tK bv etj DĒi`vZv w tR cġvj v cġY Ki tQb wK bv, Zv hvPvB Kivi tKvb Dcvq Mtel tKi _v tK bv | DĒi`vZv Qvov Ab` th tKD cġvj wU cġY Kti w tZ cv t b | m v r Kvi c x u Z t Z m v r Kvi M h Y Kvi x G w e l q , t j v t K w b w Ō Z Ki t Z cv t b , hv WwK cġvj vq m e n q bv |

c r c v Z g j K b g b v w b e P b (Biased Sample Selection): WwK cġvj vq, th t n Z i DĒi`vZv t K w t R B cġvj v cġY Ki t Z n q , t m t n Z i G u U c w i P v j b v i R b w k v r j Z R b t M v ō x i g a t t K b g b v w b e P b Ki t Z n q | w b i r i , e v K g w k v r j Z R b t M v ō x G i A v l Z v i e v B t i t t K h v q e t j w b e P Z b g b v w U G K t c t k n t q t h t Z c v t i | t m K v i t Y , A t b t K W w K cġvj v t K D c v E m s M ō n i G K u U K v h R i n w Z q v i e t j g t b K t i b b v |

mvi vsk

^ c i Y K Z W w K cġvj v D c v E m s M ō n i A b Z g G K u U t K Š k j w m v t e e e ū Z n t q _ v t K | ^ c i Y K Z W w K cġvj v c j t Y DĒi`vZv v a x b f v t e g Z v g Z e 3 Ki t Z c v t i b | m v a v i Y Z t , t h m e m g v t R w k r v i n v i t e k x , t m m e m g v t R ^ c i Y K Z W w K cġvj v t e k x D c t h v M x n t q _ v t K | W w K cġvj v i A b Z g ` e P Z v n t Q DĒi`vZv n v i K g n q | Z t e m y e a v i w K u n t Q , DĒi`vZvi c f v e n x b DĒi`vZvi d t j h _ v h _ g t b v f v t e i c Ō Z w a Z i n q t e k x | e Z g v b c v t V , ^ c i Y K Z W w K cġvj v i w e i r f b e w K A v t j w P Z n t q t Q | t h g b , c f v e w e v i K v i x D c v v b m g n , m y e a v I A m y e a v , B Z w |

cvřVvĚi gj`vqb

`be³K cĕke

mWk DĚti i cvřk Wk (v) WPy w`b –

1| Wk cĕgvj vi cĕvb AmjeawU ntj v:

- K. GřZ A_řekx j vřM
- L. GřZ DĚi tdir cĕBi nvi Kg
- M. GřZ DĚi AmřúYřnl qvi nvi tekx
- N. GřZ mgq j vřM tekx|

2| Wk Rwiřc DĚi cĕBi nvi tekx nq, hLb:

- K. Mřel Yvi weI he`´`Q _vřK
- L. cĕgvj wU mřúřK DĚi`vZvi gřbvřve mř`ngřB _vřK
- M. cĕgvj v cřřYi mnRmva`Zv _vřK
- N. Dcři i me|

3| cĕgvj v cřY Kři tdir cvřvb bv, Ggb DĚi`vZvř`i _____`řj weř³ Kiv řřřZ cvři |

- K. `ř
- L. vřZb
- M. Pvi
- N. cvřP

msřřB cĕke

1| Wk cĕgvj v Wk?

2| Wk cĕgvj vi Amjeav_řj v Wk?

i Pbvřj K cĕke

1| ersj vř`řki MřgxY mgvřR Wk cĕgvj v KZUKy dj ř`te etj Avřvb gřb Křib?
D`vni Ymn we`vvi Z Avřřj vPbv Ki`b|

2| `^cřYKZ Wk cĕgvj v eřenvři i mřeav I Amjeav_řj v Avřřj vPbv Ki`b|

GB cW tk̄t̄l hv Rvbr hv̄te —

- mv᳚vrKvi w̄K
- mv᳚vrKv̄t̄i i c̄āvb `ewkó`mḡn
- mv᳚vrKvi t̄K c̄f̄ve w̄e`vi Kvi x Dcv`vb
- mv᳚vrKv̄t̄i i c̄Kvi t̄f`
- mv᳚vrKv̄t̄i i m̄jeav I Am̄jeav
- mv᳚vrKvi M̄hYKvi xi Kv̄h̄ej̄x

mv᳚vrKvi w̄K (What is an Interview)?

DcvĒ msM̄ni th t̄Kvb t̄K̄sk̄t̄j i Zj bvq, mv᳚vrKvi c̄xw̄Z nt̄j v met̄Pt̄q tek̄x mḡvR%Áw̄bK c̄Kw̄Zi | Kvi Y, mv᳚vrKvi nt̄`Q `̄Rb e`w̄s̄i ḡt̄a` cvi`úw̄i K w̄g_w̄`̄Q̄vi GKw̄J m̄vgw̄RK c̄āqv̄| t̄mB `̄Rb e`w̄s̄i GKRb nt̄j b, mv᳚vrKvi M̄hYKvi x I Ab`Rb nt̄j b, DĒi`vZv | m̄vavi Yfv̄te, DĒi`vZvi KvQ t̄_t̄K Z` msM̄ni Rb` DĒi`vZv I c̄āK̄Z̄f̄ ḡt̄a` t̄ḡs̄MLK Av`vb-c̄l̄vb̄t̄K mv᳚vrKvi ej̄v hvq | DcvĒ msM̄ni n̄w̄Zqv̄t̄i m̄vrv̄t̄h` GKw̄J ḡt̄Lvḡw̄L c̄w̄i w̄`w̄Z̄t̄Z mv᳚vrKvi Ab̄jōZ nq | A_̄f̄, DcvĒ msM̄ni D̄t̄t̄K` mv᳚vrKvi M̄hYKvi x e`w̄s̄MZfv̄te DĒi`vZvi Kv̄t̄Q Dcv`Z nt̄q ce`bāf̄i Z w̄KQz c̄āw̄RÁmv̄ K̄t̄ib Ges mv᳚vrKv̄t̄i i mḡqB mv᳚vrKvi M̄hYKvi x DĒi`vZv KZ̄R c̄l̄Ē DĒi`_t̄j v w̄j w̄c̄e x K̄t̄ib | c̄āw̄ Kivi Rb` mv᳚vrKvi M̄hYKvi x m̄vavi YZt̄ GKw̄J Kv̄V̄t̄ḡv̄e x mv᳚vrKvi Ab̄j̄nPx e`envi K̄t̄i _v̄t̄Kb | DĒi`vZv KZ̄R c̄l̄Ē DĒi`_t̄j v w̄Zvb mv᳚vrKvi Ab̄j̄nPx̄t̄Z w̄j w̄c̄e x K̄t̄ib | KL̄t̄bv KL̄t̄bv, m̄n̄t̄h̄M̄x ḡv̄a`ḡ w̄n̄m̄v̄te t̄Uc̄ t̄i K̄W̄f̄ e`envi Kiv nt̄q _v̄t̄K | Z̄te, mv᳚vrKvi w̄J h̄w̄` L̄p̄ Kv̄V̄t̄ḡv̄e x bv nq, t̄m t̄f̄t̄t̄ mv᳚vrKvi v̄b̄t̄`Rb e`envi Kiv nt̄q _v̄t̄K | AZGe, m̄j̄b̄w̄`̄f̄v̄te ej̄v hvq th, mv᳚vrKvi nt̄j v ḡt̄Lvḡw̄L c̄w̄i w̄`w̄Z̄t̄Z m̄s̄úw̄`Z GKw̄J Av̄š̄ēq̄s̄K Av̄j̄vc̄P̄wi Zvḡj̄K w̄ēb̄ḡq, thLv̄t̄b mv᳚vrKvi M̄hYKvi x M̄t̄el̄Yv Ab̄K̄t̄i i m̄v̄_ c̄āw̄Z̄K DĒi`_t̄j v c̄vei Rb` DĒi`vZv̄t̄K c̄āw̄K̄t̄ib |

mv᳚vrKv̄t̄i i c̄āw̄Z̄t̄K ēf̄t̄Z
nt̄j, mv᳚vrKvi c̄āqv̄i
c̄āqv̄Rbx̄q I _i`Z̄c̄Y`
`ewkó`_t̄j v w̄K, Zv Ab̄j̄v̄eb
Kiv c̄āqv̄Rb |

mv᳚vrKv̄t̄i i c̄āw̄Z̄w̄J w̄K n̄te, G w̄b̄t̄q c̄āw̄Z̄t̄i i ḡt̄a` w̄fb̄eḡZ i t̄q̄t̄Q | GK`j̄ c̄āw̄Z̄ ḡt̄b K̄t̄ib th, mv᳚vrKvi nt̄j v, th t̄Kvb ait̄Yi ḡt̄Lvḡw̄L Av̄j̄vc̄P̄wi Zvḡj̄K f̄v̄t̄ei Av`vb-c̄l̄vb, thLv̄t̄b GKRb Ab`R̄t̄bi KvQ t̄_t̄K Z` msM̄ni K̄t̄ib | Āt̄b`iv̄ ḡt̄b K̄t̄ib th, mv᳚vrKvi ḡt̄Lvḡw̄L c̄w̄i w̄`w̄Z̄t̄Z nt̄Z n̄te, Ggb t̄Kvb K_v̄ t̄b | Z̄te, Z̄viv G t̄f̄t̄t̄ gh̄̄vi mḡZv I Zj v̄t̄h̄M̄`Zvi Dci t̄Rvi w̄`t̄q̄t̄Qb | Z̄v̄t̄i i ḡt̄Z, mv᳚vrKvi nt̄j v, `̄Rb e`w̄s̄i ḡt̄a` GKw̄J m̄s̄úK` thLv̄t̄b `̄RbB Ggbfv̄te Av̄PiY K̄t̄ib, thb c̄āK̄Z̄c̄t̄f̄ bv nt̄j I, Z̄viv mv᳚vrKvi P̄j̄v̄K̄j̄xb mḡt̄qi Rb` GKB gh̄̄vi Av̄āK̄v̄ix Ges thLv̄t̄b Z̄v̄t̄i i Av̄PiY, G i Kg Av̄t̄iv mḡifc̄ c̄w̄i w̄`w̄Z̄i ḡZB A_̄en | G `̄w̄J ms̄Ávi t̄Kvb̄w̄JB mv᳚vrKv̄t̄i i c̄Y`c̄āw̄Z̄t̄K c̄āw̄K̄t̄i b̄v | AZGe, mv᳚vrKv̄t̄i i c̄āw̄Z̄t̄K ēf̄t̄Z nt̄j, mv᳚vrKvi c̄āqv̄i c̄āqv̄Rbx̄q I _i`Z̄c̄Y` `ewkó`_t̄j v w̄K, Zv Ab̄j̄v̄eb Kiv c̄āqv̄Rb |

mvŋvrKvŋi i cāvb ēwkó`mgn (Salient Features of Interview)

mvŋvrKvŋi i cōg ēwkó`w nŋjv th, DĒi`vZvŋK cōkōRÁvmv Kiv nq tgšLkFvŋe Ges wZvb DĒi`vZv cōvbl Kŋib tgšLkFvŋe | GB tgšLkFvŋe cōkōRÁvmv Kivi wel qwJ mvŋvrKvŋi i wZvbw cōh`žK ōi`žzi mvŋ_ wbt`R Kŋi | cōgZt, mvŋvrKvi i agvŋ Avj vcPwi Zvgj K evK` wewbgq bq | GwJ Ggb aiŋYi Kŋ_vcK_b, thLvŋb cāvb ZvobwJ _vŋK tgšLkFvŋe wRÁvmZ cōkōe gva`tg tgšLkFvŋe DĒi cōhBi Dci | wZxqZt, GB tgšLk Avj vcPwi Zvgj K wewbgq ŋjv gŋLvgwL Dcw`Z nŋq KižZ nŋe, Ggb ŋKvb K_v tbB | tUwŋ tcvŋbi gva`gl mvŋvrKvi AbjōZ nŋZ cvŋi | G ŋŋŋŋ, thwJ ōi`ZcY`tmwJ nŋjv th, mvŋvrKvi MōhYKvix I DĒi`vZvi gŋa` wq_wŋŋwJ nŋZ nŋe tgšLkFvŋe | ZZxqZt, hw I mvaviYvŋe Kŋ_vcK_bwJ `ŋRb e`wŋi gŋa` nŋq _vŋK, wKš' mvŋvrKvi `ŋRb e`wŋi gŋa` mxgve_x _vKvi ŋKvb Avek`KxqZv tbB | thgb, `ŋgx I `ŋxi mvŋvrKvi GKB mvŋ_ tbqv thžZ cvŋi | wczv-gvZv I mšwbŋi i mvŋ_ GKB mvŋ_ Avŋj vPbv Kŋi Z_` msMōh Kiv thžZ cvŋi | GgbwK, `j xqfvŋe | Avŋj vPbv Kŋi Z_` msMōh Kiv thžZ cvŋi |

mvŋvrKvŋi i wZxq ēwkó`w nŋjv th, Z_` ŋjvŋK mvŋvrKvi MōhYKvix wj wce_x Kŋib, DĒi`vZv bq | DcvĒ msMōhni Ab`vb` ŋKškj ŋjv vl mvŋvrKvŋi i GB ēwkó`žK AbymY Kŋi | thgb, chŋeŋY I cixŋY c_xwZžZi Z_`žK wj wce_x KižZ nq | wKš' gŋLvgwL nŋq tgšLkFvŋe cōB Z_` wj wce_x KiY mvŋvrKvŋi i GKwJ Aek` cvj bxq Abb` ēwkó` |

ZZxq ēwkó`w nŋjv th, mvŋvrKvi MōhYKvix I DĒi`vZvi gŋa` mēúKwJ wewfbŋvŋe mŋbw`ē Kiv thžZ cvŋi | cōgZt, GwJ GKwJ ŋY`vqx mēúKŋ `vqxžZi mgqKvj Ges cōkōēi aiŋYi Avj vcPwi Zvgj K wewbgq, Dfq w`K ŋ_žKB GB mēúKwJi GKwJ wbaŋi Z`i` Ges ŋkl i žŋŋQ | wZxqZt, mēúKwJ Ggb th, tmLvŋb mvŋvrKvi MōhYKvix Ges DĒi`vZv DfŋŋqB GŋK Actii KvŋQ AcwŋwPZ e`wŋi | dtj, `ŋRŋbi KvŋQB GwJ GKwJ bZb AwfÁZv |

PZl`ēwkó` wnmvŋe mvŋvrKvŋi i AwŋžK I i_xwZi gŋa` hŋ_ó cwi gvŋY wē`gvb bgbxqZvi wel qwJžK Dŋj Ē-Kiv thžZ cvŋi | DcvĒ msMōhni Lŋ Kg nwmZqvi B cōkōRÁvmv Kivi GZ tekx`ewPĪ c`vb Kŋi _vŋK | KwŋŋgMz wfbžZvi GB ēwkó`w mvŋvrKvi MōhYKvix I DĒi`vZvŋK cōkōGes DĒi Dc j wai Rb` cvi `ūwi Kfvŋe D`Pgvŋvq mŋhwm cō vb Kŋi |

mvŋvrKvi žK cŋve wē`hi Kvi x Dcv`vb (Factors Affecting the Interview)

DcvĒ msMōhni ŋKškj wnmvŋe, mvŋvrKvi GKwJ Dcŋhvmx Ges ōi`ZcY`c_xwZMZ cōŋqv | hw GKRb DĒi`vZv K_v ej žZ cvŋib, Zŋe aŋi tbqv hvq th, GKwJ mvŋvrKvŋi i mēvebv tmLvŋb wē`gvb i žŋŋQ | Avi hw DĒi`vZv mvŋvrKvi cōvŋb AvMōh _vŋKb Ges mvŋvrKvi MōhYKvix GKwJ tmšnv`ēY`mēúK`-vcŋb mdj nb, Zŋe GKwJ mdj I gvb mēúbōmvŋvrKvi MōhY Kiv mēe nq | GKwJ mdj mvŋvrKvŋi i Rb` wZvbw Dcv`vb Kvŋŋi _vŋK | cōgZt, GKwJ ceŋci cixŋŋZ mvŋvrKvi AbymPx | wZxqZt, mvŋvrKvi cōŋqv i mvŋ_ mvŋvrKvi MōhYKvixi chvŋ cwi wPwZ | ZZxqZt, DĒi`vZvŋK wēkŋm, mēŋb Ges tmšRŋb`i mvŋ_ wēŋePbv Kiv | mvŋvrKvi cōŋqvŋK cŋwēZ KižZ cvŋi, Ggb AŋbK Dcv`vb i žŋŋQ | Zŋe, Gi gŋa` wZvbw wēŋkl fvŋe ōi`ZcY`ŋ tm ŋjv nŋjv, mvŋvrKvi MōhYKvixi ŋYMZ gvb, DĒi`vZvi ŋYMZ gvb Ges MŋelYvaxb mgn`wJi cōkōwZ | mvŋvrKvi MōŋYi cŋe`G wel q ŋjv mēúŋK`hŋ_ó hZēvb bv nŋj MŋelYvi `ēAwŋbK Dŋŋk` ŋjv ARŋ Kiv mēe nŋe bv |

AvPiY mæwKZ wełtq Z_ msMh Kivl KwB| A_ŕ, Lp tekr e`w³MZ I `úkRvZi wełtq gŕLvgyl mvŕvrKvŕi i gva`tg mWk Z_ cvl qv hvq bv| Ggb wKQwiel q i`tqtQ, hv DĒi`vZvi cŕŕl tgšwLKfŕte Dc`vcb Kiv Amæe ntq cto etj mvŕvrKvi c×wZŕZ Zv Mtel Yv Kiv hvq bv| mvŕvrKvŕi i ſ_YMZ gvb h_vh_ Mtel Yv bKkvi Dci l wbfŕkŕj | mvŕvrKvi AbjnPŕtZ cĔĒ cĕkŕtj v hw` Rwiŕci Dŕŕk` cŕŕY chŕß bv nq, A_ev cĕkŕtj v hw` AgwRZŕfŕte Dc`vcb Kiv nq, Zte GKRB `ŕ mvŕvrKvi MhYKvixl h_v_ŕ Kvhŕi DcvĒ msMh KiŕZ e`_ŕtZ cvŕib|

mvŕvrKvi AbjnPŕtZ cĔĒ cĕkŕtj v hw` Rwiŕci Dŕŕk` cŕŕY chŕß bv nq, A_ev cĕkŕtj v hw` AgwRZŕfŕte Dc`vcb Kiv nq, Zte GKRB `ŕ mvŕvrKvi MhYKvixl h_v_ŕ Kvhŕi DcvĒ msMh KiŕZ e`_ŕtZ cvŕib|

mvŕvrKvŕi i cĕkŕtj v (Types of Interview)

mvŕvrKvŕi i msÁv l cĕkŕZ Avŕj vPbv KiŕZ wMŕq Avgiv ŕ`ŕLwQ th, G wełtq cwŔZŕ i gŕa` HKgŕZ`i Afve iŕtqtQ| ŕKD etj ŕQb th, mvŕvrKvi gŕLvgyl nŕZ nŕe Ges Aŕb`iv etj ŕQb th, gŕLvgyl nŕZB nŕe, Ggb ŕKvb K_v tbB, ŕKb bv ŕUwŕ ŕdvŕbi gva`tg| mvŕvrKvi MhY Kiv hvq| G Qrov l, DcvĒ msMhni nwwZqvŕi gŕa` wfbŕv i KvŕŕY mvŕvrKvŕi KivVŕgvMZ wfbŕv `Zwi nq| G mKj wełqtK weŕePbvq ŕŕl mvŕvrKvi c×wZi weŕfbŕeaiY_ŕj v wŕtge Avŕj vPbv Kiv nŕj v|

wbŕ` Rbwenxb mvŕvrKvi (Nondirective Interview): mvŕvrKvŕi i meŕPŕq bgbxq aiYw nŕj v, wbŕ` Rbwenxb mvŕvrKvi | GLŕb ceŕwbaŕi Z cĕkŕRÁvmv i Rb` mvŕvrKvi MhYKvix ŕKvb mvŕvrKvi AbjnPŕ e`envi Kŕib bv, A_ev ŕKvb mŕw`ŕ web`vm Abhvqx cĕkŕRÁvmv Kŕib bv| mvŕvrKvi MhYKvixi KvQ ŕ`ŕK Lp mvgvb` wbŕ` Rbv wŕtq, A_ev KLŕbv KLŕbv ŕKvb wbŕ` Rbv QrovB Mtel Yvaxb wełq mæúŕK`DĒi`vZv Zvi wBR`^AwfÁZv eYŕv Kŕib, Zvi weŕePbvq ſ`i`ZŕyŕNUbv_ŕj v Zŕj aŕib, cwŕw`wZi msÁvqb Kŕib Ges Zvi wBR`^gZvgZ l `wŕfŕw/2 cĕkŕ Kŕib| GLŕb mvŕvrKvi MhYKvixl AŕbK wełq Dŕl vcb Kivi Ges ŕKvb weŕkl wełtq cĕkŕkivi Rb` hŕ_ŕ`ŕaxbZv ŕŕvM Kŕib|

AKivŕtgvex mvŕvrKvi (Non-Schedule-Structured Interview): mvŕvrKvŕi i wŔZxq gj aiYw nŕj v, AKivŕtgvex mvŕvrKvi | Gi PŕiwU `enkŕ` iŕtqtQ| cĕgZt, GwU weŕkl AwfÁZvi mŕŕ_ msŕkŕe`e`w³ŕ` i mŕŕ_ msNwUZ nq| wŔZxqZt, GwU Ggb GKwU cwŕw`wZŕZ nq, hv mvŕvrKvi MhŕYi cŕe`weŕkŕw`Z nŕtqtQ| ZZxqZt, GwU Mtel Yv Abjŕŕi i mŕŕ_ mæwKZ cŕŕŕŕi Dci cŕZKZ mvŕvrKvi wbŕ` Rbvi wŕŕĒŕZ GwMŕq hvq| PZŕZt, GwU Mtel Yvaxb cwŕw`wZ mæúŕK`DĒi`vZvi AwfÁZvi Dci ŕK`ŕŕZ nq| hw` l cĕkŕZvŕ DĒi`vZvi gŕa` mæúKŕŕ AvbŕwŕbK, Zeyl Mtel Yvi th ŕKvb wełtq gZvgZ ŕ`evi gŕZv hŕ_ŕ`ŕaxbZv DĒi`vZvi iŕtqtQ| GB mvŕvrKvŕi i gva`tg Mtel K DĒi`vZvi e`w³MZ AvŕeM, AbjŕwZ, wŕqŕKj vc, BZ`w` mæúŕK`avi Yv ŕcŕZ cvŕib| mvŕvrKvi MhYKvix thŕnZi cwŕw`wZ mæúŕK` AvŕM ŕ`ŕKb AeinZ `ŕŕKb, ŕŕŕnZi Zŕ`i gŕa` th ŕKvb AmvgÁm`Zv ev AmsMwZi e`vcŕŕi wZwŕ mveavb l mŕŕe`bkj `ŕŕKb|

AbjnPŕ-Kivŕtgvex mvŕvrKvi (Schedule-Structured Interview): mvŕvrKvŕi i meŕPŕq Kg bgbxq aiYw nŕj v, AbjnPŕ-Kivŕtgvex mvŕvrKvi | AbjnPŕex mvŕvrKvŕi, DĒi`vZvi Rŕb` wbaŕi Z cĕkŕe msL`v Ges kŕweb`ŕŕm ŕKvb wfbŕv `ŕŕK bv| ŕmRb` mvŕvrKvi MhYKvixŕK cĕkŕtj vi Rb` evi evi bZb kŕ cĕqŕM, ev cĕkŕe bZb web`vm `Zix KiŕZ nq bv| Zte, DĒi`vZv ŕKvb cĕkŕeŕŕZ bv cvŕŕj, mvŕvrKvi MhYKvix ŕmŕŕi e`vL`v w`ŕZ cvŕib| AbjnPŕ-Kivŕtgvex mvŕvrKvi c×wZŕZ cĕZwU mvŕvrKvŕi B cĕkŕe ŕgweb`vm_ŕj v GKB i Kg `ŕŕK| GwU weŕkl ŕŕte gŕb i vLv cĕqŕRb th, DĒi`vZv KZŕ cĔĒ DĒŕi i gŕa` wfbŕv thb

AbjnPŕ-Kivŕtgvex mvŕvrKvi c×wZŕZ cĕZwU mvŕvrKvŕi B cĕkŕe ŕgweb`vm_ŕj v GKB i Kg `ŕŕK|

DĒi`vZv`i gta` cĀKZ cv`K`i Rb`B nq, mv`lvrKv`i i wfB`Zvi Rb` bq | GwU wbow`DZ Kivi Rb`B Mtel K mvavi YZt AbjnPx-KvWrtgve`x mv`lvrKvi c`xwZ e`envi Kti b |

AbjnPx-KvWrtgve`x mv`lvrKvi wZbwU ce` Abgytbi Dci wbf`Pkj | cĀgZt, cĀZwU Mtel YrtZB DĒi`vZv`i wKQz mvavi Y kĀ Ávb `vKtZ nte Ges cĀkœ`eüZ kĀ `tj vi A` mevi KvQ GKB iKg ntZ nte | wZxqZt, cĀkgyj vq web`-cĀkgytj vi thšw`KZv cĀZ`K DĒi`vZvi KvQ GKB iKg ntZ nte | ZZxqZt, hw` cĀZ`K DĒi`vZvi KvQ cĀkœ` A`GKB iKg nq, Zte Gi tĀcĀvUI Aek`B GKB iKg ntZ nte Ges thtnZi mkj cĀkœ`tmB tĀcĀvctUi Ašf`P `vtK, tmtnZicĀkgytj vi Abyugl GKB `vKtZ nte |

tUwj tĀdvb mv`lvrKvi (Telephone Interview): tUwj tĀdvbi gva`tg m`úw` Z mv`lvrKv`i i mv`lvrKvi AbjnPx e`eüZ nq | gĀLvgwL mv`lvrKv`i i mjeav`tj v tUwj tĀdvb mv`lvrKv`i i tĀtĀI cĀqvr` | wKš` Gi evowZ mjeav ntj v th, GtZ Aí Li tP Ges `ZZvi mv` Awak mSL`K e`w`i KvQ t`tK DcvĒ msMh Kiv hvq | hw` I mvgwRK weÁvb AĀcĀv evRvi Mtel Yvq tUwj tĀdvb mv`lvrKv`i RbwĀZv tekx, mvgwRK Mtel Yvq | GwU ht`ó Kvhr`i fite e`envi Kiv nq | Kw`úDUvi cĀw`tZ Dbq`bi dtj tUwj tĀdvb mv`lvrKvi Avt`v AĀbK mnR ntqQ | Kw`úDUv`i i mn`thwMZvq tUwj tĀdvb mv`lvrKvi (computer-assisted telephone interviewing, ev CATI) c`xwZ e`env`i i gva`tg wbow` mgMĀK t`tK bgbv wbe`Pb, mv`lvrKvi MhYKvixi cwi wPwZ, h`vh` OvKbx cĀkœ`n mv`lvrKvi AbjnPx i `dv`tj vtK cĀkœ` Ges DĒi`vZvi DĒi `tj vtK wj wce`x Kiv m`e nq | mv`lvrKvi MhYKvix DĒi `tj vtK mivmwi Kw`úDUv`i mst`KZxKiY Kti tĀtZ cvtib | tUwj tĀdvb mv`lvrKv`i DĒi cvevi nvi AĀbK tekx nq | hviv WwK cĀkgyj vq DĒi t`b bv, ev e`w`MZ mv`lvrKv`i i hviv A`KwZ Rvbvb, tUwj tĀdvb mv`lvrKvi Zv`i tK DĒi cĀv`bi m`thvM Kti t`q |

tUwj tĀdvb mv`lvrKv`i i Amjeav`i i tĀtQ | Gi cĀvb AmjeavwU ntj v th, hviv `wi` ; hĀK, Amj` wKsev kvixi Kfite cĀZeÜx, wKsev hviv Awakvsk mgqB tUwj tĀdvbi KvQ `vtKb bv, ev hv`i tUwj tĀdvb tbB, Zviv mv`lvrKv`i i Avl Zvi evBti t`tK hvb | t`tK `úkRvZi wltq cĀkœ`Kivl KwWb | Dciš, gĀLvgwL mv`lvrKv`i i Zj bvq tUwj tĀdvb mv`lvrKvi AĀbKvB wfBœ` Ges tUwj tĀdvb mv`lvrKv`i i Rb` mv`lvrKvi MhYKvix`K GKwU wĀtKl cĀkĀY t`evi cĀqvrB nq | mv`lvrKvi MhYKvix DĒi`vZvtK cĀZ`Ā Kti Zvi cĀZw`q v e`vL`v Kivi m`thvM cvb bv | mZivs, ZvtK Aek`B Lp `úofite cĀkœ`Dc`vcb Ges Lp hZ` mnKv`i DĒi i`tb eštZ nq th, cĀkœ`štZ DĒi`vZvi tKvb Amjeav nt`Q wK bv | mv`lvrKvi wU hw` ce`baw`i Z bv nq, Zte mv`lvrKvi MhYKvix DĒi`vZvi cY`gĀbthvM bvl tĀtZ cvtib | mv`lvrKvi tkl nevi Avt`MB DĒi`vZv mv`lvrKvi t`qv eÜ Kti w`tZ cvtib |

mv`lvrKv`i i mjeav (Advantages of Interview)

mv`lvrKvi c`xwZi Ab`Zg cĀvb mjeavwU ntj v Gi bgbxqZv | mv`lvrKv`i i mgq m`w` DĒi cvevi Rb` mv`lvrKvi MhYKvix DĒi`vZvtK tĀcĀmwvZ Ki tZ cvtib Ges DĒi`vZv KZĀ cĀĒ DĒi i`tb hw` gtb nq th, DĒi`vZv cĀwU eštZ cvtib w, Zte mv`lvrKvi MhYKvix cĀkgytj vi e`vL`v cĀvb Ki tZ cvtib | wZxqZt, mv`lvrKvi c`xwZtZ DĒi cĀBi nvi DĀtj L`thvM` fite tekx ntq `vtK | hviv GKwU `be`K WwK cĀkgyj v cĀtYi Rb` mgq t`b bv, Zvivi e`w`MZ mv`lvrKv`i i Rb` mv`lvrKvi MhYKvixi AbĀiv`ta mvov t`b | Ggb wK, hviv cotZ, wj LtZ, ev fvlv eštZ cvtib bv, Zv`i i tĀtĀI mv`lvrKvi c`xwZ cĀqvm mnR, hv WwK cĀkgyj vi tĀtĀI cĀhr` nq bv | ZZxqZt, mv`lvrKvi c`xwZtZ mv`lvrKvi cwi w`Zi Dci Mtel tKi ht`ó wqšy` vtK | GKwU mv`lvrKv`i i cwi tĀtK mv`lvrKvi `tj v GKvtš`-cwi Pvj bvi

welquU wbowÖZ Kivi Rb` MtelK cwi tek tK cwi wGZ KitZ cvtib Ges wbePZ DEi`vZvi DEi`vtbi welquU wbowÖZ KitZ cvtib| PZyZt, G cxwZtZ cÖkie µgweb`vtmi Dci mVjvrKvi MhYKvixi wqšy`_vtK| DEi`vZv cÖkie DEi mWk µgweb`vtm w`t`Qb wK bv, A_ev cieZx`cÖkie Kivi AvtMB ceZx`cÖkie Reve w`t`Qb wK bv, BZ`w` welq`_tj vtK mVjvrKvi MhYKvixi `VjZvi mvt_ wbowÖZ KitZ cvtib|

cAgZt, GtZ mVjvrKvi MhYi mWk mgq I Ae`vb wj wceX KitZ cvtib| dtj, MtelK cÖB DEi`_tjv Avtiv h_vh`fvte wetkHY KitZ cvtib| mVjvrKvii mgq NtU hvl qv tKvb NUbv hw` DEi`vZv KZR c`E DEi Dci tKvb cfve ivtL, Zte tm tVtI mgq Rvbw _vKtj tmB NUbvi cte`I cti cÖE DEi`_tjvi gta` Zj bv Kti t`Ltz cvtib| IöZt, mVjvrKvi MhYKvix DEi`vZvt`i KvQ t`_tK AwZwi` Z` mSMh KitZ cvtib| G me Zt`_i gta` DEi`vZvt`i e`w`MZ`ewkÖ I Zvt`i cwi tek m`u`wKZ Z` _vKtZ cvti, hv djvdj wetkHYi mgq MtelKtK mnvnh` Kti | mBgZt, GKwU mVjvrKvi cwi w`wZtZ DEi`vZvi AtgSmLK Ges ZvrVjwK cÖZµµqv wj wceX Kiv hvq, hv DcvE wetkHY I e`vL`vi mgq gj`erb fvgKv cvj b Kti | AögZt, G cxwZtZ cÖkie DEi wj wceX Kiv ntqtQ wK bv, Zv wbowÖZ Kiv hvq|

mVjvrKvii Amjeav (Disadvantages of Interview)

mVjvrKvi cxwZi tek wKQz Amjeav i tqtQ| cÖgZt, GuU WwK cÖgVj v AtcVjv AtbK tekx e`qeuJ ntq`_vtK| mVjvrKvi AbjPx cVq, Qvcvtbv, bgbv wbePb, mVjvrKvi MhYKvix`i wbePb, cÖkVjY, Z`vi wK, teZb, ágY, BZ`w` LvZ mVjvrKvi cxwZtZ AtbK A_`e`q nq| ZvQov, wetkl Kti AKvWtgvex mVjvrKvii tVtI, DcvE wj wceX KiY Ges cÖµqvKi tYI ht`ó A_`e`q nq| wÖZxqZt, mVjvrKvi MhY cÖµqvU `xN`Ges ágY AtbK mgq jvtM etj mVjvrKvi cxwZ tek mgqmvtcVj| AtbK mgq, GKwU mVjvrKvi MhYi Rb` DEi`vZvi KvQ KtqKevi thtZ nq| ZZxqZt, AwkZi bgbxqZv mVjvrKvi cxwZi cÖvb mjeav etj wetewPZ ntj I tmU AtbK mgq cÖkZV e`w`MZ cfve I cVjcwZtZi mthvM %Zwi Kti | mVjvrKvi MhYKvix`K `be`K`_vKtZ Ges e`w`MZ gZvgZ bv t`evi Rb` ejv ntj I Zivi mVjvrKvi MhYi mgq DEi`vZvtK Ggb wKQzm` awi tq w`tZ cvtib, hv Zvi DEi`tK cfweZ KitZ cvti | Ggb wK, wZvb tgSmLKfvte weifbœm` cÖvb Gwotq thtZ cvi tj I Zvi kvixi K Awfe`w` ev BwZtZi cfve`_tj vtK wZvb Gwotq thtZ cvtib bv|

PZyZt, G cxwZtZ DEi`vZvi ctVj tKvb `wj j cI cixVjv Kti t`Lv, ev tKvb Z`_tK hvPvB Kti t`Lvi Rb` cwi evti i Ab`vb` m`m` ev eU`evÜtei mvt_ Avtj vPbvi tKvb mthvM`_vtK bv, hv WwK cÖgVjvq DEi`vZvtK GKwU eo mjeav cÖvb Kti | cAgZt, DEi`vZvtK ZvrVjwKfvte mVjvrKvi w`tZ nq etj GuU DEi`vZvi Rb` Amjeav`Zwi Kti | Kwš`- Amj`Zv, ev e`-ZvRwbZ Kvity AcÖZ`_vKtj I DEi`vZvtK mVjvrKvii AskMhY KitZ nq, hv DcvEi gvthi Dci cfve tdtj`_vtK| IöZt, mVjvrKvii mgq DEi`vZvi cwi wPwZ MtelYvi djvdj cÖZdwj Z nte bv, Ggb cÖZkÖZ`_vKtj I DEi`vZv Rvttb th, GtZ WwK cÖgVjvi gtZv bvgnxZv ev tMvcbxqZv`_vtK bv| KviY, mVjvrKvi MhYKvixi KvQ bjbZg ctVj DEi`vZvi bvg, wKvbw I bgbv b`at`_vtK Ges wZvb e`w`MZfvte DEi`vZvi mvt_ cwi wPZ ntq hvb| GtZ Kti, DEi`vZv wivcEvnxZvq fVtZ cvtib, wetkl Kti hw` tKvb cÖh` ev cÖkie cÖZ DEi`vZvi`_ükRvZiZv`_vtK| mBgZt, ivR`wZK msNvZ, `thMcy` Avenl qv, ev`MöZvi Kvity mVjvrKvi MhYKvix AtbK DEi`vZvi KvQ t`cÖQ`Z cvtib bv etj mVjvrKvi MhY m`e nq bv| Gi dtj DEi`cÖBsi nvi wbgantq hvq|

cĕwRÁvmv Kiv (Asking Questions): AwaKvsk epĒi MtelYvi gj j ĞW ntjv, cĕw RÁvmv Kiv I DĒi wj wce×KiŕYi tĞtĠ mġwZcyZv eRvq ivLv| mvġvrKvi MġYKvixi KvŕQ cĹ`vkWU ntjv th, wZwb me cġhr` cĕwġjv wRÁvmv Kiġeb, th Abjvtg cĕwġjv t`qv iŕtqŕQ tmB AbjvtgB wRÁvmv Kiġeb, tġrmwvZ Kivi Rb` hZUKzwbŕ` Rbv t`qv vKġe wK ZZUKB Kiġeb Ges kĀ cġqvŕMi tĞtĠ tKvb iKg AcġqvRbxq wfbzġv Avbteb bv| Zġe GwU gtb ivLv cġqvRb th, mvġvrKvi MġYKvix tKvb hŠ; bq| Zvt`i KŪ, AvPiY, ktĀi D`PviY, mj, BZ`w` Zvt`i tPrvivi gŕZvB wfbentq vŕK| tKvb cĕwġYB me mvġvrKvi MġYKvixi gŕa` mġvYŕŕte GKB iKg mġwZcyZv AvbŕZ cvŕi bv| wBZ`w` tbi e`envh` kĀgvjv w`ŕq hw` cĕwġjv `Zwi Kiv nq, Zvntj cĖKĕ evK` MVbŕK jfcvŠŕi cĖYZv Kg j ĞW Kiv hvŕe|

mvġvrKvi MġYKvixi KvŕQ cĹ`vkWU ntjv th, wZwb me cġhr` cĕwġjv wRÁvmv Kiġeb, th Abjvtg cĕwġjv t`qv iŕtqŕQ tmB AbjvtgB wRÁvmv Kiġeb, tġrmwvZ Kivi Rb` hZUKzwbŕ` Rbv t`qv vKġe wK ZZUKB Kiġeb Ges kĀ cġqvŕMi tĞtĠ tKvb iKg AcġqvRbxq wfbzġv Avbteb bv|

DĒi`vZviv KLŕbv KLŕbv AchŕB DĒi w`ŕq vŕKb| G tĞtĠ mvġvrKvi MġYKvix Zvi`ġZv e`envi Kŕi DĒi`vZvi KvQ t`ŕK mġwK mġvY`DĒiWU tei Kŕi Avbteb| AchŕB DĒiŕi cĖWU cĀvb j ĞWŕK wPŕyZ Kiv hvq| thgb,

- Avav DĒi: thLvŕb DĒi`vZv cĖwġK, wKŠ` AmġvY`DĒi cĖvb Kŕi b|
- DĒi nxbZv: hLb DĒi`vZv wBĖc vŕKb, ev DĒi cĖvŕb A`ŕKwZ Rvbvb|
- AcĖwġK DĒi: th cĕwRÁvmv Kiv nq, DĒi`vZv Zvi mŕt` mġvY`KZ DĒi t`b bv|
- fj DĒi: hLb DĒi`ŕjv cġcvZ`ŕ | Ah_v`ŕnq|
- DĒi cĖvŕb mgm`v: KLŕbv KLŕbv, DĒi`vZv DĒi w`ŕZ cvŕi b bv| nqŕZv chŕB Zŕ`i Afŕŕe wZwb cĖWU eŕŕZ cvŕi b bv, A_ev wZwb msŕkĕ-cĖKĕK AcĖwġK, ev h_v`ŕbq etj gtb Kŕi b|

DĒi wj wce×KiY (Recording Answers): DĒi wj wce× KivŕK gtb ntZ cvŕi hŕ_ó mnR GKwU KvR| wKŠ` gŕŕS gŕŕS, wKQz wKQz KviŕY GLvŕb| fj ntZ cvŕi | cġgZt, mvġvrKvi MġŕYi KvRwU wBZvŠ`-KwŠKi | `ePwqZ bgjvŕtbi tĞtĠ DĒi`vZvŕK LŕR cvevi Rb` mvġvrKvi MġYKvixŕ`i hŕ_ó mgq e`q KiŕZ nq| DĒi`vZvŕK cvevi ci ZvŕK mvġvrKvi MġŕYi gZ`xN`RwUj | KwŠKi KvRwUŕK evievi KiŕZ nq| hw` tKvb KviŕY wZwb tnb`-v nb, wKsev DĒi`vZvi Dci tiŕM hvb, wġkl Kŕi hLb DĒi`vZv wKgŕZv mnŕthwMzv Kŕi b bv, ZvŕK nqŕZv Lŕ GKUv t`vl t`qv hvq bv| wZxqZt, mvġvrKvi MġYKvixŕK cĖqkt, tek RwUj wBŕ`Rbv Abjvŕx mŕŕKZxKiY KiŕZ nq| ZZxqZt, i`agvĠ GKwU KvŕR cY`gbŕthwM t`qv Zvi cŕġ memgq mġe ntq lŕv bv| KviY, GKw`ŕK, wZwb GKwU cĖKĕ DĒi wj wce× Kŕi b Ges Ab`w`ŕK, wZwb cieZŕ cĕwRÁvmvi Rb` cĖwZ tbb, wKsev cĕwKŕi b| Avevi GKbmvŕt, ZvŕK mŕ`ncY`e e`vL`vŕthwM` DĒi`ŕjv mġvŕK`mZK`vKŕZ nq| PZġt, ce` wbaŕi Z mŕŕKZxKiY Kiv cŕkĕ tĞtĠ, mvġvrKvi MġYKvixi KvR ntjv wK mŕŕKZwU wbeŕPb Kŕi eĒvKvi Kiv| ŕ`wUcY`gġ`vqb, ev AmŕPZbŕŕte fj mŕŕKZ wbeŕPb Kiŕj MtelYvi djvdŕj ĀwŠ`cĖek Kiŕe| cĀgZt, tLvjv cĖKĕ tĞtĠ wj wce×KiŕYi KvRwU Avŕiv KwWb| DĒi`vZv hv wKQz etj b, mvġvrKvi MġYKvix wK Zvi mewKQB wj wce× Kiġeb, bv wK i`agvĠ cĖwġK gtb nq Ggb K_v`ŕjv wj wce× Kiġeb, bv wK DĒi`vZvi cĖĒ DĒi`ŕjv wZwb bZb evK` web`vŕm Dc`vcb Kiġeb? G mKj wġŕq cĕwġYmZ wBŕ`Rvejxi evBŕi l ZvŕK ZvrġwYK wmxvŠ`-MġY KiŕZ nq|

mvġvrKvi MġY ŕkl Kivi mgq, mvġvrKvi MġYKvix Aek`B mvġvrKvi AbjvŕŕK ciŕġv Kŕi t`Lŕeb th, wZwb me cĕwRÁvmv KŕiŕQb wK bv, me cĖKĕ DĒi wj wce× KŕiŕQb wK bv, h_vh` DĒi`-dv ev mŕŕKZŕK eĒveZ`KŕiŕQb wK bv Ges DĒi`ŕjvi gŕa` tKvb AmġwZ

itqtQ wK bv| Gi mvt_ wZwb, mvflvrKvi mautK©Zvi e"i³MZ chfeftYi Dci tUvKvgj K gše" wj Lteb| thgb, DEi`vZv tKvb aitYi cwi tetk evm Ktib, wZwb wK aitYi e"i³, MtelYv mautK©DEi`vZvi gtbvfe, DEi`_tjvi h_v_Zv mautK©mvflvrKvi MhYKvixi aviYv, BZ`w` | G mKj wel tq, mvflvrKvi MhYKvix hZ tekx Zvi gše"tK mvflvrKvi AbjPxi gta" wj wce× Kiteb, DcvE wtkHY | e"vL`vq, Zv ZZ tekx DcthvMx Z_" wnmvte wetePZ nte|

mvivsk

mvgwRK MtelYvq, mvflvrKvi GKwU euj cwiwPZ c×wZ| `Rb e"i³i gta" cwi`úwi K wq_w`Evi GKwU mvgwRK cKiY ntjv mvflvrKvi | mvflvrKvfi cāvb`ekó", ntjv cKkZP DEi`vZvi KvQ wbw`θ wKQz cKæKtib Ges cKkZP cKæ Revte DEi`vZv DEi`_t`b, hv cKkZP mvflvrKvi AbjPxtZ wj wce× Ktib| wj wce×KZ DEi`_tjvB DcvtEi wfwE wnmvte KvR Kti | mvflvrKvfi`_YMZ gvb wbfP Kti mvflvrKvi MhYKvixi`_YMZ gvb, DEi`vZvi`_YMZ gvb Ges mtefcwi mvflvrKvfi`_Rb` wbwgZ mvflvrKvi AbjPx| GB wZbwU wel q hw` gvbmæZ nq Ges mvflvrKvi MhYKvix hw` tckv`vi nb, Zvntj Mtel K AtbKvstKB mdj nteb etj ati tbqv hvq| mvflvrKvi MhY thgb tek wKQz mjeav AvtQ, tZgwb tek wKQz Amjeavl AvtQ| mvflvrKvi c×wZ e"envfi i tftT, tm`_tjv`_i`_tZi mvt_ gtb ivLv cQvRb|

cřtVvĚi gj ıvqb

ıbe⁹³ K cġe

mıVK DĚti i cřk ıJK (√) ıPý ı b –

1| mıřvrKvi cřııqřtK cřıveZ KiřZ cřti :

- K. mıřvrKvi MıYKvi xi ıYMZ gvb
- L. DĚi ıvZvi ıYMZ gvb
- M. MřelYřxb mgmıvi cġıZ
- N. Dcřti i me|

2| AKvřtgrex mıřvrKřti i _____ ıenkó ıřřřQ|

- K. GKııJ
- L. ıřııJ
- M. ıZbııJ
- N. PııııJ

3| mıřvrKvi cıııZi Ab ıZg cřıvb mıeavıı ntj v _____ |

- K. A_ıKgj řřM
- L. Gi bgbıřZı
- M. Gi msLıv řekx ıřřK
- N. mgq Kgj řřM|

mıřřıB cġe?

- 1| mıřvrKřti i mıeav ıřř v ıK?
- 2| mıřvrKřti i Amıeav ıřř v ıK?

iPbıvgj K cġe

- 1| mıřvrKvi ıK? mıřvrKřti i cřıvb ıenkó ıřř v Avřř vPbv Ki ıb|
- 2| mıřvrKvi MıYKvi xi Kıřřej x Avřř vPbv Ki ıb|

Wj j cT wekHY
Document Analysis

GB cW tkfI hv Rvbr hvte —

- Wj j cT wekHYi „i“Zi
- Wj j cTfI cKvif`
- Wj j cT MtelYv cMq
- Wj j cT wekHYi mjeav I Amjeav
- wekHYi aiY
- weqew`wekHY

Wj j cT wekHYi „i“Zi (Importance of Document Analysis)

MtelK mvaviYzt, Zvi wotRi DcvE wotRB msMh I msMwZ KiZ cO` Ktib| GtZ Kti MtelKti mjeawU ntjv th, wZwb MtelYvxb wetq Zvi Avb, AwfAZv I MtelYv AbKf Abhvqx, Zvi DcvE msMhni cKwZ I tKskj tK wbaFY KiZ cvtib| wKs' wKQz wKQz tTfT, MtelK Ggb weq wotq MtelYv Ktib, hv ZvtK DcvE mieivnKvix tKvb ew³, cOZovb ev m³cOvtqi KvO t³tK cZ`Tfvt Z` msMhni mthvM t`q bv| Gi wefBceKviY itqtQ| cLgZt, MtelK wotR DcvE msMh KiZ tMj, Zv AtbK e`qeuj I mgq mvteTl ntq cto| wOZiqZt, MtelYvxb wetq chfB cwigtY Zt`i j f`Zv vKtj, bZb Kti DcvE msMh AcOqvRbxq I Aevst` ntq cto| ZZiqZt, MtelYvxb tKvb NUbv hw` AZxtZ NtU vtK, Zte tmB NUbvi Dci DcvE msMh Am³e ntq cto| PZzEt, cOqvRbxq Zt`i gvIv, ev aiYI AtbK mgq MtelKtK mxgve^x Kti Zj tZ cvti |

G aitYi cwiw`wZtZ, AskMhYKvixt`i KvO t³tK cZ`Tfvt DcvE msMhni weKf wnmvte, wefBce Wj j cT I HwZnwmK Drtm cOB weqew`eweni Kti DcvE msMh Kiv thtZ cvti | G mKj DcvEi cKwZ cwimsLvbMZ ntZ cvti, Avevi eYvgyjKl ntZ cvti | G mKj Wj j cT I HwZnwmK Dcv`vb ntZ cvti, Av`gi gvixi DcvE, wefBceaitYi Wj j -`vteR, miKvix bw_cT, cZ`wEj cOvY, ew³MZ Wvtqix, agY eEvst` cPvgyjK mwnZ, cT-cwI Kv, eB I mvqvkx, ew³MZ wPwCt, Av`vj tZi bw_cT, AvBb I wevagyjv, AvZvRvbx, wKv cOZovtbi bw_cT, BZ`w`mn ew³ ev mgvR KZR msivTlZ AmsL` Dcv`vb| we`gvb, G mKj Dcv`vbtK gva`wgK Dcv`vb Ges Gi Dci wfwE Kti MtelK th wekHY Ktib, ZvtK gva`wgK wekHY etj | Zte, Wj j cT wekHYi DcthvMxZv AtbKvstK wbfP Kti, Wj j cTfI h_v_Zv I cyLvbcyLZvi Dci | h_v`Q cyLvbcyL DcvEi gva`tg MtelK bZb As`-tctZ cvtib, AbKf wbgfY, Ggb wK AbKf cixTvl KiZ cvtib |

Wj j cTfI cKvif` (Types of Documents)

Wj j cT wekHY, th mKj Wj j cT w` metPtq tekx ewuZ ntq vtK, tm`tjv ntjv:

- msiwŋZ `wj jĈ (Archival Records): wef bœ ai tŋi `wj j-`-vteR, cŹZvWĖK cŹvY, AvBb I weagvjv, Wv³vi, bvm, mgvR Kgŋ I nvmcivZvtj i tmev-msµvš-bw_, wef bomsMVtbi bw_cĈ, BZ`w` |
- mi Kvix `wj jĈ (Public Documents): Av`gi gvixi DcvĖ, cwi msL`wbK el eÄx, Av`vj tZi `wj jĈ, Kvi vMvti i bw_cĈ, wkvŋv cŹZvŋtbi bw_cĈ, BZ`w` |
- e`w³MZ `wj jĈ (Personal Documents): RxebŊBwZnvm, e`w³MZ tivRbigPv, `šwZK_v, āgYeĖvš, `ŋKvti w³, AvZvRxebx, wPwCĈ, BZ`w` |
- cŹvmbK `wj jĈ (Administrative Documents): cŹvebv, AMŊwzi cŹZte`b, Avtj vP`mPx, mfvi Kvŋweei Yx, tNvI YvcĈ, cŹvcb, BZ`w` |
- Mtel Yv cŹZte`b I cŹvkvb (Research Reports and Publications): Z_`weei Yx, Rwi c cŹZte`b, Mtel Yv mvgwqKx, BZ`w` |
- mwnZ` I MYgva`tgi cŹvkvb (Literary and Media Publications): CĈ-cwĈ Kv, mvgwqKx, Dcb`vm, Mf , KweZv, BZ`w` |

mgq I NUbvi mvŋ_ NwbóZvi wfvĖtZi we`gvb `wj jĈ tK wef bœfvŋM fvM Kiv hvq | thgb,

- mgmvgwqK `wj jĈ (Contemporary Documents): th mKj `wj jĈ NUbv NUevi mgŋq msKwŋ Z Kiv nq |
- AZxZ chŋj vPbvŋj K `wj jĈ (Retrospective Documents): th mKj `wj jĈ NUbv NUevi cŋi `Zwi Kiv ntŋtQ |
- cŹwŋK `wj jĈ (Primary Documents): th mKj `wj jĈ ewvZ NUbvi Pvŋŋd mvŋŋ cŹvŋtŋi ōviv msKwŋ Z ntŋtQ |
- gva`wŋK `wj jĈ (Secondary Documents): cŹwŋK Drm t_ŋK AvnwI Z `wj jĈ |

th gvb`ŋi wfvĖtZB `wj jĈ tK tkYx wef³ Kiv nDK bv tKb, Avtj vPbvi mjeavŋ_©Avgi v mKj cŹvi `wj jĈ tK cŹvbZt wZbwŋ tkYxtZ wef³ Kiŋev – msiwŋZ `wj jĈ, e`w³MZ `wj jĈ Ges mi Kvix `wj jĈ | wŋtŋe GB cŹvb wZb ai tŋi `wj jĈ tK we`wI Zfvte Avtj vPbv Kiv ntj v |

`wj jĈ tK cŹvbZt wZbwŋ tkYxtZ wef³ Kiv hvq – msiwŋZ `wj jĈ, e`w³MZ `wj jĈ Ges mi Kvix `wj jĈ |

msiwŋZ `wj jĈ (Archival Records): mvgwRK Mtel Yvq msiwŋZ `wj jĈ i „i“Z; wef bœ Kvix w`b w`b evotŋ | cŹgZt, mi Kvix Awdm, wki Kvivlvb, ev Ab`vb` msMvB B`vbx `gvi xi gva`ŋ Awak nŋi cwi msL`wbK DcvĖ msMŋ I msiŋŋY KiŋtQ | wŋZxqZt, Gi cŹZ RbMY I Mtel K mœcŹvtŋi µgeŋgvb AvMŋ I Pwn`v ewx tctŋtQ | G me Z_` µgvMZ mj f ntŋ Dŋvtŋ, weŋkl Kŋi Kiv uDUvti i gva`ŋ DcvĖ msiŋŋY mnR ntŋ Dvvi dtj | thgb, 1960 mvj t_ŋK msMnxZ Avŋŋi Kvi Av`gi gvixi DcvĖ_ŋjv e`envŋi Rb` AvsŋkK ev mœúYŋvte wef bœj vBteŋx I wekte` `vj tŋi Z_`vMvti Aegß Kiv ntŋtQ | ZZxqZt, G ai tŋi DcvĖ msMŋni KvŋR mvgwRK weÁvbx`i AskMŋYI µgvMZ evotŋ eŋj, msMnxZ DcvĖ mgŋni mvŋ_ mvgwRK cŹv_ŋjvi mœú³Zvl ewx cŋt`Q |

msiwŋZ `wj jĈ i DcvĖ e`envi Kŋi WŋLBtŋi AvZŋZ`vi Dci mœúw` Z Mtel YvWŋtK, G tŋŋŋŋ GKwŋ D`vniY wnmŋte Dc`vcb Kiv thŋZ cŋi | WŋLBg wef bœ mvgwRK e`e`v, ev mvgwRK `j_ŋjvi gŋa` AvZŋZ`vi nŋi i wef bœ v wŋtŋ Mtel Yv Kŋi tŋb | Zvi AbŋKŋwŋ wŋtŋv th, mgvŋR gvŋj wŋtŋtK AŋxfZ KiŋZ bv cvivi Kvixŋ nŋtZv gvŋj AvZŋZ`v Kŋi |

Zvi gTz, GB A½xfZ KiTZ bv cvi wU, gvbŋli gtb GK aiŋYi gb`wEĶ Pvc ^Zwi Kti, hv ZvtK AvZhnZv cEY Kti tZvtj | AbKí wU cixŋŋYi Rb` wZwb wewfbaegŋq mæcD vq, wewfbae cwi ewi K Ae`vb, cwDg BDŋvtci wewfbaei vR%bwZK cwi tek l wewfbae`ŋki AvZhnZvi nvi wbtq MtelYv Ktib | WŋLBg Zvi AbKí cixŋŋ Kti AvZhnZv l mvgwRK A½xfZKiŋYi Afrŋei gŋa` mæúKŋ` wLŋŋQb | WŋLBŋgi GB MtelYwU mæúYŋŋteB we`gvb`wj j cĪ w`i Dci wŋE Kti Kiv nŋŋŋQ, hv mvgwRK weAvŋbi AwfÁZvgj K MtelYvi GKwU gvBj dj K wnmvŋe wPwYz nŋq AvŋQ |

e`w³MZ `wj j cĪ (Personal Documents): MtelK Z` msMŋni Rb` Kvŋiv e`w³MZ Rxeŋbi wj wce x eYŋvi Dci wbfP KiTZ cvŋi b | GŋK RxeB-BwZnm c x wZl (life-history method) ejv thŋZ cvŋi | GLvŋb MtelK mæúYŋŋteB tKvb e`w³i e`w³MZ Rxeŋb NŋU hv l qv` i`ZcYŋNUbvej xi eYŋvi Dci wbfP Ktib | mvari YZt, G me eYŋv e`w³ Rxeŋbi GK` ŋ` ŋ` t`ŋK Ab` ŋ` ŋ` DŋEviŋYi Kwnbx nŋZ cvŋi (ŋhgb, wKfvŋe GKRB wKŋkvi AcivaxŋZ cwi YZ nq), A`ev tKvb e`wZµgx avivq hwmcZ Rxeŋbi we`wii Z eYŋv nŋZ cvŋi (ŋhgb, GKRB mgKvgxi wBZ`w` bKvi RxeB hvcŋbi eYŋv) | G me eYŋv gj Zt, GKRB e`w³i AwfÁZvi eYŋv l e`vL`vi mgæŋ | mZivs, Z` msMŋni `beŋ³K c x wZ` ŋj vtZ MtelK Zvi MtelYvi wcl qe` mæúŋKŋ`th Aš`ŋŋ cvb bv, Zv wZwb GB e`w³MZ eYŋvmŋĪ cDŋ Zŋ`i gva`ŋg j vŋf KiTZ cvŋi b |

RxeBŋBwZnm e`envŋi i wewfbaei Kg KvŋRwii Zv iŋŋŋQ | cĪgZt, GwU GKwU ZwEĶ cD`vebvi cDZ tKvb e`w³i wBR`^ wŋf wŋŋŋK Zŋj aŋi | wZŋqZt, cieZŋŋZ Awak wbgqZwŋŋK Dcvŋq Z` msMŋni Rb` cDŋqRbxq Abgvŋbi wŋE wnmvŋe, RxeB-BwZnm e`envŋi i tek` i`Zi iŋŋŋQ | GB Abgvb` ŋj v NUBvi tŋŋŋvU, NUBvi KvŋY, ev Ab` tKvb djvdj cDŋbi mæbev, BZ`w` th tKvb wclŋŋi Dci nŋZ cvŋi | ZZŋqZt, Lŋ we`wii Z eYŋv`vKvi KvŋŋY, MtelK GB Z`mŋĪ i gva`ŋg bZb, ev wŋbZi tKvb Aš`ŋŋ tŋŋZ cvŋi b | PZy Zt, mvgwRK wŋ`wŋŋŋv l NUBvi MwZkxj cDŋqvtK tevSvi Rb`, RxeB-BwZnm nŋj v Zŋ`i GKwU eo Drm | RxeB-BwZnm ZEj MVB, ev mvari YxKiŋYi Rb` AwfÁZvgj K wŋE nevi thwM`Zv ARŋ KiTZ bv cvi ŋj l cieZŋŋZ AwakZi wbgqZwŋŋK Dcvŋq MtelYv cwi Pvj bvi Rb`, Gi we`wii Z eYŋvi gva`ŋg MtelK wKQzmĪ tŋŋZ cvŋi b |

mi Kvix`wj j cĪ (Public Documents): wewfbaemŋŋq mi Kvŋi Zvt` i cDŋqRŋb wewfbaeiŋYi Z` msMŋ l msiŋŋY Kti`_vŋK | Zŋe, tm me Z` mi Kvixfvŋe Aw`Kvj t`ŋK msiŋŋY Kiv nŋj l Zvi cDŋqKŋiY l weŋkŋY cŋe`Lŋ GKwU Kiv nq w | wesk kZvãŋZ GŋmB G mŋei e`envi e`vcKfvŋe ewx tŋŋŋŋQ | e`Zt, cŋe`MtelKŋ` i H me Zŋ`i cwi eŋZ`i aycŋKwKZ mi Kvix`wj j, bwZvgj v, BZ`w` i Dci wbfPŋkj nŋZ t`Lv thŋZv | wKŋ`B`wbs, GKw`ŋK, MtelKŋ` i thgb wewfbae wclŋŋ MtelYvi AvMŋ tetŋŋQ, Ab`w`ŋK, tZgwb cDZwU wclŋŋ Zŋ`i l cDŋqRb nŋ`Q | evsj vt`ŋk, wewfbaemi Kvix l temi Kvix cDZŋŋŋb eŋ gj`evb`wj j cĪ iŋŋŋQ, A`P tm`ŋj vi tZgb e`envi nqwb | tm me wj wLZ`wj j cĪ msMŋ Kti Zv e`envi Kiv thŋZ cvŋi |

`wj j cĪ weŋkŋŋYi GZme KvŋRwii Zv mŋEj | Gi h`v`Zv wbtq cŋæDVŋZ cvŋi | KvŋY, Z` ŋj v msMŋxZ nq Ab` tKvb e`w³, ev msMVB KZŋ, hvi mŋŋ` MtelŋKi tKvb mæú³Zv`_vŋK bv Ges Zvi Dci MtelŋKi tKvb wbgŋŋY l`_vŋK bv | dŋj, G i Kg AwbqŋŋZfvŋe msMŋxZ DcvŋEi gŋa` wbgqZwŋŋK l %ŋe-ãwŋŋ-nevi mæbev tekx`_vŋK | Z` msMŋKvix e`w³ GKwU NUBv mæúŋKŋ`Zvi wŋŋŋi msÁv, wŋŋŋi cD` l` wŋf wŋŋi Dci wŋE Kti Z` msMŋ Ktib, hvi mŋŋ` cieZŋŋZ Ab`v` MtelŋKi wŋŋŋvebvi mgŋŋ bvl nŋZ cvŋi | MtelKŋK

ZvB DcvfEi wbfPthvM`Zv I h_v_Zv hvPvB Kti wbtZ nte| Ggb wK, DcvfEi Af`š+y mgšq (A_ŕ, DcvfEi cŕZUW Astki gta` mgšq) Ges emn`K mgšq (Ab` tKvb AwfAZvgj K `wj j ev cŕvYi mvt_ mgšq) cixŕv Kti wbtZ nte|

`wj j cĀ wekH cŕµqv (Process of Document Analysis)

`wj j cĀ wekH KZ_tjv avivewnK µgciµúivq cwiPwj Z nq| GB avc_tjv cŕwj Z MtelYv bKkvq AbmZ cŕµqv gZB, Zte tŕĀ wekĀ, Gi e`wZµgl NtU_vtK| `wj j cĀ wekH`Yi cŕg avcU ntjv, cŕmwzK `wj j cĀ i wPvYZKiY| cŕmwzK `wj j cĀ i wbePbiU wbfP Kti MtelĀKi e`wZMZ AvMŕ, `wj j cĀ i mnRj f`Zv Ges tm_tjvi cŕZ mnRMg`Zvi Dci| tKvb MtelYvi Rb` KLtŕv GKUW DrmĀK wbePb Kiv nq, Avevi Ab` MtelYvi Rb` GKwaK `wj j cĀ i wbePb Kiv nq| `wj j cĀ i e`envi KLtŕv tKvb enr MtelYvi GKUW Ask ntZ cvti (thgb, MtelYv mwnĀZ`i chŕj vPbv), Ab` mgq, tmuU GKUW gj MtelYv ntq `vovq (thgb, welqe`wekH)|

`wj j cĀ wekH`Yi wZxq avcU ntjv, DcvE msMh| DcvfEi welqe`wK nte, Zv wbfP Kti cŕmwzK `wj j cĀ wbePbi cvkvcwK DcvE wekH`Yi c`wZi Dci| hw` MtelYvi DĀk`wU nq eYŕvgjK Ges c`wZUW nq m`úYŕvte _YMZ, tm tŕĀĀ `wj j cĀ Aa`qb Kti tUvKv tŕqvB DcvE msMŕni Rb` ht_ó ntZ cvti| wKš` hLb welqe`wekH`Yi gZ cwi kwj Z c`wZ e`envi Kiv nq, ZLb DcvfEi msMvB I wekH`Yi Rb` cwi kwj Z I RŕUj c`wZ e`envi KiĀZ nq etj, DcvE msMŕni welqU Lp mZKZvi mvt_ KiĀZ nq| DcvE wekH`Yi I e`vL`v ntjv `wj j cĀ wekH`Yi cŕµqv ZZxq I Pŕvš-avc| `wj j cĀ MtelYvq DcvE wekH`Yi tek `wPĀcYŕ DcvfEi gj`vqb wbfP Kti `wj j cĀ i cKwZ, e`eüZ c`wZ I MtelYvi DĀĀk`i Dci| hLb AĀbK tekx Ges wewfbŕaitYi `wj j cĀ e`envi Kiv nq, ZLb DcvE wekH`Yi `wPĀw RŕUj ijc aviY Kti| mvaviYŕvte, MtelYv`i`i cŕe, ev cwi Pj bvi mgq th mKj ce`aviYv Kiv nq, tm mKj ce`aviYvi mvt_ DcvEmgn KZUKz m`wZcYŕ, Zv gj`vqb Kti t`Lv nq| wekH`Z djvdj e`vL`v Kti Zv w`tq cwi msL`vbMZ mvaviYxKiY Kiv hvte wK bv, Zv wbfP Kti wK aiĀYi `wj j cĀ Ges c`wZ e`envi Kiv ntqŕQ, Zvi Dci| wKQz wKQz tŕĀĀ, Avti vnx mvaviYxKiY Kiv m`e nq Ges Ab` tŕĀĀ, wekH`YMZ mvaviYxKiY Kiv hvq|

`wj j cĀ wekH`Yi mjeav I Amjeav (Advantages and Disadvantages of Document Analysis)

`wj j cĀ wekH`Yi metPĀq cŕvb mjeavU ntjv th, wewfbŕwelĀq we`gvb `wj j cĀ w` Ggb wKQz welĀq MtelYvi mthvM cŕvb Kti, th_tjvi cŕZ mvaviYŕvte MtelĀKi tKvb mnRMg`Zv _vtK bv Ges Ab` tKvb c`wZ e`envi i gva`tg DcvE msMŕ Kiv hvq bv| wZxqZt, `wj j cĀ wekH`Yi c`wZ MtelĀKĀ AZĀZ NtU hvlqv welq I NUBvej x m`úĀK MtelYvi mthvM cŕvb Kti| ZZxqZt, `wj j cĀ _tjv hviv iPbv Ktib, Zviv Zv MtelĀKi digvtqk QrovB iPbv Ktib etj MtelYvi Dcv`vb_tjvi gta` GK aiĀYi `ZtŕZŕv _vtK| PZi_Zt, Ab`vb` DcvE msMŕni c`wZi Zj bvq, `wj j cĀ wekH`Yi Zj bvgj Kŕvte Kg e`qm`úbentq _vtK| cĀgZt, Ab`vb` DrmĀ Afvte KLtŕv KLtŕv `wj j cĀ w` DcvfEi GKgvĀ Drm ntq _vtK| IóZt, hw` I `wj j cĀ wewfbŕegvĀbi ntq _vtK, wKš` `ŕZm`úbetj LKĀ`i ŕviv wj wLZ cĀ-cwĀ Kvq cKwKZ wbeÜ A`ŕ DĒi`vZĀ`i ŕviv cĀYKZ Ww cKŕgvj vi DĒi_tjvi Zj bvq AwakZi gvbm`úbentq _vtK| mBgZt, `wj j cĀ w` thĀnZi Ab` DĀĀk`i i wPZ nq, tmĀnZi tm_tjv `beŕK Ges cŕŕcivnxb ntq _vtK|

mjeavi cvkvcnk, `wj j cĭ weġkġYi wKQz Amjeavl itqtQ| cġgZt, `wj j cĭ,tj v
cġZwbaZġxj nq bv, etj tm,tj vi gva'tg mvavi YxKiY Kiv mæe nq bv| wZxqZt, wKQz wKQz
`wj j cĭ mnġR cvl qv hvq bv| thgb, e'w³MZ wPw, Wtqix, BZ'w | ZZxqZt, wKQz wKQz
`wj j cĭ AmæuY[©]_vtK etj tm,tj vi gva'tg tKvb Dcmsnvti tġQvtbv hvq bv| PZzġt,
`wj j cĭ i gta' wefbaZv _vKvi dtj G,tj v gvtS gvtS Zj bvtvM' _vtK bv| cġgZt, wefbae
`wj j cĭ wefbaeDġġk' i wPZ ntq _vtK etj, Gi gva'tg DcvġEi gta' wefbaeġcwZZj
cġek Kġi | /ôZt, wefbaeAwġġk G,tj v i wPZ nq etj, G,tj v weġkġYi Rb' mvstKZxKiY,
cġgZKiY, BZ'w i tġġġ wefbaeġkvi mgm'v Zwi Kġi |

weġkġYi aiY (Forms of Analysis)

`wj j cĭ weġkġYi wefbaeaiY itqtQ| Gi gta' meġPtq Rbwcġ aiY,tj v ntjv, ŸYMZ
weġkġY, cwi gvYMZ weġkġY, eYġvgj K-Zj bvgj K weġkġY Ges weġq'e' weġkġY | ŸYMZ
weġkġY, MtelK `wj j cĭ we' gvb Z,tj vtK wPwY Z Kġib Ges e'vL'v Kġib| wZvb
MtelYvi weġqi Dci cġvb cġh/2, aviYv, e³e' Ges wPŠ,tj vtK wbaġġY Kġib| `wj j i
cġvb weġq'e'ġK AbjvÜvb Kġib| thgb, tK `wj j w i Pbv KġiġQb? KLB KġiġQb? `wj j i
Drġmi wbfġthw'Zv KZUK? BZ'w | G me weġq AbjvÜvti ci, wZvb cġmwġK Dcmsnvti
tġġQb| Zte, ŸYMZ cæwZġZ cwi Pwġ Z `wj j cĭ weġkġYi gva'tg AwRġ Dcmsnvi,tj v
mvavi YxKiYi Rb' mxgveX | `wj j cĭ wbtq ŸYMZ weġkġY th mKj KgRvÜ cwi Pj bv Kiv
nq, cwi gvYMZ weġkġYi tm mKj KgRvÜ cwi Pj bv Kiv nq| wKŠ cwi msL'vbMZ weġkġYi
bKkwÜ ŸYMZ weġkġYi Zj bvg AġbK tekx mjbw'ġ Ges KwġgveX ntq _vtK| DcvġE msMġ
I weġkġYi cæwZw _vtK cwi gvYMZ cKwZi Ges Dcmsnvi,tj v Avġivnxgj K
mvavi YxKiYġK wbt' R Kġi |

*`wj j cĭ e'envġi i gva'tg
th me NUbvej x wbtq Mtel Yv
Kiv nq, eYġvgj K-
Zj bvgj K weġkġY, MtelK
tm mKj NUbvej xi eYġv
Ges AvŠtms'æZK ev
AŠtms'æZK Zj bv, ev
wefbaemgtqi gta' Zj bv
Kġib|*

`wj j cĭ e'envġi gva'tg th me NUbvej x wbtq MtelYv Kiv nq, eYġvgj K-Zj bvgj K
weġkġY, MtelK tm mKj NUbvej xi eYġv Ges AvŠtms'æZK ev AŠtms'æZK Zj bv, ev
wefbaemgtqi gta' Zj bv Kġib| `wj j cĭ i Ab' tKvb aiġYi weġkġY bv Kġi, mvavi YZt
cġwgK chġqi ev'e Zġ' i Dci wfvġE Kġi G aiġYi weġkġY cwi Pwġ Z nq| `wj j cĭ
e'envi Kġi weġq'e' weġkġY cæwZġZ Avġiv RvÜj I cwi kwj Z weġkġY Kiv nq| weġq'e'
weġkġY cæwZ `wj j cĭ i cKwKZ I mġ Dfq aiġYi weġq'e' i Dci tK'ġfZ Kġi
weġq'e' i A,ġ, kġ, evK', Abġ'Q', BZ'w ġK AZ'Š-Mfvi fvtē weġkġY Kġi | `wj j cĭ
weġkġYi cwi kwj Z cKiY wmwte Avgiv weġq'e' weġkġY cæwZġK wbtgæ we'wi Zfvte
AvġivPbv Kiġev|

weġq'e' weġkġY (Content Analysis)

*weġq'e' weġkġY ntjv, tKvb
mjbw'ġ aviYv, weġq'e', kġ,
ev th tKvb e³e'ġK
wbaġġYi Rb' wefbae³Zv,
`wj j Ges Ab'vb' wj wLZ
gva'tgK e'envi Kġi
Mtel Yvi GKwÜ tKŠkj |*

weġq'e' weġkġY ntjv, tKvb mjbw'ġ aviYv, weġq'e', kġ, ev th tKvb e³e'ġK wbaġġYi Rb'
wefbae³Zv, `wj j Ges Ab'vb' wj wLZ gva'tgK e'envi Kġi MtelYvi GKwÜ tKŠkj | th me
MtelK cġvMZfvte cwi gvYMZ Abġġi cixġvq AvMhx, Zviv ŸYMZ eYġvg' -ġ' -teva Kġib
bv| G mKj MtelġKi Rb', ŸYMZ eYġvtK Aa'qtbi Dġġk' weġq'e' weġkġY GKwÜ h_vh_
MtelYv tKŠkj ntZ cvġi | weġq'e' weġkġYi gj j ġ'wÜ ntjv, tgšwLK Acwi gvYMZ `wj j ġK
wbtq cwi gvYMZ DcvġE ifcvŠt NUVt bv Ges tmB DcvġEġK weġq'e' i mvġ_ mæuġKġ Kġi
Abġġi cixġv Kiv| Abġġi cixġv Ovovl, weġq'e' weġkġYi Avġiv wKQz Dġġk' i itqtQ|
tm,tj v ntjv, weġq'e' i gta' aviv eYġv Kiv, Drġmi AvZ' enġġ'oi mvġ_ mKj Drm th
e³te' i Rb' t'q, Zvi mvġ_ mæuġKġ Kiv, cġZwöZ gvb' tÜi wecixġZ thwMvthvġMi

welqe`tk ciL Kti i`x Kti tbqv, welqe` iPbvq th tKškj e`envi Kiv ntqtQ, Zvi wekH Kiv, Ges iPbvʒkj xi wekH I thvMvthvMi ifctK eYv Kiv|

welqe` wekH mvari YZt, MYgva`tg cKwikZ tKvb welqe`tk wbgge`frte wekHʒi Rb` GKwJ Mtel Yv tKškj wnmvte cwipwZ jvf Kti tQ| Zte, MYgva`tgi mv_ m`umKʒ bq, Ggb welqe` i tʒtI GB tKškj wJ cDqM Kiv ntq _vtK| Gi msAv w` tZ wMtq cuUZMY etj tQb th, wbgqZwšK I e`wböfvte wefbae`3te`i `enkó`tk wPwYZ Kivi gva`tg Dcmsnvi Uvbi tKškj tK welqe` wekH etj | GB e`3e`_tjv msev`cĪ, e`w`3MZ wPwCĪ, tivRbvqPv, e`3Zv, Mš, KweZv, Mvb, Qwe, BZ`w i gta` weaZ _vKtZ cvti | GB tKškj wJ weKvk gvĪ KtqK `ktKi ntj I mvgwRK weAvbxi GB tKškj i AšwbnZ cĪ`q I avi Yvmg`xNp b ati e`envi Kti AvmtQb| Zte, AvajbK welqe` wekH AʒbK tekx mmsnZ Ges GtZ msL`vZwĪK cDqMʒK GKwJ cʒqvRbxq Dcv`vb wnmvte Ašfʒ Kiv ntqtQ| AvajbK Abkxj tB, Mtel KMY mgʒi AveʒZ`e`3te`i _YMZ cwieZʒbi gj`vqb, e`3te`i `enkó`i eYv, e`3e` cDvbKiv m`u`tkDcmsnvi Uvbi, wefbaemgvtRi mvs`wZK wfbzv, ev mvs`wZK welq m`u`tkAbKí cixʒv I e`3te`i cʒve m`umKʒ AbKí cixʒvi Rb`, welqe` wekH tKškj wJ e`eüZ ntq AvmtQ|

AvajbK welqe` wekH
AʒbK tekx mmsnZ Ges
GtZ msL`vZwĪK cDqMʒK
GKwJ cʒqvRbxq Dcv`vb
wnmvte Ašfʒ Kiv ntqtQ|

wekHʒi GKK wbePb, bgbvqb I mvstKZxKiY (Selection of Units of Analysis, Sampling and Coding): mvstKZxKiYi gva`tg wekHʒi tkYx ev tMvöx`_tjv wbaʒʒi cʒe`Mtel KtK wmxvš`wbʒ nte th, `wjtj i tKvb welq`_tjvtK wj wcx` Kiʒ nte| mvari Yfvte, PviwJ wekHʒi GKK itqtQ: GKwJ kã, GKwJ welq, GKwJ cãvb `enkó` I GKwJ evK` ev Abʒ`Q` | cDqkt, GKwJ kãtK wekHʒi GKK wnmvte wbePZ Kiv ntq _vtK| GKwJ `wjtj, wekH GKwJ ktãi Dcw`wZtK tkYxex Kti mvstKZxKiYi gva`tg GKwJ web`vm `Zwi Kiv nq| hv cwigvc Kiv nte, Zvi Rb` hw` GKwJ kã GKwJ h_v`_mPK wnmvte cDZwbaZi Kti, Zte tmB kãwJ wekHʒi GKK wnmvte DEg wbePb etj wetePZ nte| thgb, tKvb tJ LtKi Dcb`vfm cwiewi K wmxvš`Mhʒi tʒtI, bvix I cj`tli gta` Kt`vcK`_tbi mgq Kvi e`3e`wJtK wmxvš`wnmvte MhY Kiv nt`Q, tmwJ tkYxex Kiti tmB Dcb`vfm bvixi ʒgZvqb m`u`tkGKwJ `úo aviYv cvlqv thʒ cvti | G tʒtI, bvixi ʒgZvqb cwigvc ōm`xvš` kãwJ wekHʒi GKK wnmvte h_vh`_ntZ cvti | GKbfvte, kirPb` i Dcb`vm`_tjv Aa`qb Kti mvgwRK ms`v`ti welq`_tjvtK wekHʒi GKK wnmvte wbePb Kiv thʒ cvti | tKvb `wjtj weaZ wefbaepwiĪ wekH Kti I mgvtRi wefbaeNUbv, welq, cĪ`ĀtK eYv I e`vL`v Kiv thʒ cvti | thʒnZitKvb evK` ev Abʒ`Q` GtKi Awak aviYv Ašfʒ _vtK, tmʒnZi tm`_tjv wekHʒi GKK wnmvte e`envi Kiti wefbaetkYx ev tMvöxZ wef`3 Kivi tʒtI mgm`v`Zwi Kti | Gi dtj, wbfʒthvM`Zvi gvĪvl Ktʒ hvq| Zte, ZwĪK I cĪ`qMZ wetePbvq G`_tjvtK wekHʒi GKK wnmvte wbePbi `i`Zi itqtQ|

welqe` wekHʒi, bgbvqʒbi aviYwJ Ab`vb` Mtel Yv cxwZi gZB| AʒbK mgq, wekHʒi welqe` GZ tekx _vtK th, Gi me`_tjvtK wbtq Mtel Yv Kiv Aev`e ntq `wvq| thgb, GKRb Mtel K hw` cwĪ Kvq nZ`vKvŪi Dci cKwikZ cDZte`b`_tjv wbtq Mtel Yv Kiti Pvb, tm tʒtI Mtel K wK me cwĪ KvʒK wetePbv Kiteb? me aiʒi nZ`vKvŪiK wetePbv Kiteb? ivR`wZK nZ`vKvŪi ntj wK me `tj i K_v wetePbv Kiteb? bv wK Gi wKQz AskʒK wbePZ Kti Mtel Yv cwipj bv Kiteb? cĪ cwĪ Kvq G mKj msev` GZ tekx _vtK th, Mtel YvtK msnZ I mmsMwZ Kivi Rb` bgbvqbB tkD c`_ Mtel K meʒtq tekx cPwi Z cwPwJ %wbK cwĪ KvʒK wbePb Kiti cvtib, i`agvĪ ivR`wZK nZ`vKvŪiK wetePbv Kiti cvtib Ges i`agvĪ `jxq Ašfʒ` i dtj msNwJ nZ`vKvŪiK wetePbv Kiti cvtib| Zte, GwJ `i`Zji

mvf_ gtb ivLv c0qvRb th, wbePZ bgbvK Aek'B c0ZvwaZkxj nZ nte, hvZ Kti c0mwzK wel q mæutK GKw mvavi Y mævš-tc0vrbv mæ nq

welqe' weikHYi c0vb
KvRw njv, GKw
mstKZxKiY webvmtK Zwi
Kiv, hvj f' wj j weikHYi
Rb' e'eüZ nq| wK aiYi
wj j e'envi Kiv nQ, ev
wK aiYi AbKí cixv Kiv
nQ, Zvi Dci GB
mstKZxKiY webvmti
aiYw wbfP Kti|

th tKvb KgRvÜ hLb tKvb wj tj weeZ Kiv nq (thgb, GKw Mš, tivRbvgPv, NUbv wj w, Pj wPĪ, ev avi K hš), ZLb Zv e'AwbK weikHYi c0Z c0hvR' nq Ges welqe' weikHYi gva'tg GKw wj tj i c0ZxKx welqe'tK (thgb, kã ev Ab' tKvb c0Zifc) YMZ I wek;Lj ifc t_tK cwi gvYMZ I k;Luj Z ifc ifcšw Z Kiv nq| Ab' K_vq, welqe' weikHYi GK aiYi mstKZxKiY c0vqv ejv hvq, hv weifbæDcv vbtK KZ_tjv mwgZ tkYx, ev tMv0tZ wef3 Kivi KvR e'envi Kiv nq| AZGe, welqe' weikHYi c0vb KvRw njv, GKw mstKZxKiY webvmtK Zwi Kiv, hvj f' wj j weikHYi Rb' e'eüZ nq| wK aiYi wj j e'envi Kiv nQ, ev wK aiYi AbKí cixv Kiv nQ, Zvi Dci GB mstKZxKiY webvmti aiYw wbfP Kti| Ab'vb' MtelYvq e'eüZ we' gvb mstKwZK webvmtK welqe' weikHYi Rb' e'envi Kiv thZ cvti| GtZ GKw tK, MtelKi Rb' AtbK mgq, ktj I At_P mvktj nZ cvti Ges Ab'w tK, welqe' weikHYi djvdj tK Ab'vb' MtelYi djvdjtj i mvf_ Zj bvtvM' Kti Zj tZ cvti| wKš' we' gvb mstKZxK webvmtjv memgq welqe' weikHYi AšfP Dcv vbtjv tġtġ c0hvR' bvl nZ cvti| tm tġtġ, GKw bZb mstKZxK webvm %Zwi Kivi c0qvRb nq cto| welqe' weikHYi GB 'enk0w Ab'vb' MtelYv bKkv ev evqtb i cwi Kí bvg GKw KvRi fvgKv cvj b Kti v_tK|

welqe' weikHYi mjeav I Amjeav (Advantages and Disadvantages of Content Analysis): welqe' weikHY mgq I At_P w K t_tK mePtq wgzex GKw tKškj | Kvi Y, c0gZt, GKRb MtelK gvġ wKz wj j -cĪ, ev cĪ-cwġ Kvi welqe' weikHY Kti GKw MtelYv mæubakitZ cvtib| wZxqZt, weifbæ wj tj weaZ wel q_tjv c0Zwvqvnx nq v_tK| Kvi Y, hviv GB wj j, c0Zte`b, Dcb'vm, BZ'w` c0Z Ktib, Zviv mvgbvmgvb Dcw`Z v_tKb bv Ges hLb Zviv G_tjv c0Z Ktib, ZLb Zviv Rvbb bv th, G_tjv KLtbv tKvb MtelK e'envi Kiteb| dtj, MtelKi mvf_ DcvE mieivnKvixi tKvb wq_w0ev bv nevi dtj, tm_tjv cġcvZgP nq v_tK| ZZxqZt, hZamnKviti tKvb wj j, ev c0Zte`b msiġY Kitj tm_tjv xN'vqx nq| dtj, mvavi Y MtelYi gva'tg th mKj DcvE mnRj f' bq, welqe' weikHYi gva'tg MtelK tm aiYi DcvEtK mnR tctZ cvtib| PZL_Zt, eü c0Zte`b Ges wj tj cwi msl'wbK Z_wj wce x v_tK, hv xNRvj ati avivewKfvte msiġY Kiv nqtQ| G cxwZtZ, G mKj j' f' I AMg' DcvE c0w mnR nq etj xN' b cæ'gvbġ I AvPiY, mvgwRK c0Zvrb i fc I cwi uwi K mæuK'Kgb w0j, tm me wel tqi Dci xNRvj xb I aviv MtelYv Kiv mnR nq| cAgZt, thtnZieü aiYi wj j c0w cwi gvY we' gvb v_tK, tmtnZidjvdjtj i Dci Av`v I wbfPthvM'vZv ewx i Rb' e'q ewx bv Kti B epr AvKviti i bgbv e'envi Kiv mæ nq|

welqe' weikHYi wKz Amjeav itqtQ| c0gZt, thtnZi weifbæ wj j -cĪ MtelYi Dti tK' i wPZ bv nq wfbæDti tK' i wPZ nq, tmtnZi tmMjtj vi YMZ gvb memgq MtelYi DcthvMx v_tK bv| wZxqZt, weifbæ wj j -cĪ, weikl Kti HwZnwmK wj j -cĪ, AtbK mgq AmæY nq v_tK| G me AmæYZvi cfve MtelYi Dci KZUKz cto, Zv c0qkt Rvsv hvq bv| ZZxqZt, mgtqi AveZt'cwi eZB NtU Ges tm mKj cwi eZB wj j cĪ we' gvb DcvEi Zj bvtvM' ZvtK Kwgtq t`q| PZL_Zt, weifbæ wj j -cĪ MtelYi Dti tK' %Zwi bv nq wfbæ Dti tK' Zwi nq etj, Gw wbi0Z Kti ejv hvte bv th, tm_tjv e`wb0| cAgZt, fj, ev Ah_vh_ bgbvqb c0vqv gva'tgl e`wb0 DcvEi gta' cġlcwZZi c0ek Kti weawški djvdjtj i Rb'w tZ cvti| I0Zt, GB tKškj i agvġ wj wLZ, ev c0wKZ Z_wtqB MtelYv KitZ mrvh' Kti| wKš' tKvb mgn'vi Dci mæY MtelYv KitZ njt i agvġ c0wKZ Z_t'i

Dci wbfP Kij B Pj te bv | wj wce× nqwb Ggb wel q I NUbvI Mtel Yv Rb` wekl fite
i"ZcY® GB tKŠktj Zv wetePbvq Avtm bv| mBgZt, G tKŠktj i gva'tg cwi Pwj Z
Mtel Yvi dj vdtj i h_v_Zv I wbfPthvM`Zv wbtq ckať_ťK hvq|

mvisk

`wj jcĀ weklH mgvR Mtel Yvq i"ZcY®vb `Lj Kti AvtQ| cťivtbv `wj j, wPw-cĀ,
Wtqix, BZ`w` `wj jcĀ weklHŸi wfiĚ wmwte KvR Kti| mvaviYZt, th me Mtel Yvq
mgvR-BwZnvťmi aviv e`vL`vi cŌqvRb t`Lv t`q, tm me tŤťĀ Mtel K cŌB `wj j-`ťeRťK
Mtel Yvi DcKiY wmwte e`envi Kti Dcmsvťi DcwbZ nb| G aitYi Mtel Yvi Ab`Zg
Amjeav nťjv, cŌB Z_ťK mvavi YxKiY Kiv mæe nq bv| eZgvb cvťV, `wj jcĀi i"Z;
cKviťf`, mjeav-Amjeav we`wi Zfite Avťj wPZ nťqtQ| cW tkl, wel qe` weklH c×wZ
mæúťK® i"ZcY®Avťj vPbv Kiv nťqtQ|

cvfVvEi gj`vqb

`be⁹³K c0ke

mWVK DEti i cvtk WJK (v) WPy w`b -

1| `wj j cT wetkH+Yi c0g avcWU ntj v:

- K. `wj j cT mSM0h Kiv I msi 9Y Kiv
- L. `wj j cT `tj vi Avtj vtK Z_` ^Zwi Kiv
- M. c0mwzK `wj j cT WPyZ Kiv
- N. Dcti i me|

2| mvgwRK wg_w`0v I NUbvi MwZkj c0ZwμqtK tevSvi Rb` _____ ntj v Zt_`i GKwJ eo Drm|

- K. cfi vtbv wkj vwj wC
- L. c0_ mvmZ`
- M. Rxeb-BwZnm
- N. Dcti i me

3| `wj j cT wetkH+Yi Ab`Zg Ampeav ntj v:

- K. mvavi YxKiY Kiv mae nq bv
- L. mntR cvl qv hvq bv
- M. Zj bvthvM` Kiv hvq bv
- N. Dcti i me|

msv9B c0ke

1| `wj j cT wetkH+Yi mpeav wk?

2| `wj j cT i c0Kvi tf` `tj v wk?

i Pbvqj K c0ke

1| evsj vt`tki mvgwRK-BwZnm Mtel Yvq `wj j cT i fvgKv Avtj vPbv Ki`b|

2| evsj vt`tki wk9v e`e`v ch9j vPbvq `wj j cT i `i`Zi AvtQ wk? Avtj vPbv Ki`b|

DcvĒ cĉμqvKiY *Data Processing*

DcvĒ msMĉni ci, wekvj DcvĒimkgvjvK wekĉiYi thvM Kti Zj tZ ntj, tm,tjvK weae× wqđgi gvađg msMwZ Ki tZ nq| DcvĒK msMwZ Ki tZ ntj, ħU i“ZcYĉKg[©] māv`b Ki tZ nq| cĉgU ntjv, DcvĒi māv`bv I hvPvB Ges wZxqU ntjv, DcvĒi mswĉBKiy| DcvĒi māv`bv I hvPvB cĉμqv, cĉYKZ cĉgvyv, ev mvĉvrKvi AbjnPxi gta` mae` fj -āmsĉK vPwYZ Kivi j tĉ| DcvĒi māvYzv, mwKZv, mgiĉZv, tevaMgZv, mZwZcYzv, BZw` cixĉv Ki tZ nq| wekvj DcvĒimkĉK mswĉBKiyi ħU cĉμqv itqtQ| GKwU ntjv, mvsĉKZxKiY Ges AbwU ntjv, mviwYKiY| mvsĉKZxKiYi gvađg cĉB DĒi-`dvĉK A_eYĉvte tkYex Kivi cĉμqv, cvi`úwi K wekóZv, mvgwMĉZv I cyLvbyLZvi Dcv`vb,tjv i“ZcYĉ mvsĉKZxKiYi wqđvejx AbjniY Kti cĉZU Pj tKi Rb` mvsĉKZxKiY QK wqđYi ci, tm,tjvK GKwU mstKZ-eBtq MĉSZ Ki tZ nq, hv gj Zt mvsĉKZxKiY cwi Kí bvi GKwU ifĉiLv| mviwYKiYi gvađg DcvĒ mswĉBKiy cĉμqv DcvĒi wekĉY I e`vL`vi c_ mĉMg Kti| G BDwbU, G mKj weqtK we`wi Zfvte Avtj vPbv Kiv ntqtQ| Zte, weqē`i wgj _vKvi Kvi tY cv-3 Gi wKQz wKQz tĉtĉĉ ĆmvgwRK cwi msL`vb cwi vPwZĉ (mgvRZĒ-4) Mĉšĉ cĉmwZK Astki mvĉ_ mv`k`_vKte|

GB BDwbU Avgiv th cv,tjv Aa`qb Ki tev, tm,tjv ntjv:

- ◆ cv - 1 : māv`bv I hvPvB
- ◆ cv - 2 : DcvĒ mswĉBKiy 1 – mvsĉKZxKiY
- ◆ cv - 3 : DcvĒ mswĉBKiy 2 – mviwYKiY

GB cvW tk^l hv Rv^{bv} hv^{te} —

- DcvE c^uqvKiY wK
- m^{auv} bv I hvPvB

DcvE c^uqvKiY wK (What is Data Processing)?

DcvE msM^h mgw^{Bi} ci, M^{te}l^tKi c^{av}b KvR^uW n^{tj}v, th D^tl^k w^{btq} M^{te}l^Yw^u iⁱ n^{tq}Q^{tj}v, tm D^tl^k t^jv AR^{bi} j^tl^l DcvE w^{etk}H^Y g^{tb}w^{btq} Kiv| g^v t^tK w^{btq} Av^mv Ac^wi^tk^wa^Z DcvE^tK mi^mwi w^{etk}H^Y Kiv hv^q bv e^{tj}, tm t^jv^tK w^{etk}H^Yi th^vM^l K^ti t^Zv^jvi R^b c^uqvKi^tYi g^{va}tg c^oZ K^ti w^{btz} n^q| w^KS^l DcvE msM^hni ci, m^vg^wR^K M^{te}l^K, w^{etk}l^l K^ti be^l M^{te}l^K, w^KQ^uv w^Ks^KZ^ew^{eg}p n^{tq} c^{to}b GB t^fte th, m^sM^hx^Z w^{ek}vj DcvEⁱw^k w^{btq} w^Zw^b w^K Kⁱte^b| DcvEⁱ Y^MZ g^{vb} m^{te}v^o g^vt^{bi} n^{tj}l M^{te}l^K me DcvE^tK Z^{vi} c^oZ^{te} t^b Dc^vcb Kⁱt^Z c^vt^{ib} bv| w^{ek}vj DcvEⁱw^kt^K hvP^vB-ev^QvB K^ti tm t^jv^tK m^sw^lB^Ki^tYi ci, w^{etk}H^Y l e^vL^v Kⁱt^Z n^{te}, hv^tZ K^ti Z^vr^{ch}e^Yw^KQ^z Dc^msⁿvi Dc^vcb Kiv hv^q| DcvEⁱ hvP^vB-ev^QvB t^tK w^{etk}H^Yi ce^och^s-th m^KJ Kg^RvE^l m^{auv} b Kiv n^q, tm m^KJ Kg^Rv^tUⁱ m^{au}s^j Z i^fc^tK DcvE c^uqvKiY e^{tj} |

DcvEⁱ hvP^vB-ev^QvB t^tK w^{etk}H^Yi ce^och^s-th m^KJ Kg^Rv^tUⁱ m^{au}s^j Z i^fc^tK DcvE c^uqvKiY e^{tj} |

DcvE c^uqvKi^tYi w^u c^{av}b Kg^Rv^U i^tq^tQ| G^Kw^u n^{tj}v, DcvEⁱ m^{auv} bv I hvPvB (editing and verification) Ges Ab^wu n^{tj}v, DcvEⁱ m^sw^lB^Ki^Y (summarization)| DcvE m^sw^lB^Ki^Y w^of^vte Kiv hv^q – m^vs^tK^Zx^Ki^Y (coding) l m^vi^wY^Ki^tYi (tabulation) g^{va}tg| GB Kg^RvE^l t^jv G^tK Actⁱi m^vt^l m^{au}s^jK^h n^{tj}l tm t^jvⁱ g^{ta} cv^r i^tq^tQ| m^{auv} bv I hvPvB n^{tj}v cⁱY^KZ c^kg^vv ev m^vl^vr^Kvi Ab^mP^x t^jvi g^{ta} t^Kv^b f^j-a^ws^l-i^tq^tQ w^K bv, Z^v m^bv³ K^ti tei Kiv Ges tm t^jv^tK x^fZ Kiv| w^{ek}vj Zⁱw^kt^K m^sw^lB^Ki^tYi g^{va}tg w^bq^s t^hv^M c^wi g^vt^Y w^{btq} Av^mvi c^uqv^wu n^{tj}v m^vs^tK^Zx^Ki^Y| t^Kv^b t^Kv^b t^ll, m^vs^tK^Zx^Ki^Yt^K G^Kw^u m^vavi Y Kg^RvE^l e^{tj} g^{tb} n^{tj}l m^vs^tK^Zx^Ki^Y c^uqv^q c^obi c^wi g^vt^Y Aw^fA^Zv^j a^l w^{ete}P^bvc^hZ w^mx^vs⁻M^ht^Yi w^lZ^v c^ok^hbi c^oqv^Rb n^q| DcvE w^{etk}H^Yi c^{te}o DcvEⁱ g^j w^{au}k^o t^jvi K^xq^Zv c^ok^hbi R^b Zⁱw^kt^K m^vi^wY^x Kⁱt^Z n^q| w^lz^l M^{te}l^Yvi t^ll, m^vi^wY^Ki^Y c^uqv^wu n^vZ n^vZ m^{au}b^oKiv hv^q, Z^{te} Z^vt^Z K^wi Mⁱx w^lZ^vi c^wi e^tZ^co^{bi} c^wi g^vt^Y h^Ze^l m^wK^Zv l w^{au}th^o c^oqv^Rb n^q| hv^l M^{te}l^Yw^u eⁿr n^q, Z^{te} Z^v K^wu^DU^vtⁱ g^{va}tg h^vh^l ce^oc^wi Kⁱ bv l w^lZ^vi m^vt^l m^{auv} b Kⁱt^Z n^q| GB c^vt^V Av^giv m^{auv} bv I hvPvB w^{btq} w^lwⁱ Z^fv^{te} Av^tj^vP^bv Kⁱte^v Ges cv^W 2 l 3-G DcvE m^sw^lB^Ki^tYi Ab^wu Dcv^q (m^vs^tK^Zx^Ki^Y l m^vi^wY^Ki^Y) w^{btq} Av^tj^vP^bv Kⁱte^v |

m^{auv} bv I hvPvB (Editing and Verification)

cⁱY^KZ c^kg^vv ev m^vl^vr^Kvi Ab^mP^xi g^{ta} m^{au}te^l f^j-a^ws^lK w^Pv^YZ K^ti tm t^jv^tK h^ZU^Kz m^{au}e m^st^kv^{ab} K^ti DcvEⁱ Y^MZ g^{vb} e^wx^B n^{tj}v m^{auv} bv I hvPvB^Ki^tYi g^j D^tl^k G^ul M^{te}l^Yv c^uqv^q m^et^Pt^q w^ei^w3^{Ki}, w^{au}g^wE^K, axi M^wZ^mau^be^o c^pi^ve^wE⁻c^oY Ges G^Ktⁿt^q G^Kw^u Kv^R| w^KS^l D^Ei^vZ^{vi} Kv^Q t^tK, ev g^v t^tK t^{dir} Av^mv cⁱY^KZ c^kg^vv ev m^vl^vr^Kvi Ab^mP^xi g^{ta} th t^KD G^K S^jK w^o w^tj^B Ab^ov^eb Kⁱt^Z c^vite^b th, m^hZ^e

máúv`bv I hvPvB-Gi ubi½k cŃqvRbxqZwU KZ Ri`ix| GKRb mvŃvrKvi MŃhYKvix hZ
`ŃB trvK bv tKb, wZwb wKQžZB wbuŃZ cŃZkŃwZ w`tZ cviteb bv th, mvŃvrKvi MŃhYi
mgq wZwb tKvb fj Kižeb bv| Ggb wK, GKRb tkŃ mvŃvrKvi MŃhYKvixl fj Kti _vtKb|

wefbœDrm t_žK fj -áwšž Rbž ntZ cvti | GKRb mvŃvrKvi MŃhYKvix mvŃvrKvi MŃhYi
wbž`RvejxtK fj ešžZ cvtib, cŃkœwRÁvmv Kitž fjž thžZ cvtib, DĚi wj wce× Kitž
fjž thžZ cvtib, DĚižK A`úofvte wj wce× Kitž cvtib, ev DĚi wj wce× KitžI fj
Kitž cvtib| mvŃvrKvi MŃhYKvix máúv`bv I hvPvB-Gi KvrwU `ii` Ktib gw chŃq
mvŃvrKvi MŃhY tkl Kivi mvž_ mvž_B| KviY, fj -áwšž-žkvaivžbv mežPtq mnR nq, hw` Zv
mvŃvrKvi MŃhYi ciciB wPwYZ Kiv hvq| Zž, Gi A_ŃGB bq th, gw t_žK tdivi ci
máúv`bvi Avi cŃqvRb žB| mvŃvrKvi MŃhYKvix gw chŃq hZ hžZž: mvž_B cžYKZ
mvŃvrKvi AbjnPx máúv`bv Ki`b bv tKb, Pevš-máúv`bwU Kiv cŃqvRb MželžKi KvhŃž žq,
Zvi wbr`^ZĚjeavž| cžYKZ WwK cŃkŃvj vi žŃžž, máúv`bv I hvPvB-Gi KvrwU gvžV Kivi
tKvb mžhM žB| tmwU MželžKi KvhŃž žqB máúv`bv KižZ nq|

cžYKZ cŃkŃvj ev mvŃvrKvi AbjnPx máúv`bv I hvPvB-Gi žŃžž, GKwU „i`ZcYŃwel qžK
wežPbvq ivLv cŃqvRb| tmwU ntžv, cŃi wK chŃq wK me_žv mvŃvrKvi AbjnPx ev
cŃkŃvj vtK máúv`bv Kiv nž, bv wK Gi t_žK wKQzmsL`K ŃŃefvte wbeŃPb Kti Kiv nž? G
cŃhž½ tKvb evavaiv wbgq žB, Zž wmxvššU wbfP Kti wefbœaitžYi áwšž SŃK KZUKz
ižžž, Zvi Dci | hw` ŃwU nlqvi máŃebv Kg _vtK, Zž me_žv cŃkŃvj ev mvŃvrKvi
AbjnPx máúv`bvi gvažg mgq I máú` AcžPtqi tKvb thšw³KZv žB| wKš` wKQzmsL`K
cŃkŃvj ev mvŃvrKvi AbjnPx máúv`bvi ci, hw` t`Lv hvq th, ŃwU-wepžwZi cwigvY
Zj bvžj Kfvte AžbK tekx ižžž, tm žŃžž me_žv cŃkŃvj ev mvŃvrKvi AbjnPx máúv`bv
KivB žžž|

wK cwigvY cŃkŃvj ev mvŃvrKvi AbjnPx máúv`bv I hvPvB Kiv nž, tm wmxvšžš žvž_
AvžKwU cŃwž½K welžg wmxvšš-MŃhYi cŃqvRb ižžž| tmwU ntžv, GKwU cŃkŃvj ev
mvŃvrKvi AbjnPxi cživwžKb wK máúv`bv Kiv nž, bv wK tKvb GKwU wežkl Ask, ev cŃkŃK
máúv`bv Kiv nž? hw` GKwU wežkl Ask, ev cŃkŃK cixŃv Kti t`Lv nq, tm žŃžž mževwU
ntžv th, GKRb máúv`bvKvix GKwU ev `ŃwU cŃkŃ: Dci `wŃ wbe× Kti KvhŃRifvte
máúv`bvi KvrwU Kitž cvtib| Ab`w žK, GKwU cživ cŃkŃvj ev mvŃvrKvi AbjnPx cixŃv
Kti t`Lvi gvažg wefbœcŃkŃel DĚžž žž` máúYžv, mwKZv I mžwZcYžvi máúžKŃ
GKwU mvgwMŃ wŃ tčžZ cvtib| GžZ Kti, GKRb mvŃvrKvi MŃhYKvixi `ŃZvžKI hvPvB
Kti t`Lv hvq|

KvhŃRi wixŃv wbuŃZ Kivi žžž, máúv`bvKvixi Rb` wžž`Rvejx mážž Z GKwU wžž`ŃKv
_vKžZ nž, hv cŃZwU máúv`bvKvix máúv`bvi mgq Abjnyi Kižeb| máúv`bv `ii`i cžŃ
máúv`bvKvixi`i Dchžß cŃkŃŃY w`žq wžžZ nž| MželYvi Džž`k, wefbœPžK I mPžKi
cwigvc Ges tm_žvi „i`Zj máúžK`máúv`bvKvixi h_vh_ Ávb _vKžZ nž| GKwU cžYKZ
cŃkŃvj ev mvŃvrKvi AbjnPžK mvžKZxKiY, mvivYKiY I wežkžžYi Rb` thw` ežž
wežwPZ Kivi cžŃ, MželKžK KZ_žv „i`ZcYŃwel q wbuŃZ Kti wžžZ nž| tm welq_žv
ntžv cžYKZ cŃkŃvj ev mvŃvrKvi AbjnPxi máúYžv, mwKZv, GKijcZv, `úofvte
cVžhM`Zv, tevaMg`Zv I mžwZcYžv|

máúv`bv `ii`i cžŃ
máúv`bvKvixi`i Dchžß
cŃkŃŃY w`žq wžžZ nž|
MželYvi Džž`k, wefbœPžK
I mPžKi cwigvc Ges
tm_žvi „i`Zj máúžK`
máúv`bvKvixi h_vh_ Ávb
_vKžZ nž|

máúYžv (Completeness): máúYžv cixŃvi cŃvb welqiw ntžv th, cŃZwU cŃkŃ DĚi
wj wce× Kiv nžžž wK bv, Zv cixŃv Kti t`Lv| mvŃvrKvi MŃhYKvix hw` tKvb cŃkœwRÁvmv

KiZ fj hvb, ev tKvb cOkie DEi wj wceX KiZ fj hvb, tm tqtI KZ tjt mae Dcvq Zv mstkvab Kiv thZ cvti | fj wU hw gw chq aiv cto, Zte DEi vZvi KvQ cpiq wMtg Zv tRtb Amv thZ cvti | wKS' hw fj wU gw t_tK tdivi ci aiv cto, tm tqtI Ab'vb' cOmWzK cOkie DEi t_tK mae DEiW Abgvb Kti, ev 'si Ykw³ e'envi Kti tm kb'Zv ciY Kiv thZ cvti | msk'e- cOkie DEiW hw Lp 'i'ZcY^onq, tm tqtI DEi vZvi KvQ wdti wMtg, ev hw' cw w' wZ mg_8 Kti, Zvntj WwKthvM DEi vZvi KvQ cpiq tRtb tbevi gva'tg kb'ZwU ciYi Dt' wM MhY Kiv DvPr |

*hw' t'Lv hvq th, tKvb
wetkl mvqvrKvi AbmPxtZ
AtbK tekx cwigtY cOkie
DEi tbB, tm tqtI ati
tbqv thZ cvti th,
mvqvrKvi MhYKvixi
A' qZvi KviY DEi vZv
DEi vtb Aw'OK wdtj b |*

wKS' cOkie tcvqvcU, ev Ab'vb' cOmWzK cOkie DEi t_tK hw' GuU wbaFY Kiv bv hvq th, DEi vZv wK DEi w' tZ A' xKuZ RwbqtqQtb, bv wK mvqvrKvi MhYKvix cOkieRAvmv KiZ fj wMtgQtb, bv wK DEi wj wceX KiZ fj wMtgQtb, bv wK cOkie DEi vZvi Rb' cOhvR' wQj bv, tm tqtI mgm'wU RuUj AvKvi aviY Kti | Ab'vb' cOmWzK DcvE t_tK cOkie cOhvR' DEiW nqtZv Abgvb Kiv thZ cvti, wKS' DEi ev' covi Ab'vb' KviY tjtvi e'vL'v cOvb Kiv hvte bv | GKRb cOkie qZ I mZK^omvqvrKvi MhYKvix maviYZt, G aiYi fj Kg Kti _vtKb | wKS' hw' t'Lv hvq th, tKvb wetkl mvqvrKvi AbmPxtZ AtbK tekx cwigtY cOkie DEi tbB, tm tqtI ati tbqv thZ cvti th, mvqvrKvi MhYKvixi A' qZvi KviY DEi vZv DEi vtb Aw'OK wdtj b | G aiYi Am'uy^omvqvrKvi AbmPxtK wetk'Y t_tK ev' w' t'q w' tZ nq | cOs- tLjv cOkie Rb' m'uy^ovi cixqv Kiv KvZt Am'ae | tm tqtI, DEiW 'uo'fivte wj wceX Kiv ntqtQ wK bv Ges Zv tgvUvgUfvte A_^oenb Kti wK bv, GuU wbaFY Kiv Qrov Avi tekx wKQzKivi _vtK bv |

*mvqvrKvi MhYKvixi
AmZKZv t_tK, ev DEi vZv
KZR avs-DEi t'evi
mtPZb cQym t_tK, ev
tmSRb' gj K DEi t'evi
cEYZv t_tKl aw'si Rb'
ntZ cvti |*

mWkZv (Accuracy): ciYKZ mvqvrKvi AbmPx ev ckgvj v m'uv' bv I hvPvB-Gi tqtI 'i'ay cOZwU cOkie DEi itqtQ wK bv, tm welqU t' Ltj B Pj te bv, DEi tjt mWk wK bv, ev DEi tjtvi gta' tKvb Am'wZ itqtQ wK bv, Zvl cixqv Kti t' LtZ nte | thgb, hw' GKwU ckgvj ev mvqvrKvi AbmPxtZ t'Lv hvq th, GKRb miKvix KgRZ^o eqm 32 eQi Ges c'gh^ovi w' K t_tK hM' mPtei c'wUtZ wK w'Y t' qv itqtQ, Zte ati wdtZ nte th, 'wU Zt' i gta' tKvb GKwU fj | nq DEi vZvi eqm fj tjtLv ntqtQ, bZev Zvi c'gh^o v fj tjtLv ntqtQ | G aiYi fj tjtvtK 'i Kivi Rb' meZ'K cOPov _vKtZ nte | AtbK mgq mWk DEi tKl AvciZt' wotZ aw'seY^ogtb ntZ cvti | tm tqtI, mZKZvi mvt_ j q' i vL'tZ nte th, mstkvab tjt thb 'i'agvI 'wUcY^o DEi tjtvi tqtI B Kiv ntqtQ | mvqvrKvi MhYKvixi AmZKZv t_tK, ev DEi vZv KZR avs-DEi t'evi mtPZb cQym t_tK, ev tmSRb' gj K DEi t'evi cEYZv t_tKl aw'si Rb' ntZ cvti |

mvqvrKvi MhYi mgq, mvqvrKvi MhYKvix maviYZt GKwU gvbwK Pvtci gta' _vtKb | KviY, ZvtK GKB mvt_ cOkieRAvmv KiZ nq, DEi wj wceX KiZ nq, Ges cOqvRbtevt DEi vZvtK, tcvrmmnZi KiZ nq | GtZ Kti, wZwb GKwU fj DEi -' dvtK wPwYz Kti tdjtZ cvtib | AtbK mgq, DEi wj wceX KiZ wMtg mvqvrKvi MhYKvix t'OU-LvU wYqgjK wnmve KiZ nq etj tmB me wnmve t_tKl aw'si Rb' wdtZ cvti | thgb, mvqvrKvi MhYKvix t'K hw' wevfb'Avtqi Drm t_tK cOB Avtqi thvMdj wYq KiZ nq, tm tqtI Zvi AmZKZvi Rb' thvMdj wU fj ntZ cvti | G QrovI, tKvb cOkie DEi i tqtI, GK GKK t_tK Ab' GKtK (thgb, MR t_tK wUvi, ev weNv t_tK tn±i) ifcv'si mgq fj ntZ cvti | wYqgjK wnmve KiZ nq, Ggb DEi wj wceX Kivi mgq, thvMdj ev GKK cwieZ'bi KvRuU mvqvrKvi MhYi mgq bv Kti gw t_tK wdti Gtm Kiv DvPr | cOs- tLjv cOkie tqtI, G aiYi aw's-tekx ntq _vtK | mhZem'uv' bv I wixqv' gva'tg GB aw's- tjtvtK 'i Kti mWkZvtK wbwOZ Kiv hvq |

m½wZcYzv (**Consistency**): GKw cłgıj v ev mvřvrKvi AbıjPxi gřa` cři cwi gıY Am½wZi Dcw`wZ i agvı mstKZxKiYKvixi Rb`B mgm`v %Zwi Kři bv, řm ,řj v DcvE msMđ ev wj wce×KiřYi mgm`řKl Bw½Z Kři | řhg b, DEi`vZv hw` řKvb Avq Ges mřu` bv _řřK, Ges řmB DEi`vZv hw` Mđtg emevm Křib Ges wZwb hw` Rvrvb řh, Zvi Avřqi AvıKvsk e`q nq e`jıwZK wej cwi řkva Kivi Rb`, Zvřřj eřřZ nře řh, DEi w m½wZcY` bq| G aiřYi cwi w`wZřZ, ZvrřwYKřvře GB Am½wZi Dřm AbıjUvb Kři Zv`řřřZ KřřZ nře| hw` Zv Kiv bv hvq, Zře řmB bgřwU ewřZj Kři bZb bgřvi mvřvrKvi wřřZ nře| Avi hw` Z`wU řZgb ,i"ZcY`bv nq, řm řřřř Zv ewřZj Kři ř`qvB řkř| bZb bgřvi mvřvrKvi řbevi řKvb cřřqvRb řbB|

GKıřZv (**Uniformity**): mvřvrKvi MđřYi mgq, mvřvrKvi MđYKvix cłke Ges wřř` řvej řřK KGBřvře e`vL`v l gj`řqb Kři řřQb wK bv, mřu`v`bKvixřK Zv mZKřvi mřř` cıřřřv Kři ř`řřZ nře| aiv hvK, cwi ewi K Avq-e`q mřřřř-GKwU MřelYvq, GKwU cłke i řřřř řh, řcřř gřřm cř-cwř Kv l mvgıqKxi Rb` Avcwb KZ UvKv e`q Kři bđ? G cłwU řKej gřř řm mKj cwi evři i řřřřřB cřhvR` nře, řh cwi evi ,řj v ewřřřZ w bqıgZ` w bK cř-cwř Kv l mvgıqKx ivřLb| mřu`v`bvi chřřq ř`Lv řMj řh, řKvb řKvb mvřvrKvi MđYKvix Ggb DEi`-`dvq wUK wPy w řřřřQb, hv řmB DEi`vZv i řřřř cřhvR` bq| Kvi Y, řm cwi evři řKvb cř-cwř KvB ivLv nq bv| Avi l GKwU D`vni Y ř`qv řřřZ cvři | řhg b, cwi ewi K Avq mřřřř-GKwU cłkē wřř` řvej řřZ ej v nřřřř řh, řmKj Dřm ř`řK Amřř Avřqi Z` wj wce× KřřZ nřeř| wKř` ř`Lv řMj řh, řKvb řKvb mvřvrKvi MđYKvix cwi evi cřřřřvi Avřqi wřřřřřDřm ř`řK Amřř Ař`ř cwi gıY Dřj l-Kři řřQb, wKř` řxi Abvrvřw bK LvZ ř`řK Avřqi cwi gıY wj wce× Křib w b| G aiřYi řwřřř, mřu`v`bvi cři wřK chřřq wPyřZ Kři`ř Kiv mñR nq| AZGe, mřu`v`bvi KvrwU hZ řekř cři wřK chřřq i i" Kiv hvq, ř`wU ,řj v mřřkvıřvi mřřhvM _řřK ZZ řekř|

`úóřvře cvřřhvM`Zv (**Legibility**): mvřvrKvi MđYKvix, chřřřřK, ev cłgıj v cıYKvix řh me cřřřK e`envi Kři řřQb, ev Zřř`i nřřZi řj Lv hw` cov bv hvq, Zře mřřřKZxKiY Amřē nřq cřř| řm Rb`, cłgıj v ev mvřvrKvi AbıjPxi ,řj v hLb gıw ř`řK řdir Avřřm, ZLb řm ,řj vřK řřřřřřvře cıřřřřv Kři ř`Lv`iKvi řh, nřřZi řj Lv`úóřvře cov hvq wK bv| cřřřřřřřřřřř, ZvrřwYKřvře cřivq`úóřvře wj wLřq wřřZ nře| wKř` GřZ mřřřKZxKiYKvixi Rb` GKwU evwřZ Svřřj v %Zwi nq| Kvi Y, mvřvrKvi MđYKvixřK Lřř cvl qv AřřK mgq mgm`v nřq`wovq Ges mřřřKZxKiY cřřřřř i i" nřq hvevi cı, Zv cłq Amřē nřq cřř|

řevaMg`Zv (**Comprehensibility**): DEi`vZv KZř cđE DEi mvřvrKvi MđYKvix, ev chřřřřřřřřřř Křřř mřu`Yřvře řevaMg` nřZ cvři, wKř` mřřřKZxKiYKvix, ev Ab` e`w`i Křřř Zv bv l nřZ cvři | Kvi Y, řh cwi w`wZřZ DEi`vZv GKwU DEi`ř`b ev AvřřY Křib, mvřvrKvi MđYKvix, ev chřřřřřřř Křřř řmB cwi w`wZ LřB cwi wPZ, hv mřřřKZxKiYKvixi Křřř bq| dřj, řmB DEi`i gva`řg DEi`vZv cłKZcřřř wK řevřřřř řřřřřřQb, Zv mřřřKZxKiYKvix Abřřřř KřřZ cvřib bv| řm Rb`, w bqqZwřřřřřř cłcwmRÁvmv Kiv, ev chřřřřř Kiv Dcvřēi ,YMZ gıv ewıxı Rb` AZ`ř-Ri`ix| Dcvřēi gřa` řh řKvb aiřYi A`úóřv ev wēwřřř-řřb řKvbřvře řřřK cřřZ bv cvři, řm wēłřq mvřvrKvi MđYKvixřK mřēřřřřřřř mZK`vKřZ nře|

mvisk

DcvĒ msMñi ci, MtelK cĀg th KVRuJ Ktib Zv ntjv, th DcvĒ msMpxZ ntqtQ, Zvi h_v_Zv wbfCY Kiv| DcvĒi h_v_Zv wbfCY MtelK `ñu cñvb KVR Kti _vKb — m=úv`bv I hvPvB| m=úv`bv I hvPvB ce©tkl nIqvi ci, cĀB DcvĒK mstKZxKiY I mviYxKiYi gva`tg eYĒv I wtkHĒYi chĒq tbqv nq| GB cĀμqvU mvaviYZt cwi gvYMZ DcvĒi tĒĒĒ tekx AbmiY Kiv nq| _YMZ DcvĒi tĒĒĒ, GKB hĒ³ e`envi Kiv nq, wKŠ' mviwYKiY ZZUv cñvb` cvq bv| DcvĒ wKfvte cĀμqvRvZ Kiv nte, Zv gj Zt MtelYvi aiYi Dci wbfP Kti | GB cvtV, cwi gvYMZ DcvĒi K_v wetePbvq ti tL m=úv`bv I hvPvB -Gi Dci Avtj vPbv Kiv ntqtQ|

cvfVvEi gj`vqb

`be⁹³K cċæ

mWVK DĒti i cvfk WJK (√) WPy w` b –

1| DĒti i tŋtĪ āwšt RbŋntZ cvti:

- K. āvš-DĒi t`evi cċym t_ŋK
- L. tmsRb`gj K DĒi t`evi cċym t_ŋK
- M. mŋŋvrKvi MōYKvixi AmZKZv t_ŋK
- N. Dcŋi i me|

2| cċB DĒti i T`W ŋtj v mstkvatbi mŋhM tekx_vŋK:

- K. mŋŋvrKvi MōtYi i i`ŋZ
- L. mŋŋvrKvi MōtYi ŋktl
- M. cċŋj v m`uv`bvi i i`ŋZ
- N. Dcŋi i me|

3| GKW ciYKZ mŋŋvrKvi AbmPx ZLbB weŋkŋYi Rb` thM` etj weŋwPZ nŋe, hLb Gi
_____ wvōZ etj `ŋKwZ cŋe|

- K. mWVKfvŋe cvŋhM`Zv
- L. GKifcZv
- M. m½wZcYZv
- N. Dcŋi i me

msŋŋB cċæ

UxKv wj Lp:

- K. ciYKZ mŋŋvrKvi AbmPxŋZ m`uv`Zv
- L. cċŋj vi tevaMg`Zv

i Pbvċj K cċæ

1| DcvĒ cċμqvKiŋYi ŋi`ZiD`vniYmn Avŋj vPbv Ki`b|

2| DcvĒ cċμqvKiŋYi tŋtĪ, m`uv`bv l hvPvB -Gi fŋgKv Avŋj vPbv Ki`b|

DcvĒ mswŋBKiY 1 – mvsťKZxKiY
Data Reduction 1 – Coding

GB cW tkŋl hv Rvbr hvŋe —

- mvsťKZxKiY wK
- mvsťKZxKiŋYi wbgvej x
- Aeti vnxgj K I Avŋi vnxgj K mvsťKZxKiY
- mstKZ-eB wbgŋŋ
- mvsťKZxKiŋYi mvavi Y wbt` Rbv
- DcvĒ Ašfŋŋi tkŋskj
- mvsťKZxKiŋYi wbfŋkxj Zv
- DcvĒ wei xKiY

mvsťKZxKiY wK (What is Coding)?

AvRKvj Kvi w`tb GiU ati tbqv nq th, wetkŋŋYi Rb` mswŋxZ DcvĒ mvsťKZxKiY, msiŋŋY, cwi`xKiY I wetkŋŋYi KvRiU KwúDUvŋii gZ hšj e`envŋii gva`tg m`úwæKiv nŋel thŋnZi KwúDUvi eYŋvgjK e³e`ŋK eŋŋZ cvŋi bv, ŋmŋnZi KwúDUvŋii fvlvi mvŋ_ mŋwZcY[©] Kŋi ZjŋZ nŋj, DcvĒiwkŋK mSL`vq ifcvšŋi KiŋZ nŋel GKwU PjŋKi chŋeŋŋYKZ `ewkŋŋi cŋZ eivŋKZ mSL`vmPK cŋZxKŋK ŋmstKZŋ (code) eŋj Ges eYŋvgjK e³e`ŋK mSL`vmPK cŋZxK ev mstKŋZ ifcvšŋi cŋŋwŋŋŋK ŋmvsťKZxKiYŋ (coding) ej v nq| A_ŋ, mvsťKZxKiY nŋjv DcvĒ cŋŋwŋŋŋi ŋmB Kjv tkŋskj, hv tkvb chŋeŋŋŋYi Rb` cŋB eYŋvgjK DĒi`_ŋj vŋK tkYxex Kŋi mŋbw`ŋ DĒi`_`dvq cwiYZ Kŋi Ges ŋmB DĒi`_`dv`_ŋj vŋK mSL`vmPK ev cwi gvYMZ mstKŋZ ifcvšŋi Z Kŋi | thgb, wj ½ Pj KŋUi Rb` eivŋKZ DĒi`_`dv iŋŋŋŋ ŋbvi xŋ Ges ŋcj`lŋ| GB ŋbvi xŋ Ges ŋcj`lŋ -Gi kŋMZ cŋZxK`ŋŋŋK mSL`vmPK cŋZxK ifcvšŋi Z KiŋZ nŋj, Gi weciŋŋZ h_vŋŋŋ, ŋ1ŋ Ges ŋ2ŋ mSL`v ievŋ KiŋZ nŋel KwúDUvi wj ½ PjŋKi`ŋŋŋ `ewkŋŋK wŋvŋZ Kiŋe ŋ1ŋ Ges ŋ2ŋ w`ŋŋ, ŋbvi xŋ I ŋcj`lŋ w`ŋŋ bq|

*mvsťKZxKiY nŋjv DcvĒ
cŋŋwŋŋŋi ŋmB Kjv
tkŋskj, hv tkvb chŋeŋŋŋYi
Rb` cŋB eYŋvgjK
DĒi`_ŋj vŋK tkYxex Kŋi
mŋbw`ŋ DĒi`_`dvq cwiYZ
Kŋi Ges ŋmB DĒi`_`dv`_ŋj
vŋK mSL`vmPK ev
cwi gvYMZ mstKŋZ
ifcvšŋi Z Kŋi |*

PjŋKi `ewkŋŋi weciŋŋZ mSL`vmPK mstKZ eivŋŋi iŋŋŋŋ, th weliŋŋŋ`iŋŋŋi mvŋ_ wetePbv KiŋZ nŋe, ŋmU nŋjv, th tkvb mstKZŋK mgifc cwi w`wZŋZ, NUbv ev wetkŋŋYi GKK Abŋwŋx mvŋŋm`cY`nŋZ nŋel thgb, hLb Avgiv ŋ1ŋ w`ŋŋ ŋbvi xŋ I ŋ2ŋ w`ŋŋ ŋcj`lŋKŋ mvsťKZxKiY Kiŋev, ZLb wj ½ PjŋKi mvŋ_ m`úwæKŋ mKj bviŋŋKB mstKZ ŋ1ŋ -Gi gva`tg wŋvŋZ KiŋZ nŋel iaye`w³i iŋŋŋŋŋB bq, ŋMŋŋi `ewkŋŋKl mstKZ eivŋ Kiv ŋŋŋZ cvŋi | aiv hvK, GKRB Mŋel K KŋqKkŋ e`w³i tckvi Dci Z`_ mswŋŋ Kŋi wewfŋŋŋckvi aiY`_ŋjv wj wce x Kŋiŋŋŋ | thgb, K.L.K, tRŋj, Kvgvi, Kgyvi, bwcz, Qzvi, gŋP, ŋmweKv, w`b-gRj, DŋKj, wŋKrmK, cŋKŋskj x, wŋŋŋK, wbeŋŋx Kgŋŋŋŋ, mvsew`K, wcbq, cŋj k, mvŋwi K Kgŋŋŋŋ, we`ŋr wefŋŋMi Kgŋŋ, BZ`w` | tckvi GB wewfŋŋŋaiY`_ŋjv w`ŋŋ miwmi DcvĒ wetkŋŋ Kiv hvq bv| KviY, tckvi aiY`_ŋjvi gŋa` AŋbK tekx wewŋŋ iŋŋŋŋŋ | ŋm Rb`, G`_ŋj vŋK mswŋŋB Kŋi wKŋwŋw`ŋ tkYxŋZ wef³ KiŋZ nq| Mŋel Kŋi`i Kvŋŋ MŋŋŋŋŋM` GKwU tkYxexKiY cŋŋwŋŋ gva`tg DcvĒ³ tckvi aiY`_ŋj vŋK mswŋŋB Kŋi wetkŋŋŋŋŋM` Kŋi iZvjv ŋŋŋZ cvŋi | thgb,

tckvRixex: Dwkj , c0Kškj x, wk¶K, wPwKrmK, mivew` K, mvgwi K KgRZ¶

tmev c0 vbKvi x: tmeKv, cyj k, we`jr wefv¶Mi Kgx¶

`¶ klgK: Kvgvi , Kgvi , bwcz, Ozvi , g¶P |

A`¶ klgK: K.I.K, w` b-gRj, tRtj |

mvsťKZxKiťYi wbgvej x (Rules of Coding)

thtnZi mvsťKZxKiY ntjv DEi-`dvtK A_řevaK tkYxťZ tkYxex Kivi c0µqv, tmtnZi mvsťKZxKiťYi c0µgK wbggµW ntjv th, th me msL`v,tjv eivl Kiv nte, tm,tjvi thb `ÁVMZ (intuitive) A_©_vtK | A_ř, GKµU PjťKi D`PgybtK D`P mvsťKZ eivl KiťZ nte | th e`w³i eqm Abťi Zj bvq teuk, Zvi eqťmi t¶¶ť D`PZi mvsťKZ c0vb KiťZ nte | thgb, GK Rťbi eqm 28 eQi ntj , Zvi msL`vmpK mvsťKZ nte 28 Ges 35 eQi eq` e`w³i mvsťKZ nte 35 | GgbµK hw` eqťmi tkYx,tjv µggj Kfvte tkYxex Kiv nq, tm t¶¶ť tekx eq` e`w³iv D`P eqm=úbae`ťji mvt_ m=úwKZ nte | e`wBggj K PjťKi t¶¶ť, GB wbggµW Lp mnťR c0qvM l c0k0 Kiv hvq | wKš` msÁVMZ KviťY wKQz PjťKi Rb, wetkl Kti bvgmPK gvťvq cwi gvcKZ Pj K,tjvi t¶¶ť, msL`vmpK mvsťKZ eivťi tKvb `ÁVMZ mťšw RbK thšw³K wfvE tbB | thgb, wj tzi t¶¶ť cj`lťK 020 Ges bviťK 010 mvsťKZ c0vťbi gva`tg cj`tl i wj ½MZ gh¶v w0,Y ntq hvq bv | Dciš, ZvťiťK hw` h_vµtg 3 Ges 4, A_ev 4 Ges 3 msL`v eivl Kiv nq, ZvťZl tKvb Zdvr nte bv | hLb mÁVMZ Ať_P kZ0 cťY ntq hvq, ZLb cvi`úwiK weukóZv (mutual exclusivity), mvgµMKZv (exhaustiveness) Ges cyLvbcyLZvi (detail) Dcv`vb,tjv mvsťKZxKiťYi wmvťšit gta` wetePbv KiťZ nq |

bvgmPK gvťvq cwi gvcKZ
Pj K,tjvi t¶¶ť, msL`vmpK
mvsťKZ eivťi tKvb
`ÁVMZ mťšw RbK thšw³K
wfvE tbB |

cvi`úwiK weukóZv (Mutual Exclusivity): wbggZ mvsťKZxKiY QťK Ašřß mvsťKZ `dv,tjvtK Aek`B cvi`úwi Kfvte weukó Ges mvgµMK nťZ nte | cvi`úwiK weukóZvi wbgg Abhvqx c0ZµU PjťKi mvsťKZ `dv,tjvtK Ggbfvte wbg¶Y KiťZ nte, hvťZ Kti c0ZµU NUbv, ev wetklťYi GKK tKej gvť mskó-PjťKi GKµU `dvqB Ašřß nq | thgb, e`w³i agřej řZvi t¶¶ť, g¶nj gvb l wv`y ag`µUťK `µU Avjv`v `dvq wPwYZ KiťZ nte | MtelKťK Avi l wv0Z nťZ nte th, Zvi evQvBKZ DEi-`dv,tjv thb GZ we`Z bv nq, hvťZ Kti DEi-`dvi gta` „ZcY`cv`R`„,tjv A`úo ntq hvq |

mvgµMKZv (Exhaustiveness): mvgµMKZvi A_© ntjv, cZ`wKZ DEi-`dvi me,tjv `dvtKB Avjv`v Avjv`vfvte wPwYZ KiťZ nte, tKvbwťK ev`ťqv hvte bv | thgb, eewwK gh¶v tkYxexKiťYi t¶¶ť, Avgiv hw` 0AweewwZ0, 0weewwZ0, 0Zvj vKc0B/Zvj vKc0Bv0 Ges 0weaev/wecZwK0 GB PviwU `dvi gta` mxgve`_wK, Zvntj GB tkYxexKiYwU mvgµMKZvi `enkó` nwiťq tdťj | KviY, 0`vgx cwi Z`³v0 ev 0wev`QbEfvte emevmKviw0 e`w³ťK Gi gta` Ašřß Kiv nq bv | AZGe, G aiťYi Avi l `µU DEi-`dv mvsťKZxKiY QťKi gta` Ašřß Kiv DvPr | hw` GKµU PjťKi Aaxťb cZ`wKZ DEi-`dv,tjv mvgµMKZv bv nq, tm t¶¶ť 0Ab`vb0 DEi-`dvi gta` metPťq teuk NUbv Ašřß ntq cotē | cvkvcwK, 0DEi`vťb A`řKwZ0, 0DEi bv`ťqv0 Ges 0c0hvR` bq0 mvsťKZ `dvtKI D³ PjťKi mvsťKZ `dvi gta` Ašřß KiťZ nte |

cyLvbcyLZv (Detail): GKµU mvsťKZxKiY QťK Ašřß DEi-`dv,tjvi cyLvbcyLZv MtelYv m¶vi Dci wbf¶ Kiťj l Gi wKQz mraviY wbgg iťqťQ | clgZt, DEi-`dv

WpnyZKiY mautKqKvb mfn vKtj, GKw bZb DEi-` dv hy3 Kiv thZ cvti | wZxqZt, chfj vPvi ci, hw wKQz wKQz DEi-` dvi gta Lp tekx cv_R wbfcy Kiv bv hvq Ges DEi-` dvi mSLv AfbK tekx ntq hvq, tm tjtj wewfbwDEi-` dvtK m%wPZ Kti cZ`wkZ DEi-` dv wbgfY Kiv thZ cvti | Zte gtb ivLz nte th, GKevi DEi-` dv wPnyZ ntq tmjt, tmB DEi-` dv tjtvtK Avi cti tft% bZb DEi-` dv `Zwi Kiv hvq bv | ZZxqZt, MtelYv mgm`vi mvt_ mautKZ ZEj, MtelYv mgm`v I MtelYvarb RbtMvxi Dci MtelKtKi Avtbi wfwEz DEi-` dv tjtvtK mstkrab I wbgfY Kiv DvPr |

Aetivnxgj K I Avtinvxgj K mvtKZxKiY (Deductive and Inductive Coding)

DEi-`vZvi KvQ t_tK MtelK wK aitYi DEi-` dv cZ`vkv Kiteb, tm mautKqWZwb ZEj t_tKB aviYv MhY Kti v_tKb | A_w, th me MtelK cwigvYgj K wetkHtYi mvt_ mskk, Zviv mvaviYzt ZEj t_tK Avnwi Z Abki cixqv Ktib Ges Zvt`i e`euZ mvtKZxKiY e`e`wUj gra`tg Zviv tmB ZEjK mg_0, ev fj cgvY Kivi tPov Ktib | thgb, MtelK hw D`vi %wZKZv mautKqMtelYv Kitz Pvb, Zte ZEj ZvtK GB cZ`qWj eugwKZvi welqW mautKq K wbt`Rbv c0vb Kite | GKrb e`w3 mvgwRKfvte D`vi %wZK ntZ cvtib, wKs` A_wZKfvte bvl ntZ cvtib | A_w, GKrb e`w3 bvixi mstb tbevi, ev bv tbevi AvakvitK mg_0 Kijt I Rbt wbgfY cxwzi e`envi w`vti j`jt` miKvti A_`e`qtK mg_0 bvl Kitz cvtib | G tjtj, mvgwRKfvte D`vi %wZKZvi D`P gvb A_wZK D`vi %wZKZvi D`P gvbi mvt_ mautKZ nte bv | AZGe, DcvE msMni nWZvi MVtbi tjtj, mte` DEi-` dv wbgfY ZEjK e`envi Kti Aetivnxgj K mvtKZxKiY Kiv hvq | G tjtj, DEi-` dv tjtvt ce`wba`w Z ntq v_tK | Zte ce`cixqv (pre-test) gra`tg ZEj t_tK Avnwi Z cZ`wkZ DEi-` dv tjtvtK Avtiv Zx2 Kti tZvj v hvq |

*hLb DEi-`vZvi KvQ t_tK
wK aitYi DEi-` dv Avkv
Kiv hvq tm wltq ZEj
MtelKtK Lp GKUv w`K
wbt`Rbv w`tZ cvti bv, ZLb
Avtinvxgj K mvtKZxKiY
cxwzi e`envi Kiv nq |*

hLb GKw MtelYv eYvgj K nq, ev hLb DEi-`vZvi KvQ t_tK wK aitYi DEi-` dv Avkv Kiv hvq tm wltq ZEj MtelKtK Lp GKUv w`K wbt`Rbv w`tZ cvti bv, ZLb Avtinvxgj K mvtKZxKiY cxwzi e`envi Kiv nq | Avtinvxgj K mvtKZxKiY, MtelK`wj cT t_tK c0B Z_`, ev wewfbwckie DEi (wetk Kti c0S`Lvj v c0kie) t_tK c0B Z_`, ev AskMhYgj K chfjYi gra`tg c0B Z_t`i c0ZibwZgj K bgpvi wfwEz mvtKZxKiY QK wbgfY Ktib | GKw Avtinvxgj K mvtKZxKiY QtK th me DEi tekx Avtm, DcvE wetkHtYi Rb` tm tjtvt mvtKZxKiY QtK AS`f` Kiv nq | GKevi hLb MtelK GKw mvtKZxKiY QK wbgfY Kti tdjt b, ZLb Zv Awko DcvEi Dci c0qM Kiv nq | GKw D`vniY t`lqv hvK | aiv hvK, GKrb bvix Zvi `vgx KZR wbhZZ nevi ci wZwb wK Kitz cvtib, G c0kie DEti c0B DEi-` dv tjtvt Rb` GKw mvtKZxKiY QK wbgfY Kiv c0qRb | tm tjtj, mte` DEi tjtvt hv ntZ cvti, Zv ntj v wbgfY:

1. `vgxK tQto ewo t_tK Ptj hvtev |
2. `vgxi mvt_ t_tKB mgm`wU mgvavtbi tPov Kiteb |
3. tKvb eUzev AvZtqi KvQ mrvh` Pvbtev |
4. tKvb mvgwRK tmevgj K ms`vi KvQ civgtK` Rb` hvtev |
5. wbhZbKvix `vgxi w`t`x GKw mvgwqK wbt`l avAv Avtivc Kivi Rb` Av`vj tZ hvtev |
6. c`j`tk Lei t`tev |

t`Lv hvte th, ev`te Awakvsk bviXB G aiŷYi cŷZuquv e`³ Kiŷeb| GB DĒi` t`jv tekx Dvj wZ nq etj, G` t`jv gj DĒi`-`dvq `vb cvq| wKŠ` wKQz wKQz bvi x wfbœDĒi l w` t`Z cvtib| tKD DĒi` vtb A` ŷKwZ RvbtZ cvtib| tKvb tKvb bvi xi t`ŷtĀ, cŷkw cŷhvR` bvl ntZ cvti| tKD tKD nqtZv Rvttb bv th, Zviv wK Kiŷeb| Avevi tKvb tKvb cŷkvj v ev mŷŷvrKvi AbymPxtZ cŷkw i t`ŷtĀ, tKvb DĒi` wj wce x Kiv bvl `vKtZ cvti| G mKj mœebvi K`v wPŠv Kti Avti vnxgj K mstKZxKiŷYi gva`tg cŷvb DĒi`-`dv` t`jv wPvYZ Kivi ci, Mtel K Pœvš-mstKZxKiY QŷK wbgvj wLZ `dv` t`jv tK hy³ Ktib|

1. Ab`vb` (wbu` ŷ Ki`b)|
2. Rvb bv|
3. DĒi` vtb A` ŷKwZ
4. cŷhvR` bq (Kvi Y DĒi` vZv weevnZ bb)
5. tKvb DĒi` tbB|

Avti vnxgj K c`wZi cŷvb mjeav ntj v Gi bgbxZv Ges mg`Zv, hv Mtel Yvq cŷB Z` t` tK e`vL`v MVtb mnvqZv Kti| ZvOrov, Gw Mtel KtK GKw chŷeŷŷYi l ci wewfbœaiŷYi mstKZxKiY QK wbgŷYi mŷhvM Kti t` q Ges cŷqB GtZ bZb bZb DĒi`-`dvi cŷve Kiv hvq| GB c`wZi Amjeav ntj v th, GtZ wekvj DcvĒi wki e`vL`vi cŷPœvq Mtel K wK wew K nwi t`q t`jv t`Z cvtib| DĒi`-`dv wPvYZ Kiv memgq mnR nq bv, etj GKw meŷZK mstKZxKiY QK wbgŷ cŷuquv mœubœKiŷZ Mtel tKi `xN`mgq t`j tM hvq|

mstKZ-eB wbgŷ (Code-Book Construction)

mstKZ-eB ntj v, tKvb Pj K ev cŷkœ weciŷZ wK wK DĒi`-`dv `vKte Ges tm mKj DĒi`-`dvi weciŷZ wK wK mstKZ cŷvb Kiv nte, Zvi GKw cwi Kí bv| tmB cwi Kí bv Abjvqx Mtel K mstKZxKiY cŷuquv Kvhŷi Ktib| GB cwi Kí bvi iŷcŷi LwŷtK mstKZxKiY QK etj| mstKZxKiŷYi wbgqvej x AbymY Kti cŷZw Pj tKi Rb` mstKZxKiY QK wbgŷYi ci, G` t`jv tK GKw mstKZ-eBtq MŷŠZ Kiv nq|

mstKZ-eB wewfbœKvi ntZ cvti| Zte, th tKvb GKw Av`k`mstKZ-eBtq Pj tKi bvg l bœt, cŷZw Pj tKi Ae`vb, mstKZxKiY QK Ges nwi t`q hvl qv DcvĒi Rb` mstKZ mœuŷZ Z`vej x `vK| GB mstKZ-eBw mstKZxKiYKvixi Rb` (hvi v Acwi t`kwaZ DcvĒi K wœuDUvŷi cwi mSL`vbMZ weŷkŷY e`envŷi i Rb` iŷcvšt Kiŷeb) GKw wot`œKv wnmvte KvR Kti| Gw cŷvb Mtel Km Ab`vb` Mtel tKi Rb`, hvi v GB DcvĒi wktK e`envi KiŷZ Pvb, GKw mnvqKv wnmvte KvR Kiŷe| G Orov, AŷbK mstKZ-eBtq DcvĒi mŷMŷni Dŷt`k` cwi Pwj Z gj cŷkvj v ev mŷŷvrKvi AbymPxtKl AŠŷŷ Kiv ntq `vK| GKw mstKZ-eBtqi wK AwŷK n l qv DvPr, Zvi mŷŷŷB D`vni Y mvi wY 9.2.1-G t` Lv t`bv ntj v|

mstKZ-eB ntj v tKvb Pj K ev cŷkœ weciŷZ wK wK DĒi`-`dv `vKte Ges tm mKj DĒi`-`dvi weciŷZ wK wK mstKZ cŷvb Kiv nte Zvi GKw cwi Kí bv|

D`vni ŷY cŷĒ mstKZ-eBtq t` Lv hv`Q th, t` me mstKZ`-`dv e`envi Kiv ntq tQ Zvi gvb, th t`œcŷZw Pj tKi mstKZxK gvb cvl qv hvte Zvi Ae`vb, tKvb gvbw nvi t`bv gvb wnmvte wPvYZ nte tmw Ges cŷZw Pj tKi t`ŷtĀ Ab` wK weŷk l mstKZxK wbgq cŷqvm Kiv nte, Zv mnŷRB wPvYZ Kiv hvq| cwi mSL`vbgj K K wœuDUvi t`œMŷg Abjvqx DcvĒi wew wwi ZcŷtĀ i (spreadsheet) AvKvŷi wew`-Kti Pj K` t`jv tK t`œAbymŷi Ges NUbv` t`jv tK mwi Abymŷi mŷRv t`bv nq| GB DcvĒi wki e`envi KiŷZ AvMŷx th tKvb Mtel KtK cŷZw t`œmSL`v etj

t`q th, tKvb t`ctKvb wov` Pj tKi gvb itqtQ| mstKZ-eBtq aviYKZ Z` t`tKB th tKvb Mtel K m`uY`Z` mgMKtK cpM`b Ki tZ cvi teb|

mvi wY 9.2.1: GKwJ mstKZ-eBtqi msw`B D`vni Y

<i>Pj tKi bvg</i>	<i>mstKZxKi Y QK</i>	<i>t`cb`f</i>
cwi PqenbKvix b`f	D`Ei`vZvi cwi vPwZ b`f (cKZ b`f wJ Lp)	1-3
P001	wj 1/2 1 = bvi x 2 = cjt`l	4
P002	D`Ei`vZvi eqm (cKZ eQi wJ Lp)	5-6
P003	wk`MvZ thvM`Zv: m`ubKZ mte`P tkYx 1 = 1 – 8 2 = 9 – 11 3 = 12 4 = 13 – 15 5 = 16 6 = 17	7
P004	gwmK Avq: eZ`vb/c`te`P PvKix (cKZ Avtqi cwi gvY wJ Lp)	8-12
P005	mvavi Y t`f`MZ Ae`v 1 = LpB fvj 2 = Lp fvj 3 = fvj 4 = tgvUvgwJ 5 = Lvi vc 6 = LpB Lvi vc 8 = Rwb bv 9 = D`Ei t`bB	13
P006	wk`Mv MhYB mvg`tb GwMtq hvl qvi Dcrg 1 = cjt`vcji GKgZ 2 = GKgZ 3 = tgvUvgwJ GKgZ 4 = tgvUvgwJ w`gZ tcvI Y Kwi 5 = w`gZ tcvI Y Kwi 6 = cjt`vcji w`gZ tcvI Y Kwi 8 = Rwb bv 9 = D`Ei t`bB	14

mstKZxKi t`Yi mvavi Y wbt` Rbv (General Coding Instructions)

mstKZxKi Y jvj Kwj Ges gvW w`fv`Mi t`w`xKi Y t`jv meR Kwj w`tq Avj`v`v Kiv DvPr| m`v`vrKvi MhYKvix KZ` e`EKZ tKvb mstKZ, ev gZvgZ KLt`bvB g`Q t`djv DvPr bq| c`kgvjv ev m`v`vrKvi AbymPx mstKvat`bi mgq, fj wnmvte e`EKZ mstKZiUi ga` w`tq Ggbfvte GKwJ `vM Uvb`Z nte, hv`Z Kti c`te`hv Kiv ntq`Qtjv Zv thb D`xvi Kiv Am`e

ntq bv cto | cōZwU `ƒcgvĪ GKwU Kti mstKZ _vKtZ nte Ges tKvb `ƒB GtKi Awak
`úofvte eĒKZ mstKZ _vKte bv |

th me cōkæ tKvb wetkl mstKZ mgmiv Abgvb Kiv ntqtQ, tm me tŷĪĪ,
mstKZxKiYKvixi wKQz tQvU tQvU cZvKv mieivn Kiv nq, hv mgmiv mŷj Z cvZvq
AvUKvtZ nte | mstKZxKiYKvixiv Abvb Asktkl cZvKvhŷ Kitz cviteb, wetklZt
thLvfb Zv AmŷYev A`úo, ev hvZ ZĒevavqtKi wKQlv gbthvM cōqvRb nte | thme cōkæ
ŪLISTŪ etj wPwYZ Kiv _vKte, tm me cōkæ tŷĪĪ GKwU wfbæZwvj Kv _vKtZ nte | hw` tKvb
cōkæ GKwmaK Zwj Kve× mstKZ _vK, Zte cōZwU mstKtZi Rb` Avj v`v Avj v`v Zwj Kv
ivLtZ nte | cōZwU dtgP Dcti MtelYv bŷt, cōkæbŷt, tWK l `ŷbŷt Ges Zwj Kve×
mstKZ wj wce× Kitz nte |

hLb DEi`vZv DEi t`b bv, ev hLb mvŷvrKvi MhYKvix tKvb cōkæKitz, ev DEi wj wce×
Kitz fŷj hvb, ev hLb wj wLZ Z` ci`úi wetivax, ev Ū`ŷjK nq, ZLb ŪDEi tbBŪ
mstKZwĪK MhY Kiv nq | cōkævj vq ŪDEi tbBŪ Ges ŪDEi`vfb AmŷZŪ mstKtZi Rb`, GK
`ƒd tŷĪĪ e`eüZ msL`v gvbwU ntjv 7, `ß `ƒd tŷĪĪ 97, wZb `ƒd tŷĪĪ 997,
BZ`w | ŪRwb bvŪ mstKZ hw` AvtM t`K wbaŷi Z bv ntq _vK, Zte GK `ƒd tŷĪĪ, GwU
Rb` 8 msL`wU eivĪ Kiv nq, `ß `ƒd tŷĪĪ 98, wZb `ƒd tŷĪĪ 998 eivĪ Kiv nq |
GKwU cōkæKvb DEi`vZvK wRÁvmv Kivi cōqvRb bv ntj, ŪcōhvR` bqŪ mstKZwU e`eüZ
nq | tm Rb`, GK `ƒd tŷĪĪ mstKZ-gvbwU aiv nq 9, `ß `ƒd tŷĪĪ 99, wZb `ƒd tŷĪĪ
999, BZ`w |

DcvĒ Ašfŷß i tKškj (Data Entry Devices)

mstKZ-eB %Zwi ntq hvevi ci, mstKZxKiYi gva`tg DcvĒK Ggbfvte `vbršt Kitz
nte, hvZ Kti th tKD Zv msiŷY l wetkŷYi Rb` KwúDUvti Ašfŷß Kitz cvtib |
A`ŷ, cōkævj ev mvŷvrKvi AbjmPxtZ eĒKZ msL`v,tj vtK thb th tKD mstKZ-eBtq
msÁwqZ Pj tKi h_vh_ `ŷ ev tŷĪĪ cōkæ Kitz cvtib | Acwi tkwaz DcvĒK
mstKZxKiY Kti DcvĒ Ašfŷß i wewfbæKškj itqtQ | wbtgæ Avgiv DcvĒ Ašfŷß i wewfbæ
tKškj Avtj vPbv Kitev |

`vbrštĀ (Transfer Sheet): iitZ, KwúDUvi KvŷWŷtšj gva`tg wQ`aKti mKj aitYi
DcvĒ Ašfŷß Kiv ntZv | GB KwúDUvi KvŷWŷ80wU msL`vmPK cZxK msiŷY Kiv hvq |
`vbrštĀĪ KwúDUvi KvŷWŷ gZ 80wU `ŷ itqtQ | mstKZxKiYKvix mstKZ-eBtq
wbaŷi Z `ŷ l tŷĪĪ Abhvqx, `vbrštĀĪ `ŷ l tŷĪĪ DcvĒi Dm t`K DcvĒ `vbršt-
Ktib | `vbrštĀĪ, DcvĒi cōZwU jvBb NUbvi cwiwPwZ bŷt w`tq`ii` Kitz nq | hw`
DcvĒi Rb` GKwU jvBtbi tekx cōqvRb nq, Zte cwiwPwZ bŷt w`tq wZxq jvBbĪtZ DcvĒ
`vbršt Kitz nte | `vbrštĀĪ DcvĒ wj wce× Kiv ntq tMtj, tmB DcvĒi jvBb,tjv
floppy disk, hard disk, ev magnetic tape-G msiŷY Kiv nq | Zte, GwU gtb ivLtZ nte
th, thtnZi `vbrštĀ e`envi i Rb` wewfbæwŷtK wewfbæavtC KvR Kitz nq, tmtnZi
cōZwU avtC áwš-nevi mŷhvM `Zwi nq | dtj, DcvĒi wbfPkvj Zv Ktg hvevi mŷtebv _vK |
tm Rb`, cōZwU c`tŷtC mwK Pj tKi Rb` mwK mstKZwU Ašfŷß Kiv ntqtQ wK bv, Zv
hvPvB Kiv DvPr |

cōš-mstKZxKiY (Edge Coding): cōš-mstKZxKiY tKšktj i e`envi `vbrštĀĪ i
cōqvRbxqZvtK `xfZ Kti | GB c×wZtZ mstKZxKiYKvix Z` ,tj vtK cōkævj ev

DcvĒiṃk hLb tQvU nq (A_ŕ, hw` Pj tKi msL`v 50uU gZ nq), ZLb KṃúDUvti DcvĒ m`úv` bvi c`ŕq (data editor screen) DcvĒtK AfŕŕtYi gva`tg cixŕŕv Kiv thtZ cvti | KṃúDUvti c`ŕq m`úv` bvi cvZv cŕŕcY Ki tB m`e` Ő`w` t jv tPvtL cto | thgb, Lwj Ni, A`ŕfweK iKtgi eo msL`v, msL`vi cwi etZ eYŕj v, BZ`w` | Zte tKvb wbgqZwšK c`wZ e`envt`i gva`tg GuU Kiv fij | thgb, KṃúDUvti e`envi thvM` cwi msL`vbMZ c`wZ (statistical package) ev we`wi Zcŕŕi (spreadsheet) gva`tg evQvB cŕŕqv (sort procedure) e`envi Kiv thtZ cvti | evQvB cŕŕqv sort-key wmvte wbeŕPZ Pj tKi gvb t jvi wŕŕĒtZ DcvĒiṃki gta` me NUbv t jvi ŕgtK cYŕeb`- Kti | eYŕj v Pj K t jvtK eYŕj vi wŕŕĒtZ Ges msL`vPK Pj K t jvtK msL`vi wŕŕĒtZ ŕg Abŕvqx mŕvŕbv nq | evQvBKZ DcvĒtK KṃúDUvti c`ŕq cixŕŕv Ki tB Ő`w` t jv aiv coŕe | wš` A t bK tekx DcvĒiṃki tŕŕŕ, GB c`wZwU R wJ AvKvi aviY Kti | tm tŕŕŕ, SPSS e`envt`i gva`tg NUbmsL`v cŕŕqv (frequency procedure) e`envi Kti Ő`w` tei Kiv thtZ cvti |

DcvĒiṃk hLb tQvU nq,
ZLb KṃúDUvti DcvĒ
m`úv` bvi c`ŕq DcvĒtK
AfŕŕtYi gva`tg cixŕŕv
Kiv thtZ cvti |

mvsťKZxKi tYi wbfŕk j Zv (Reliability of Coding)

h_vh_fŕte wbgZ mstKZ-eB, ce`mvsťKZxKiYKZ cš-eU cŕkeGes mvsťKZxKiYKvix` i h_vh_ cŕkŕY I AwfÁZvmn GKwU MtelYv cwi Pj bv Ki t j, mvsťKZxKi tYi wbfŕk j Zv wbtq tZgb mgm`v t`Lv t`q bv | KviY, G aitYi MtelYvq, tKvb DEti i Rb` tKvb mstKZ cŕvb Ki tZ nte, tm wel tq mvsťKZxKiYKvix` i wbtRt` i weŕePbvchZ w`vš-wbtZ nq Lp Kg | G aitYi MtelYvq, metPtq ŕi "ZcYŕel qwU n t j v, mvsťKZxKiYKvixiv mstKZ t jvtK mŕVK ŕŕc` vcb Ki tQb wK bv, Zv wbdZ Kiv | GuU wbdZ Kivi Rb` cŕZwU mvsťKZxKiYKvixi KvRtK bgbwŕŕĒK hvPvB Kiv nq | wK aitYi mvsťKZxKiY tKškj e`envi Kiv nt`Q, Zvi Dci I mvsťKZxKi tYi wbfŕk j Zvi gvŕv wbfŕ Kti |

wš` cš-tLj v cŕke ev Ab` tKvb AKwŕtgvex DcvĒ msMŕni nwmZqi e`envi Kti cwi Pwj Z MtelYvi DcvĒ mstKZxKiY cŕŕqvq, DEi`-dvi mstKZ cŕvbi tŕŕŕ, mvsťKZxKiYKvix` i A t bK tekx wbtRt` i weŕePbvchZ w`vš-MŕY Ki tZ nq | Gi dtj , wewfbae mvsťKZxKiYKvix wewfbae DEti i wewfbae vL`v Kti mstKZ cŕvb Ki tZ cvtib | G aitYi cwi w`wZtZ, mvsťKZxKiY AwfŕthvM` n t q coŕZ cvti | G tŕŕŕ, metPtq mnR tKškj wU n t j v th, cŕqkt ŕŕZbRb mvsťKZxKiYKvixi mstKZ t jvtK hvPvB Kti t`Lv Ges ZvrŕŕwYKfŕte mgm`wU mgvavb Kti wel qwU Ab`vb` mvsťKZxKiYKvix` i Rwb t q | DEi`-dvi e`vL`vi wŕbZv I AmvgAm`Zv m`úwKZ Ab` mgm`wU n t j v th, mvsťKZxKiYKvix I DEi`vZvi gta` DEi`-dvi A t _P e`vL`vi wŕbZv | GB wŕbZv cŕivcŕi fŕte KLt`v ŕ` t Kiv hŕte bv, Zte Mfxi ce`cixŕŕv I cŕkŕY GB AmsMwZi gvŕv A t bKuv Kwgtq AvbtZ cvti |

mvisk

DcvĒ msMŕni ciciB th KvRwU Mtel KtK Ki tZ nq, Zv n t j v cŕB DcvĒtK mstKtZ ifcvš- Kiv | KviY, mstKtZ ev msL`vq ifcvš- Kivi ciB, tKej mŕŕŕŕfŕte DcvĒi eYŕv I wŕkŕY Kiv m`e | DcvĒ mvsťKZxKi tYi Rb` cŕ t gB cŕqvRb, GKwU mstKZ-eB wbgŕY Kiv | mstKZ-eB g j Zt DcvĒ cŕŕqvRvZKi tYi wbt` wKv wmvte KvR Kti | cŕB DcvĒi th tKvb mgm`v wKfŕte mgvavb Kiv nte, Zv GB mstKZ-eB t q ewYZ n t q v t K | eZŕvb cvtV, mvsťKZxKi tYi cŕŕRbxqZv, wbggvej x Ges mteveŕi wKfŕte cŕB DcvĒtK wei x Kiv hvq Zv Avtj vPbv Kiv n t q t Q | Zte gtb ivL t Z nte th, A t bK mgq cŕB DcvĒi gvb DbZ n t j I MtelYvq dj vdj fvtj v nte bv, hw` DcvĒ cŕŕqvRvZKiY h_vh_ bv nq |

cvfVvEi gj`vqb

`be⁹³K cġæ

mWVK DĒti i cvfk WJK (√) wPy w`b -

1| DcvĒ wei xKi tYi cġqM wbfP Kti:

- K. DcvĒ Ašf³i tKŠktj i Dci
- L. Dchj³ Kj vtKŠktj i Dci Mtel tKi Ávtbi gvĪvi Dci
- M. Kj vtKŠkj cġqvMi `ŋZvi Dci
- N. Dcti i me|

2| Pj tKi wecixZ msLvmPK mstKZ eivtĪi tŋtĪ, th weI hW ſi "tZi mvt_ wetePbvq wbtZ nte tmU ntj v:

- K. mgi fc cwi w`wZtZ mstKtZi GKtK wfbzv vKtZ nte
- L. mstKtZi GKK cwi w`wZ Abjvqx wbaŋi Z ntZ nte
- M. mgi fc cwi w`wZtZ mstKtZi GKK mvgÄm cYŋtZ nte
- N. Dcti i me|

3| GKwU Av`k⁹mstKZ-eBtq:

- K. cġZwU Pj tKi Ae`vb v³tK
- L. nwi tq hvI qv DcvĒEi Rb` wbt` Rbv v³tK
- M. cġZwU Pj tKi eY⁹v v³tK
- N. Dcti i me|

mswŋB cġæ

UxKv wj Lp:

- K. mstKZxKi tYi wbfPkxj Zv
- L. DcvĒ wei xKi Y

i Pbv³ K cġæ

1| mstKZxKi Y wK? DcvĒ e`envtĪ Gi ſi "Zi D`vni Ymn Avtj vPbv Ki "b|

2| mstKZxKi tYi wbgvej x³ tj v D`vni Ymn Avtj vPbv Ki "b|

DcvĒ msiŋŋBKiY 2 – mviwYKiY Data Reduction 2 – Tabulation

GB cW tkłl hv Rvbn hvte —

- mviwYKiYi „i“Zi
- mviwYi cKvi f`
- mviwY MVtb weŋP` wel qmgn
- MYmsL`v wbtēkb

mviwYKiYi „i“Zi (Importance of Tabulation)

thtnZi wekvj DcvĒi wktk msiŋŋB Kti weŋkĤYi DcŋhvMx Kti tZvj v ntjv cwi msL`v tbi Ab`Zg cāvb KvR, tmtnZi m`uv` bv l mstKZi KiYi ci DcvĒtK tkvb bv tkvb fite Dc`vctbi cŋqvRb ntq cto| DcvĒtK mvari YZt Pviw Dcvŋq Dc`vcb Kiv hvq| cŋgZt, gj AvtjvPbvi gta` Ašf` Kti | wZxqZt, Avav-mviwYi gta` web`-Kti | ZZxqZt, tj LwPŋi gva`tg cKvk Kti | PZt, mviwYi gta` Dc`vcb Kti | AvtjvPbvi gta` DcvĒi Dc`vcb tekx KvRi djvdj cŋvb Kti bv| GKw eYŋvi gta` Dc`wcz DcvĒmgŋi A` Abpveb Kivi Rb` cŋiv eYŋwŋtK cW KiZ nq Ges cŋiv cvŋi ci l me DcvĒi A` cŋwZKZv Abpveb Kiv mnR ntq Dŋv bv| tkvb wŋv` DcvĒi weŋk`ewkŋtK Ztj Avbn cWtKi Rb` KwB ntq cto| GB c`wZtZ, DcvĒ Dc`vcb cWtKi gtbŋhvMŋtK GKw wŋv` w`tk cŋwZ KiZ cvitj l weŋk weŋk DcvĒi w`tk AvMŋ mŋo Ges Zj bvi tŋŋ cŋZ KiZ cvti bv|

Avav-mviwYi gva`tg DcvĒ Dc`vcb cŋg c`wZi tŋq wKŋv DbzZi| hLb GKw AvtjvPbvq` fmsL`K DcvĒ e`envi Kiv nq, ZLb DcvĒtK gj cWvsk t`tk Avj`v Kti wbtq`ŋ Abt`Qt`i gvSLvŋ Dc`vctbi gva`tg DcvĒi`KxqZvŋtK Ztj aiv hvq| Zte, DcvĒi cwi gvY tekx ntj, GB c`wZ cŋivcŋi AbcŋhvMx ntq Dŋv| GB c`wZw mvgwRK MŋelYvq mPivPi tZgb e`eüZ nq bv| tj LwPŋ ev Ab`vb` wPŋi gva`tg DcvĒi Dc`vcb ŋek DcŋhvMx Ges KvRi| Zte, DcvĒi cwi gvY, gvŋv l e`wŋ teŋo tMŋj, GB c`wZi tZgb KvRi`vŋtK bv| mŋwZ msl`K DcvĒi tŋŋŋ Gw PgrKvi djvdj t`q|

mviwYKiY ntjv DcvĒ Dc`vctbi tkŋ Dcvq| mviwYi wFZti wK weŋtqi Dci DcvĒ Dc`vcb Kiv ntqŋ, GKw mviwYi wktivbvq Zv mnŋRB eŋtZ mnvŋ` Kti | mviwYtZ Dc`wcz DcvĒi weŋkĤY l e`vL`v MŋelYvq cŋB djvdjtj weŋk w`K`_tjvŋtK eŋtZ mnvŋ` Kti | GKw mviwY`ewkŋMZ fiteB wŋveo, msiŋŋB l`uó| mviwYi`wŋ l mviwY mŋwŋv` wktivbvq`_tjv cWvsk eivŋZ cŋiveŋ`_tjvŋtK AcŋqvRbxq Kti tZvtj| dtj, DcvĒi wŋveoZv l`uóZv eiv` cvq Ges Zj bvqj K weŋkĤY AŋbK tekx mnvqK ntq Dŋv| wš`Gw gtb ivLv cŋhvRb th, GKw mviwY hZ mŋwZB ŋvK bv tkb, hviv cwi msL`v mZ DcvĒ weŋkĤYi mŋ`_Lp tekx cwi wPZ bb, Zvŋ`i KvŋQ AŋbK mgq mviwYtZ web`-DcvĒi wkt`ŋeŋ` ntq Dŋv| tj LwPŋi gva`tg DcvĒi Dc`vcb tm KviŋY tm aiŋYi cvŋtKi KvŋQ AŋbK tekx Rbŋcŋ| tj LwPŋ mvari Y cvŋtKi KvŋQ DcvĒi`ewkŋ`_tjvŋtK mnŋRB`wŋMŋ` l AbpvebŋhvM` Kti tZvtj |

GKw mviwY hZ mŋwZB ŋvK bv tkb, hviv cwi msL`v mZ DcvĒ weŋkĤYi mŋ`_Lp tekx cwi wPZ bb, Zvŋ`i KvŋQ AŋbK mgq mviwYtZ web`-DcvĒi wkt`ŋeŋ` ntq Dŋv| tj LwPŋi gva`tg DcvĒi Dc`vcb tm KviŋY tm aiŋYi cvŋtKi KvŋQ DcvĒi`ewkŋ`_tjvŋtK mnŋRB`wŋMŋ` l AbpvebŋhvM` Kti tZvtj |

cwimsLvbMZ cūquvKiY, Dc⁻vcb l e^vL^{vi} m^yeavi Rb^o DcvĒ ms^qŦBKİt^yi cūquvK mviYKiY etj | mviYKiY cūquv eū Kvi^ty „i“ZcY^o cŭgZt, msMⁿxZ Z⁻tK hw^o mviYi gva^{tg} Dc⁻vcb Kiv hvq, Zte tm^otjv mn^tRB tevalMg^o n^tq D^tv, mgtqi mvk^t N^tU, Ges we^awš⁻ i nq | A⁻Ŧ, mviYKiY Rūj Z⁻ivk^tK mnRteva^o Kti tZvtj | űZxqZt, mviYi mnrv^th^o Z⁻ivki Zj bv mnRZi nq | GKū Vvh^Ri l Dc^th^wMx mviY m^vaviYZt Z⁻ivk^tK mⁿse^fvte^o ⁻Ŧ m^vi i gva^{tg} Dc⁻vcb Kti etj DcvĒi Zj bvg^j K we^tk^tŦ^yi GKū ⁻úo i^fc^ti Lv cvl qv hvq | ZZxqZt, hw^o DcvĒ^tK mviY^tZ Dc⁻vcb bv Kti i^oayeY^ov Kiv nq, Zte A^tbK „i“ZcY^oZ⁻i Zvrch^oAb^vet^b Zv m^gm^v i^oZwi Kti | KviY, DcvĒi g^ta^o c^oŦi we^awš^{ki} c^opi^{ve}Ŧ⁻ v^tK | DcvĒ mviYKi^ty i gva^{tg} G mKj c^opi^{ve}Ŧ⁻ i^o Kiv m^ae Ges DcvĒ^tK GKū h^ov^h ⁻ú^of^w^tZ e^vL^{vi} Kiv m^ae | A⁻Ŧ, mviYex DcvĒ GKū m^vaviY i^fc^tK c^ok^vk Kti, hv eY^ovi gva^{tg} AR^o Kiv m^ae bq | PZ^oZt, mviYKiY DcvĒi e^vcKZi we^tk^tŦ^tK mnRZi Kti | c^oĀgZt, hLb GKū ű^ti^vbv^tgi gva^{tg} DcvĒ^tK mⁿse^fvte mviY^tZ Dc⁻vcb Kiv nq, ZLb mviY^tZ Dc⁻wcZ DcvĒi GKū ⁻ŦZš^j i^oZwi nq, hv m^gm^vi e^vL^vq Z⁻ib^t R^k űⁿmv^te Kiv Kti |

mviYi c^oKvi^tf^o (Types of Table)

mviY MV^tbi tek űKQz „i“ZcY^obmZg^vjv i^tq^tQ | tm mKj b^wmZg^vvi w^fiĒ^tZ Dc⁻vc^tbi D^ti^ok Ges DcvĒi c^oKūZ Ab^hvqx we^wf^oba^ty i mviY c^oZ Kiv hvq | e^oen^vi i^o űK^tŦK, mviY^tK ű^of^vt^m f^vm Kiv hvq | GKū n^tjv, m^vaviY ev Z⁻ib^t R^gj K (general or reference type) mviY Ges Ab^oū n^tjv, mvi-m^st^qcg^j K (summary or text type) mviY | m^vaviY ev Z⁻ib^t R^gj K mviY^otjv Z⁻i f^vŪvi űⁿmv^te e^oeūZ nq | G ai^tyi mviY^otjv c^oq^t űek^vj Av^kūZi n^tq^ov^tK | G^otjv GKRb cv^wk^tK we⁻wi Z Z⁻ c^ovb Kti Ges Z⁻i Zvr^oŦ^oYK D^rm űⁿmv^te Kiv Kti | G ai^tyi mviY^otjv cwi^okó ev c^oZte^o Ŧbi Ŧk^ti Av^v v^fvte Dc⁻vcb Kiv nq | mvi-m^st^qcg^j K mviY^otjv Av^kv^ti Ŧ^oū n^tq^ov^tK Ges G^tZ űⁿb^of^vte m^aúK^oŦ^o Aⁱ űKQy Z⁻tK hZUK^om^ae Vvh^Ri f^vte Dc⁻vcb Kiv nq | mvi-m^st^qcg^j K mviY^tK m^pi^vpⁱ GKū Av^tjv^bvi m^vt^o msh^o Kiv n^tq^ov^tK | m^vaviY ev Z⁻ib^t R^gj K mviY^otjv Rūj n^tq^ov^tK Ges mvi-m^st^qcg^j K mviY^otjv mnR^fvte M^wZ nq |

űek^tó^oi w^fiĒ^tZ, mviY^tK űZb^fvte f^vm Kiv hvq | thgb, (1) GK-g^lx mviY (one-way table), (2) ű^o-g^lx mviY (two-way table), Ges (3) D^oP-g^lŪvi mviY (high-order table) | GK-g^lx mviY g^l GKū ⁻ek^oŦK e^oen^vi Kti | ŦmB ⁻ek^oŦ^oi w^fiĒ^tZ mviY^tZ ű^ob^omsL^ov^tK Dc⁻vcb Kiv nq | ű^ob^o c^oĒ mviYi gva^{tg} űel^oū^o tev^ov Ŧ^tZ cv^ti | GB mviY^tZ GKū ⁻ek^oŦK e^oen^vi Kiv n^tq^tQ | ŦmB ⁻ek^oŦ^oū n^tjv, ev^sj^ov^t Ŧki Rb^omsL^ovi NbZ^o |

mviY-9.3.1: c^oZ e^oM^oK^tj ű^og^oŪ^ti ev^sj^ov^t Ŧki Rb^omsL^ovi NbZ^o; 1974-2001

<i>Av^og^oi^og^oi^o e^oŪi</i>	<i>Rb^omsL^ovi NbZ^o</i>
1974	518
1981	609
1991	755
2001	881

Drm: ev^sj^ov^t k Av^og^oi^og^oi^o 2001, RvZxq c^oZte^o b (m^oig^oqK), c^op^or-26, ev^sj^ov^t k cwimsL^ovb e^ot^oiv, Rj vB 2003 |

- ̄=cl mwi i wk̄t̄ivbv̄g, t̄j v̄t̄K m̄ȳ úó I h_v_̄f̄v̄te bvḡm̄q̄Z Kīt̄Z n̄te|
- Dcv̄t̄Ei m̄ȳb̄w̄ ̄̄ cwi gv̄t̄ci GKK̄t̄K D̄t̄j ̄K̄īt̄Z n̄te| A_̄f̄, w̄el̄ q̄w̄ eQ̄ti, Uv̄K̄v̄q, kZ̄v̄st̄k, ev w̄j Uv̄ti cwi gv̄c Kiv n̄t̄q̄t̄Q w̄K bv, Zv ̄úó̄f̄v̄te D̄t̄j ̄K̄īt̄Z n̄te|
- m̄vīw̄Yi b̄x̄t̄P cv̄ Ux̄K̄vi ḡv̄āt̄g m̄vīw̄Yt̄Z ēēǖZ c̄Z̄x̄K_̄t̄j̄vi h_vh_̄ ēv̄L̄v̄ w̄t̄Z n̄te|
- m̄vīw̄Yt̄Z Dc̄w̄c̄Z Dcv̄Ē w̄ēw̄f̄b̄ēD̄rm t̄_t̄K m̄s̄M̄p̄x̄Z n̄t̄j, m̄vīw̄Yi b̄x̄t̄P t̄m̄ m̄K̄j D̄r̄t̄mi D̄t̄j ̄K̄īt̄Z n̄te|
- m̄vīw̄Yi Av̄K̄vi eo n̄t̄j, ev t̄ēk̄x̄ Dcv̄t̄Ei m̄ḡv̄n̄vi NŪt̄j, Dcv̄t̄Ei c̄ā̄vb̄ c̄ā̄vb̄ t̄k̄Ȳx_̄t̄j v̄t̄K Ggb̄f̄v̄te Dc̄v̄cb̄ Kīt̄Z n̄te, t̄h̄b̄ t̄m_̄t̄j v̄ ̄ēw̄k̄ó̄ḡw̄ǕZ n̄t̄q̄ D̄t̄V̄| c̄̄q̄v̄R̄b̄t̄ēv̄t̄a, ̄=cl mwi t̄j v̄t̄K w̄ēf̄³ K̄ti m̄s̄L̄v̄ ev ēȲḡj̄v̄ ēen̄vi K̄ti w̄P̄w̄ȲZ Kīt̄Z n̄te|
- kZ̄K̄iv ev m̄ḡv̄b̄c̄v̄Z̄ḡj̄K m̄s̄L̄vi t̄f̄f̄t̄, c̄k̄Z NŪb̄m̄s̄L̄w̄U ēǕȲxi ḡt̄ā Dc̄v̄cb̄ Kīt̄Z n̄te|
- Z̄j̄ bv̄ I K̄v̄h̄K̄vi Ȳ m̄=ú̄t̄K̄P̄ t̄f̄f̄t̄, ̄v̄ax̄b̄ P̄j̄ K̄t̄K̄ m̄vīw̄Yi Dc̄t̄i Ges̄ w̄b̄f̄P̄k̄j̄ P̄j̄ K̄ m̄vīw̄Yi ev̄ḡ cv̄t̄k̄̄Dc̄v̄cb̄ Kīt̄Z n̄te| Ḡ t̄f̄f̄t̄, kZ̄K̄iv w̄b̄Ȳq̄ Kīt̄Z n̄te ̄=̄̄ t̄h̄v̄M̄d̄j̄ w̄f̄w̄ĒK̄ Ges̄ Z̄j̄ bv̄ Kīt̄Z n̄te m̄wi w̄f̄w̄ĒK̄| ̄=̄̄ w̄f̄w̄ĒK̄ Z̄j̄ b̄vi t̄f̄f̄t̄, kZ̄K̄iv w̄b̄Ȳq̄ Kīt̄Z n̄te m̄wi w̄f̄w̄ĒK̄|
- m̄vīw̄Yt̄Z kZ̄K̄iv ēen̄vi Kīt̄j, Z̄v̄ t̄K̄vb̄ m̄s̄L̄vi m̄v̄t̄_̄ h̄ȳ³ Z̄v̄ w̄b̄w̄ ̄̄ Kīt̄Z n̄te| t̄h̄gb, ̄t̄ḡv̄U m̄s̄L̄vi kZ̄K̄iv̄0 (percent of total), ev ̄̄ēw̄x̄ ev n̄v̄t̄mi kZ̄K̄iv̄0 (percent increase or decrease)| ̄īaḡv̄t̄ ̄̄kZ̄K̄iv̄0 (percent) k̄ā̄w̄i ēen̄vi m̄em̄ḡq̄ A_̄ēȲq̄ bv̄|

m̄vīw̄ȲKīȲ c̄̄l̄ūq̄v̄ n̄v̄t̄Z n̄v̄t̄Z m̄=ú̄b̄w̄K̄iv̄ h̄v̄q̄| n̄v̄t̄Z n̄v̄t̄Z m̄=ú̄b̄w̄k̄Z̄ m̄vīw̄ȲKīȲ L̄p̄B̄ m̄ij̄ Ges̄ Ḡt̄Z̄ t̄K̄vb̄ K̄j̄ v̄t̄K̄s̄k̄j̄ M̄Z̄ Á̄vb̄, ev ̄̄f̄f̄Z̄vi c̄̄q̄v̄R̄b̄ n̄q̄ bv̄| Ggb̄ w̄K, w̄̄-P̄j̄ K̄ w̄ēw̄k̄ó̄ Av̄ov- Av̄ov̄ m̄vīw̄ȲKīt̄Yi (cross-tabulation) t̄f̄f̄t̄ I Ḡw̄U t̄ēk̄x̄ k̄t̄m̄v̄ā b̄q̄| h̄w̄ M̄t̄ēl̄K̄ Av̄q̄ I t̄ck̄vi ḠK̄w̄U w̄ēb̄w̄m̄t̄K̄ m̄vīw̄Yt̄Z Dc̄v̄cb̄ Kīt̄Z P̄vb̄, Z̄t̄ē ḠK̄w̄U P̄j̄ K̄t̄K̄ Ab̄f̄w̄ḡK̄f̄v̄te Ges̄ Ab̄ P̄j̄ K̄w̄Ūt̄K̄ D̄j̄ ̄f̄v̄te Dc̄v̄cb̄ K̄ti, c̄t̄iv̄ m̄v̄f̄v̄r̄K̄vi Ab̄j̄m̄P̄x̄ ch̄t̄j̄ v̄P̄b̄vi ḡv̄āt̄ḡ c̄ā̄Z̄w̄U NŪb̄m̄s̄L̄v̄t̄K̄ MȲbv̄ Kīt̄Z n̄te| c̄ā̄Z̄w̄U m̄vīw̄Ȳ c̄̄Z̄ K̄ivi m̄ḡq̄ ḠK̄B̄ c̄̄l̄ūq̄vi c̄p̄iv̄ēw̄Ē Kīt̄Z n̄te| w̄K̄s̄ c̄ā̄Z̄ēvi m̄v̄f̄v̄r̄K̄vi Ab̄j̄m̄P̄x̄t̄Z̄ w̄d̄t̄i h̄v̄l̄q̄vi w̄el̄q̄w̄U t̄ēk̄ Am̄j̄ēavi m̄w̄ó̄ K̄ti| t̄m̄ t̄f̄f̄t̄, w̄ēK̄ī w̄n̄m̄v̄te m̄vīw̄Yt̄Z NŪb̄m̄s̄L̄v̄ MȲb̄vi c̄t̄ēc̄ā̄Z̄w̄U P̄j̄ t̄K̄ī w̄ēc̄īx̄t̄Z̄ Ūv̄j̄x̄ w̄P̄ȳ ēw̄m̄t̄q̄ Dcv̄Ēt̄K̄ ḠK̄w̄U Dcv̄Ē ̄v̄b̄v̄s̄īc̄t̄t̄ Z̄t̄j̄ Av̄b̄t̄j̄ m̄vīw̄ȲKīt̄Yi K̄v̄R̄w̄U m̄n̄R̄ n̄q̄| w̄K̄s̄ n̄v̄t̄Z̄ n̄v̄t̄Z̄ m̄vīw̄ȲKīȲ L̄p̄B̄ axīM̄w̄Z̄m̄=ú̄b̄ēl̄ K̄w̄s̄K̄ī ḠK̄w̄U K̄v̄R̄| L̄p̄ m̄v̄avīȲ t̄f̄f̄t̄ Ges̄ t̄Q̄v̄U b̄ḡb̄vi M̄t̄ēl̄Ȳv̄ Q̄v̄ov, n̄v̄t̄Z̄ n̄v̄t̄Z̄ m̄vīw̄ȲKīȲ K̄v̄h̄K̄ī c̄x̄w̄Z̄ b̄q̄| b̄ḡb̄vi Av̄K̄vi eo n̄t̄j, ev R̄w̄Ūj̄ m̄vīw̄Ȳ c̄̄Z̄ K̄ivi c̄̄q̄v̄R̄b̄ n̄t̄j, K̄w̄=ú̄DŪvi ev Ab̄ t̄K̄vb̄ h̄t̄s̄j̄ ḡv̄āt̄ḡ m̄vīw̄ȲKīȲ K̄iv̄B̄ h̄ȳ³ m̄½̄Z̄|

MYmsL̄v̄ w̄b̄t̄ēkb (Frequency Distribution)

MYmsL̄v̄ w̄b̄t̄ēkb n̄t̄j v, Z̄_̄īw̄k̄t̄K̄ A_̄ēn̄f̄v̄te m̄vīw̄ȲKīt̄Yi ḠK̄w̄U Ab̄Z̄ḡ c̄x̄w̄Z̄| h̄L̄b̄ w̄K̄Q̄z̄ ch̄t̄ēf̄Ȳt̄K̄ MȲbv̄ K̄ti m̄s̄v̄f̄v̄t̄ē m̄v̄R̄v̄t̄bv̄ n̄q̄, Z̄L̄b̄ t̄m̄w̄U ḠK̄w̄U MYmsL̄v̄ w̄b̄t̄ēkb̄ c̄wīYZ̄ n̄q̄| ḠK̄w̄U P̄j̄ K̄ w̄t̄q̄ t̄h̄ MYmsL̄v̄ w̄b̄t̄ēkb̄ ̄Z̄w̄ī K̄iv̄ n̄q̄, t̄m̄w̄Ūt̄K̄ GK̄-P̄j̄ K̄ w̄ēw̄k̄ó̄ MYmsL̄v̄

wbtekb etj | mjbw`öfvte ejv hvq th, MYmsL`v wbtekb ntjv, KZ`tjv chfe`fjYi gta`
GKwU Pj tKi wefwbogvb KZevi NtUtQ Zvi msL`vmPK web`vm | MYmsL`v wbtekb tK`ß`
GKwU mviwYI ejv hvq | GKwU`-`ctKvb NUBv ev`ewkó`tK Zvjv Kve× Kti Ges Ab`
tm mKj`ewktó`i NUBmsL`v tK D tK tK |

bvgmPK ev µgmPK gvT`vq cwi gvcKZ Pj Kmgñni t`fj t`f, cÖZwU c` ev`dv GKwU`
Zvjv Kve× Kti cÖZ c` ev`dvi wecix tZ msuk`-MYmsL`v tK wj wece× Kiv ntq`
e`vßgj K ev AbjcvZgj K gvT`vq cwi gvcKZ Pj tKi t`fj t`f, GKB c×wZ Abjvi Y Kiv ntq`
_vtK | Zte, G t`fj t`f GKwU evowZ KvR Ki tZ nq | Zv ntjv, DcvEi wktK KtqKwU wbw`
tkYx tZ wef` Kti, tm mKj` tkYxi wecix tZ MYmsL`vi web`vm`Zwi Ki tZ nq | wKŠ` KqU
tkYx`Zwi Ki tZ nte Ges cÖZwU tkYxi e`vßwU KZ eo nte, tm we tZ cteB vm×vš-MöY
Kiv cÖqvRb | tkYx msL`v wbañ tYi we lquU wbf` Kti, wKÖlv DcvEi cKwZi Dci Ges
wKÖlv wbf` Kti, tgvU KZwU NUBmsL`v i tqtQ, Zvi Dci | hw` NUBmsL`vi cwi gvY tekx nq,
Zte`vfwefvteB tkYx msL`v te to hvte | Avi hw` NUBmsL`vi cwi gvY Kg nq, Zte tkYx
msL`v Kg nte | tkYx msL`v wbañ tYi t`fj t`f GwU gtb ivLv cÖqvRb th, hw` tkYx msL`v A tK
tekx nq, Zte tkYx`tjv Lp Kg msL`K MYmsL`v avi Y Ki te Ges c`iv web`vmU GKwU avš`
avi Yv t`te | Abi` tK, tkYx msL`v A tK Kg ntj Ges tkYx e`vßwU A tK tekx cK`-ntj
DcvEi cKZ` t`f wU nwi tZ tZ cvti |

tkYx msL`wU wbañi Z ntq` tM tJ, Avgv` i Rb` tkYx e`vß wbañ Y Lp mnR ntq` cto | Zte,
Ggb tKvb tkYx mxgv, ev e`vß wbañ Y Kiv wK nte bv, hv AcÖmwZK, ev A`ñxb gtb ntZ
cvti | thgb, 20, 30 ev 50 tkYxe`vß thgb thšw`K nte bv, tZgvb 4.15 ev 5.3 tkYx
e`vß A`ñxb nte | Avevi kvTU` g tJ`i t`fj t`f, 5 UvKvi tkYx e`vß DcthvMx ntj | tgvU
Mvoxi t`fj t`f, Zv cÖqvR` bq | KqU tkYx MVb Ki tZ nte tm m`utK`wöZ ntZ bv cvti j,
mvavi YZt tQvU tQvU e`vß w tZ tkYx`tjv MVb Kiv DwPr | hw` t`Lv hvq th, c`iv MYmsL`v
wbtektbi ci tkYxi msL`v A tK tekx ntq` wMtqtQ, ev tkYx e`vßwU Lp tQvU ntq` wMtqtQ, tm
t`fj t`f,`wU ev wZbwU tkYx tK GKxfZ Kti tkYx msL`v tK Kugtq e`vß emotq` t`qv th tZ
cvti | cÖtgB hw` A tK eo e`vß w tZ`i` Kiv nq, Zte cti tQvU Ki tZ tM tJ wbtekb
cÖqvRwU Avevi cÖg t`tK`i` Ki tZ nte | thñZ tkYx msL`v ev e`vß wbañ tYi evaviv
tKvb wbgg tbB, tmñZ Mtel Yvi djvdj we tK` I e`vL`vi D t`tK`i` w` tK j` t` t`LB GB
vm×všwU MöY Ki tZ nte |

Avgiv Rwb th, mviwYex DcvEi web`vm GKwU Pj tKi web`-`ewkó` tJ v tK eY`vq mrvh`
Kti Ges cwi msL`vb wY`qj wfwE wntmte KvR Kti | wKŠ``wU web`v tmi gta` Zj bvi t`fj t`f,
mvavi Yfvte cÖZKZ MYmsL`v wbtektbi web`vmU h t`ó bq | Kvi Y, wefwbweb`vm wefwb
GK tK cKwKZ nq (thgb, UvKv, eQi, wK tJ vMög, NvUv, BZ`w`) | dtj, wfbweGKK m`nj Z
`wU web`v tmi gta` Zj bv Kiv m`e nq bv | Ggb wK,`wU web`vm GKB GK tK cKwKZ ntj |
tgvU chfe`fjY msL`vi wfbz`vi Kvi tY Zj bvgj K we tK` m`e nq bv | G Ovov, chfe`fjY` tJ v
tKvb tkYx tZ wK AbjcvZ web`-i tqtQ, A`ev GKwU wbw` g tbi Dcti ev bxtP wK cwi gvY,
ev kZKiv KZwU chfe`fjY i tqtQ, KL tBv KL tBv Avgv` i Zv Rvbi cÖqvRb cto | wbi`k
MYmsL`v wbtekb-Gi cwi etZ` Av t`fj t`f MYmsL`v wbtekb-Gi gva`tg DcvEi tK Dc`vcb
Ki tJ, G me mgm`v` t`xfZ nq | AbjcvZ, mgvbcvZ, kZKiv, nvi, BZ`w` cwi msL`v tbi
gva`tg Av t`fj t`f MYmsL`v wbtekb tK Dc`vcb Kiv nq |

mvisk

GB cvtV, DcvE msw||BKiYi mv_ m=úwKZ KtqKwU welq, thgb, mviwYi cKviYf~, mviwY
MVtb weP" welqmgñ Ges Gi "Z; Avtj wPZ ntqtQ| cwi gvYMZ DcvE tK mviwY tZ
Dc`vcb bv Kij, wekH DcthvMx cwi tetki mwó nq bv| e`Zt, DcvE msMpxZ nI qvi ci,
mviwY %Zwi i gva`tg Avgiv DcvEi ^enkóMZ cwi Pq cvB| eYv I e`vL`vi RMtZ weWfba
iKg mviwYi e`envi t`Lv hvq| Avgiv KLtbr GK-Pj K, KLtbr GtKi AnaK Pj K, Avevi
KLtbr mij tjL-wP tI i gva`tg DcvEi Dc`vcb Kti _wK| DcvE wKfvte Dc`vcb Kiv
nte, Zv gj Zt wbfP Kti MtelYi D t k I wekH Yi cKwZi Dci |

cvřVvĚi gj `vqb

`be⁹³ K cĕke

mVVK DĚti i cvřk WJK (√) WPy w` b –

1| DcvĚřK mvari YZt _____ Dcvřq Dc`řcb Ki v hvq|

- K. `ß
- L. WZb
- M. Pvi
- N. cWp

2| DcvĚ Dc`řcřbi řkĕ Dcvq nřj v:

- K. Avřj vPbv
- L. Avav-mvi WY
- M. řj LwPř
- N. mvi WY|

3| GKWJ mvi WY ZLbB D`P gvřvi mvi WYřZ cwi YZ nře, hLb:

- K. bgřvi msL`v řekř cřZřbřaZř nře
- L. MYmsL`vi msL`v řekř_vKře
- M. D`P gvřvi e³e` cřZřbřaZř nře
- N. WZb A_ev Zvi AvřK Dcř`vb e`eüZ nře|

msřřřB cĕke

1| mvi WYKi Y Wk?

2| MYmsL`v vřřekb Wk?

i Pbvřj K cĕke

1| D`vni Ymn mvi WYi cĕKvi řř` Avřj vPbv Ki `b|

2| mvi WY MVřb weřeP` weř qmğř Avřj vPbv Ki `b|

DcvĚi weĥH, e'vL'v I Dc'vcb

Analysis, Interpretation and Presentation of Data

GKwU MtelYv cĥuqvi tkl cĥš-Gĥm gj'vqb Kĥi t'LtZ nĥe th, msMpxZ DcvĚi wĥK MtelYvi i'itZ MynZ Dĥĥk'ĥjvi mĥ_ m'wZcy'ntqtQ wĥK bv, ev tm'ĥjv Avĥ'Š tKvb A_ enb Kĥi wĥK bv | G cĥuqvg, DcvĚĥK weĥHĥYi gva'tg Pj K'ĥjvi wewfbœ'emkĥó'i eYĖv KiĥZ nq, tm mKj weĥó Pj K'ĥjvi gĥa' m'úĥKĥ m'vaviY iĥ'ĥjv cĥKvk Kĥi wĥK bv, Zv cixĥlv Kĥi t'LtZ nq, tm'ĥjvi cwi msL'vbMZ Zvrch'cixĥlv Kĥi t'LtZ nq Ges tmB m'vaviY iĥ'ĥjvi Kvĥ'KviY m'úK'e'vL'v KiĥZ nq | GK-Pj K, wĖ-Pj K I e'v-Pj K weĥó weĥHĥYi gva'tg DcvĚi G mKj weĥHĥYi Kiv nĥq _vĥK | tm Rb' DcvĚi weĥHĥYi I e'vL'vi KZ'ĥjv b'wZgyjv Ab'ymiy KiĥZ nq | weĥHĥYi I e'vL'vKZ MtelYvi djvdj ĥK ĥw' cĥKvk bv Kiv nq, Zĥe cĥiv MtelYv cĥuqvu A_ĥxb nĥq cĥo | AZGe, MtelYvi djvdj ĥK cWĥKi Dĥĥk' Dc'vcĥbi j'ĥĥ' GKwU Kvĥĥi cĥZĥe`b cĥvqĥb GKrb mdj MtelĥKi `ĥĥZvi cĥKZ cĥZdj b NĥU | G BDwĥtU, G mKj wĥlĥqi Avĥj vP'vbi gva'tg Avgiv GB Mĥš'i mgwĥB Uvbĥev |

GB BDwĥtU Avgiv th cW'ĥjv Aa'qb Kiĥev, tm'ĥjv ntj v:

- ◆ cW - 1 : DcvĚi weĥHĥYi I e'vL'vi b'wZgyjv
- ◆ cW - 2 : GK-Pj K weĥó weĥHĥYi
- ◆ cW - 3 : wĖ-Pj K weĥó weĥHĥYi
- ◆ cW - 4 : e'v-Pj K weĥó weĥHĥYi
- ◆ cW - 5 : MtelYv cĥZĥe`b

DcvtËi weþkH I e`vL`vi bmxZgvj v *Principles of Analysis and Interpretation of Data*

GB cvW þkþl hv Rvbr hvte —

- DcvtËi weþkH I e`vL`vi gta` mæúK®
- Acwi gYmZ DcvtËi e`envi
- þkYxe×KiþYi bmxZgvj v
- AKvWvtgve× wel qe`þkYxe×KiþYi bmxZgvj v
- DcvtËi cwi msL`vbMZ weþkH

DcvtËi weþkH I e`vL`vi gta` mæúK® (Relationship between Analysis and Interpretation of Data)

weþkH I e`vL`vi mæúK® mgm`v, þj vi wfbæzvi KviþY DcvtËi weþkH I e`vL`vi gta` th mæúK®, Zv GKw Mþel Yv t_þK Ab` Mþel Yvq wfbæntq _vtK | mvari Yfvte, e`vL`vgj K ev cix¶Ygþ K Mþel Yvi Zj bvq eYþvgj K Mþel Yvq, DcvtËi weþkH I e`vL`vi t¶þt AwakZi mgm`v t`Lv t`q | Zte, thþnZi weþkHþYi tgšj K bmxZgvj v, þj v me aiþYi Mþel Yvi t¶þt GKbfvte c`þhr`, tmþnZi Mþel Yv bKkvi wfvÉþZ wfbæwfbæfvte weþkH I e`vL`vi bmxZgvj v mæúK® Avtj vPbvi c`þqvRb tbB | DcvtËi weþkH I e`vL`vi mæúK® þj w`þfwi½ iþqtQ | GKw w`þfwi½ Abþvqx, weþkH I e`vL`vtK þj wfbæc`þqv wnmvte t`Lv nq Ges wðZxq w`þfwi½ Abþvqx, weþkH I e`vL`vtK Avzvxfvte RwoZ GKw c`þqv iþqtQ Awet`Q` Dcv`vb wnmvte t`Lv nq | Avgiv Avgvt`i Avtj vPbvq wðZxq w`þfwi½UþK MþY Kiþev |

þþnZi DcvtËi weþkH I e`vL`vi cvi`úwi Kfvte Nwbó, tmþnZi e`vL`vi Avj v`v tKvb KgRvÜ bv ntq weþkHþYi B GKw weþkH I e`vL`vi w`þfwi½ cwi YZ nq | AZGe, e`vL`vi c`þqvþK`úó Kþi tbqvi Rb`, weþkH c×wZi cþe`e`vL`vi Avtj vPbvU Kiv thþZ cvþi | DcvtËi e`vL`vi nþj v, Mþel Yvq c`þB djvdj mgþni GKw e`vcK Aþ_þ AþštY | GB Aþštvi þj c`þvb w`K iþqtQ | c`gZt, Ab` Mþel Yvq c`þB djvdj þK GB Mþel Yvi mvt_ hþ Kþi mvgwRK Mþel Yvi GKw avivewinKZv c`þZóv Kiv | wfbæfvte ejv hvq th, DcvtËi e`vL`vi eYþvgj K AbþUvb t_þK cix¶Ygþ K AbþUvb DEiY Nuþbvi c`þqv mvt_ mæúK® | G t¶þt, eYþvgj K Mþel Yvq c`þB djvdj i e`vL`vi cix¶Ygþ K Mþel Yvi Rb` AbþKí`Zwi Kþi | wðZxqZt, DcvtËi e`vL`vi DcvtËi e`vL`vgj K c`þtqi Rbþ t`q | DcvtËi weþkH I e`vL`vi Avtj vPbvq Avgiv Acwi gYmZ DcvtËi e`envi, weþkH wnmvte þkYxe×KiY c×wZ, DEi`dvi mviwYKiY, DcvtËi cwi msL`vbMZ weþkH, KvþKvi Y mæúK® Dci w×všgþ K Dcmsnvi Uvbn, BZ`w` w`þfwi½ þj vi Dci tRvi t`þev |

Acwi gYmZ DcvtËi e`envi (Use of Non-Quantified Data)

mvgwRK Mþel Yvq Acwi gYmZ DcvtËi e`envi c`þt½ cUþZþ`i gta` þaiþYi gZvgZ iþqtQ | GKw gZ Abþvqx, mvgwRK weÁvþbi mKj Z_þK bmxZMZfvte cwi gvc ev þkYxe× Kiv hvq | GB w`þfwi½UþK 0`þev`x0 w`þfwi½ ejv nq | AZGe, hLbB Avgiv Acwi gYmZ

DcvfEi gftLvgvL nB, ZLbB Avgvft` i cAbv KvRwU ntjv, wetkHfYi gva`tg tm,tj vftK cwii`x Kiv, hvfZ Kti tm,tj vftK cwii gYmPKfvte tkYxe` Kiv hvq| wKs`wZxq gZwU cUg gftZi weciXZ tgi`tZ Ae`vb Kti| GB gZ Abhvqx, cUzWU NUbftKB `ZSfvtA_en etj gtb Kiv nq| GB `wofwzWUtk UcbAev`x0`wofwz ejv nq| hLb Avgvft` i cwii gvc cUqv, gvcbx, ev tkYxe`KiftYi cUqv chfBZv wbtq mft`n t`Lv t`q, ZLbB Avgiv cUcAev`x `wofwzi Ae`vb MhY Kti _vK| A_uf, Avgiv GKwU wbu`0 chfEftYi Abb`ZvftK `fKvi Kti wB| mvgwRK weAvftbi MtelYvq`WU `wofwzi B cUzdj b t`Lv hvq|

mvgwRK MtelYv cUzte`tbi cUzWU cvKB GKwU welfqi mvt_ cwiiPZ th, Acwi gYmZ Acwi tkwaZ DcvEtk (thfvte tm,tj vftK mSMh Kiv ntqtQ) cUqkt D`Pzi gvTvg cwii gvcKZ cwii gYmZ DcvfEi mvt_ e`envi Kiv ntq _vftK| A_uf, cwii gYmZ wetkHfYi mvt_ mvt_ DEi`vZv KZR cU E Dw3tk ueu e`envi Kiv ntq _vftK| G welfq tKvb mft`n tBb th, G aiftYi ueu Dw3i ASffB mvgwRK weAvftbi MtelYvi wbfPkj Zvi gvTvtK ewx` Kti| Zvi A`GB bq th, ueu Dw3i ASffB i wQtb tKvb tRvi `eAmbK hy3 i tqtQ| G welfq tKvb weZtk`bv wMtg, wetkHfYi chftq G aiftYi Dcv`vb e`envti i `eAmbK KgRvUw Avtj vPbv Kiv Avgvft` i Dft`k, `eAmbK hy3wU bq|

AZGe, Acwi tkwaZ DcvEtk cwii gYmZfvte ifcvst` Kiv ntqtQ wK bv, tmwU weZtkP evBti titL ejv thtZ cvti th, wetkHfYI e`vL`vq Acwi tkwaZ DcvEtk e`envi Kiv thtZ cvti| GKwU Dw3i mKj welfqtk cwii gYmZfvte tkYxe`KiY Kivi cvkvcwk, tmB Dw3i ueu e`envi Kiv hvq, hv cviv tcvUtk Abvab Kitz mrvh` Kti| Zte, GuU gtb ivLv cUhrBb th, GKwU eYvgj`K Dw3i mKj welfqtkB cwii gYmZfvte tkYxe` Kiv hvq bv| Acwi gYmZ Acwi tkwaZ DcvE e`envti i GKwU AwZwi`3 mjev ntjv th, cwii gYmZ wetkHfY th welfq,tj vftK Aetnjv ev Dtcftv Kiv nq, tm welfq,tj vl mvgtb Pjt Avtm| wetkHfYi chftq, Acwi tkwaZ DcvfEi e`envi `WU `ZS;KgRvU m`uv`b Kti| GKwU ntjv, bZb AS`ftK Df`wcz Kiv Ges Ab`wU ntjv, GKwU wetkl tkYx`dvi mvt_ msk6-Af`P cwii wftK `uo Kti tZvjv|

bZb AS`ftK Df`wczKiY (Stimulating New Insights): GKwU MtelYvi bKkv hZ Kftvi wbgvbeZv AbvniY KtiB wbgv Kiv tnvK bv tKb Ges Gi cwii mSL`vbMZ wetkHfYi cxwZ,tjv hZ cwii kwj ZB tnvK bv tKb, Acwi tkwaZ DcvEtk cixftv wbiXftv Kti t`Ljt, Zv t`tk AftK `i`Zcy`AS`fti RbftwZ cvti| G mKj AS`ft wetkHfYtk mnRZi Kivi gva`tg PjK,tjvi gta` we`gvb m`utKp cKuztk `uofvte eStZ mrvh` Kti Ges fvel`r MtelYvi Rb` AbKfti Rbft`q| cwii mSL`vbMZ wetkHfYi tkl chftq chS-Atcftv bv Kti, hw` Acwi gYmZ DcvfEi cixftv-wbiXftv cviv MtelYv cUqv gta` Pjvftbv nq, tm tftt GuU metPtq tekx dj`vqK nq| GKRb mvgwRK weAvbx hw` G welfqWU m`utKp`mPZb _vftKb, Zte wZvb wbtmft`tn msMpxZ DcvfEi e`vL`vq AwakZi Dcv`vb hy3 Kitz cviteb Ges Zvi MtelYvi Dcmsvfti i gvftK mgx` Kitz cviteb|

mvgwRK weAvbxt` i Awakvsk wetkHfYx cUym wby3 _vftK, GK`j e`w3i e`MZ `enk0 Ges Zvt`i fiveMZ cUzWUqv gta` m`utKp`vctbi Dci| wKs`we`gvb m`utKwU Aw`Zj th mKj Dcv`vftbi mvt_ RwoZ, `iagvT tm,tj vftK Dcjwä KivB ht_0 bq| Acwi tkwaZ DcvfEi cixftv wbiXftv bZb w`Mst` DftwPbl Kti _vftK| Zte, GuU gtb ivLv cftqRb th, PjK,tjvi gta` m`utKp e`vL`vi Rb`, w`K wft`Rbvi Drm wnmvte Acwi tkwaZ DcvfEi e`envi Kiv tMjt I tm e`vL`v,tjv memgq mwK bvI ntZ cvti| hZftY chS-bv GB cUweZ e`vL`v,tjv cwii gvc Kiv hvq Ges tm,tjv cwii mSL`vbMZ cixftvftK m`e Kti tZvtj, ZZftY

hw` tkvb wbgq fiv`v bv nq, Zte GKwU tmtU`βtqi Awak tkYx-`dv_vkiz cvi | tm t`tt, KZUKz e`wZμgtK MhY Kiv nte, tm wltq GKwU wmvS-MhY KitZ nte | bwiZMZFvte, tkYx-`dvi tmU wbg`Yi Rb` me`_tjv %enkó`K e`envi Kiv m`e ntl | ev`te GuU c`qkt wgz`qx | dj`vqK nq bv | KviY, mKj tkYwefw³KitYi bwiZB AbymÜvtbi D`i k`iK KvhRi Kti bv | wKQz wKQz t`tt, Acwi tkwaz DcvE`K tkYx`x Kti wvfbetkYxtZ wef³ Kiv KwB ntq cto | hLb DEi`_tjv tgvUvgUfvtē mij | I`úo nq, ZLb tkYx-`dvi tmU wbg`Y Atc`ttKZfvte mnR Ges tm`_tjv tK my`úofvte msÁwqZ Kiv hvq | wKs` wKQz wKQz wltq e`i t`tt, KvrwU KwB | mgq mvtc`tt ntq cto |

aiv hvK, GKwU c`Zövtbi bwiZ wba` Kiv KgRZP | KgPvix`i Rb` GKwU AvevmK Gj vKv wbg`Yi cwi Kí bv wbtqtQb | cwi Kí bvi c`v`vq ej v ntqtQ th, ðAvevmK Gj vKv wbg`Yi Rb` `vtbi m%U wimb, Kg`_tj hvevi Rb` hvbevntbi h_vh_ e`envi, KgRZP KgPvix`i gta` cvi`úmi K m`ú`K P Dbq, BZ`w` wltq`_tjv tK wetePbvq ti`L, Kg`_j msj MaeGKwU wlv`_G Gj vKv KgRZP | KgPvix`i Rb` GKwU e`Zj wenkó AvevmK Gj vKv Mto tZj v nte` | mKj KgRZP KgPvix`i gta` GB c`v`v`v MhY`thvM` nte wK bv, tm j`tt` GKwU gZvgZ Rwi c`w Pj bv Kiv nq | tm Rwi`c, Ab`vb` c`k`e mvt`_ KgRZP`i wRÁmv Kiv ntqtQ`_tjv th, ðKgRZP`i mvt`_ KgPvixiv GKB AvevmK Gj vKv emevm Kitj KgPvix`i Abf`wZw wK nte etj Avcwb gtb Ktib? Ges KgPvix`i wRÁmv Kiv ntqtQ`_tjv th, ðKgPvix`i mvt`_ KgRZP`i GKB AvevmK Gj vKv emevm Kitj KgRZP`i Abf`wZw wK nte etj Avcwb gtb Ktib? GB c`k`e`_U DEti t`Lv wltqtQ th, DEi`_tjv metP`q FYvZK gtbv`v`e t`_K metP`q avvZK gtbv`v`e ch`S-w`-Z i`ttQ | thgb,

<i>KgRZP`i etj`_tQb</i>	<i>KgPvixiv etj`_tQb</i>
• KgPvixiv gtb Kite th, Zviv mggh`_vm`ub`	• Zvt`i tZv eÜZc`Y`etj B gtb nq
• Zviv avi YwU`K MYZw`S`K gj`_teva c`Zövi gvBj dj`K etj gtb Kite	• Avgvi gtb nq bv Zviv wKQz gtb Kite
• Awg Zvt`i mvt`_ tgj vtgkv Kwi bv Kv`RB Awg Rwb bv Zviv wK gtb Kite	• Zviv avi YwU`K tgv`UB cQ`_ Ktib w
• Zviv wbtRiv A`_`_teva Kite	• Zviv gtb Kite th, Zvt`i gh`_v`K`_tt`Kiv ntqtQ

GB DEi`_tjv tK w`_tq`_metP`q Abk`_j`_G Ges`_metP`q c`ZK`_j`_G gv`_vq tkYx`x`_KtYi bwiZgvj v AbymY Kti, GKwU tkYx-`dv tmU %Zwi Kiv hvq | A`_`_tt, tkYx-`dv`_tjv nte`_metP`q Abk`_j`_G,`_metP`q c`ZK`_j`_G,`_Übitc`_tt`_G Ges`_ÜAb`vb`_G | Dctii c`ZwU DEtii gta` GKwU`_Z`_S; A`_`_úofvte tevSv hvq | wKQz DEtii mvt`_ GKwU gj`_teva RwoZ i`ttQ, hv GKB AvevmK Gj vKv emevtmi dtj KgRZP | KgPvix`i wKQz myeav | Amjeav`K wbt`_R Kti Ges wKQze³te`i gta` tmB gj`_tertai Abc`w`_Z j`_tt` Kiv hvq |

th tkvb ai`_tYi tkYx-`dvi ZwiJ Kv e`envti i c`e`_c`ZwU tkYx-`dvi wltq e`_tK hZUv m`e`_mwKfvte wlv`_G Kti t`l`qv c`Q`vRb | tkYx-`dvi A`_`_K tevSiv`vbi Rb`, c`ZwU tkYx-`dvi mvt`_ D`vni`_tYi gva`_tg GKwU ev`_`_U ev`_L`_vgj`_K evK`_hj`_ Kti t`_l`qv DvPr | thgb, GB DEi`_tjvi A`_`_ntjv th, ðKgPvixiv KgRZP`i mvt`_ GKB AvevmK Gj vKv emevm Kti wKQz myeav t`vM Kite` | D`vniY wmvte ej v hvq th, ðKgPvixiv gtb Kite th, Zviv

mggh® vm=úúúú| G aiťYi mjbw` 8fvte msÁwqZ tkYx-` dv,tj vi e`envti tKvb mgm`v t`Lv
bv w` tj l, wKQz wKQz DĚi tK tkYx× Kivi t¶¶Ĥ R wJ Zv t`Lv t` q| thgb, tKvb tKvb DĚi
hw` Ggb nťZv th, 0Zviv avi YwU tK cO` Kti tQ, Kvi Y Zviv Rvťb tKb0, ev 0Zviv GKB
AvevmK Gj vKvq emevm KiťZ Pvq bv, Kvi Y, Zviv Rvťb tKb0| tm t¶¶Ĥ, hZ hZB tbqv
trvK bv tKb, G aiťYi DĚi tK weťk H Yi Rb` tkYx× Kiv tek R wJ l KóKi ntq cto|
Kvi Y, Dctii DĚi wJ A_ eáwŠKi | tmiU tKvb mjeav ev Amjeav m=úúúú gĵ` tevtai mvt_
RwOZ A_ fK wbt` R Kti wK bv, Zv wbař Y Kiv KwWb| G aiťYi DĚi tK wKfvte tkYx× Kiv
nte, tm wel tq AwZwi 3 bwiZgvj v cřqb KiťZ nte|

AKvVtgvex wel qe` tkYx×KiťYi bwiZgvj v (Principles of Classifying Unstructured Material)

AKvVtgvex wel qe` tkYx×KiťY (thgb, chře¶ĤYi wbgg, NUbvi BwZnm, e3Zv, ev
AKvVtgvex mv¶¶vrKvi, BZ`w` i t¶¶Ĥ), wKQz weťkl mgm`v t`Lv t` q| AKvVtgvex Dcv`vb
wb tq KvR KiťZ tMťj, c0tg th mgm`wU t`Lv t` q, Zv nťj v wel qe` i tKvb w` K,tj vťK
tkYx× Kiv nte Ges tkYx-` dvi tmiU wbgř Y tKvb tkYx×Ki Y bwiZ e`eüZ nte, tm wel tq
vm×vŠ-M0ťYi mgm`v| thtnZz AbymÜvbgj K Mtel Yv msÁwMZ KviťY tKvb mý úo AbĴí wbtq
i i` Kti bv, tmtnZz G aiťYi Mtel Yvi t¶¶Ĥ, tkYx×Ki Y bwiZgvj v wbař Y Kiv weťkl fvte
KwWb| DcvĚ msM0ni mgq Mtel K Rvťbb bv th, tKvb wel qwU meťPťq „i ZcY`ntq t`Lv
t` te| Kvi Y, weťk H Yi mgq Mtel K i ay AKvVtgvex Dcv`vb wbtqB KvR Ktib bv, ZvťK
AťbK tekx cwi gř Y DcvĚ wbtq| KvR KiťZ nq, hvi AwakvskB nqťZv cieZřZ Ac0mwšK
etj weťenPZ nťZ cvti |

tKvb AbymÜvbgj K Mtel Yvq Z` weťk H Yi c0g avcwU nťj v, KvhrĴix AbĴí MVb Kiv, hv
tkYx×Ki Y bwiZgvj vi Rbť t` q| tm j t¶¶Ĥ, Mtel K Zvi Mtel Yvq c0B DcvĚi mKj
Dcv`vb tK Aa`qb KiťZ i i` Ktib Ges tkYx×KiťYi mĤ cvl qv hvq wK bv, tm Rb` mZK`
_vťKb| KvhrĴix AbĴí wbgř Yi tek wKQz c×wZ i tqtQ| c0gZt, th` j ev tMv0xi Dci wZnb
Mtel Yv KiťQb, Zvi wK wecixZ %ekó`m=úúúú Gk wU tMv0xi Dci we` gvb Dcv`vb,tj vťK
Aa`qb Kiťeb, hvťZ Kti wZnb G` ůwU tMv0xi gta` cv`R` ,tj vťK ešťZ cvtib| thgb,
wKťkvi Acivaxť i Dci cwi Pwĵ Z Mtel Yvq, mgvRKj` vY` Bťii bwi t` tK Acivax bq,
Ggb wKťkviť i tKm ÷wWI Aa`qb KiťZ cvtib| w0ZxqZt, Mtel K Zvi NUbv,tj vťK
GKBi Kg mvari Y`ewktó`i wřwĚťZ weřfboe`ťj fřM KiťZ cvtib| Zvi ci, Mtel K wbtRťKB
c0kK iťeb th, wZnb weřfboeťkYx-` dv,tj vťK GK i Kg gtb KtiťQb wKtmi wřwĚťZ Abc0wYZ
ntq? ZZxqZt, Mtel K Ggb wel q,tj vťK chře¶ĤY l tm,tj vi m=te` e`vL`vi mÜvb Kiťeb,
hv mvari Y Ávb, ev ZwĚĴ cř`vkvi w` K t` tK Av0hrbK c0Ā etj gtb nťZ cvti | Ggb
wK, mý úo AbĴí wbtq AKvVtgvex wel qe` i weťk H YI AťbK mgq mgm`v mw0 Kti | Kvi Y,
tKvb GKwU` wj j t` tK tKvb GKwU wbow 8 wel tqi Z` ev` cto tťZ cvti Ges AbĴí i
mvt_ mi mwi m=úúúú bq, Ggb wel qe` l c0i cwi gř Y cvl qv tťZ cvti |

DcvĚi cwi msL`vbMZ weťk H Y (Statistical Analysis of Data)

DcvĚ msMwZ Kiv, tm,tj vťK A_ 8nfvte Dc`vcb Kiv Ges chře¶ĤY,tj vťK AbĵgZ
AbĴí i wřwĚťZ eY0v l e`vL`vi Rb`, Avgvť i cwi msL`vbMZ c×wZ e`envti i c0qvRb|
Kvi Y, Avgiv th mKj c0Ā tK wbtq Mtel Yv Kwi, tm me c0Ā i gta` we` gvb mvari Y
i fc,tj v, cwi msL`vbMZ tKŠktj i c0qM Ovov AwřÁZyĵ äfvte ešťZ cwi bv| cwi msL`vb tK
hLb i agvř eY0v l weťk H Yi Rb` e`envi Kiv nq, ZLb tmB cwi msL`vbMZ c×wZ tK

eYbvgj K cwi msL'vb c xwZ etj | DcvE'K KvhRi Ges A_@nfvte msMwZ Ges
msw'fjBKi'Yi Rb'', eYbvgj K cwi msL'vb Mtel KtK weifbæc xwZ I tKSkj mieivn Kti |
Ab'w' tK, cwi msL'vb tK hLb Awf'AZvgj K ch'fe'f'Yi w'f'w'Z, tKvb e'ev NUBvi Dci c'ß
mvavi Y i'f'ci e'vL'vi gva'tg wmx'vS-M'hY, Dcmsnvi Uvbn Ges f'wel'v'YxKi'Yi Rb'' e'envi
Kiv nq, ZLb tmB cwi msL'vbMZ c xwZ tK wmx'vSgj K cwi msL'vb c xwZ etj | G mKj
wmx'vS, Dcmsnvi I f'wel'v'Yxi c'fe'Ab'vgZ Ab'K' cix'f'vi gva'tg M'pxZ nq | wmx'vSgj K
cwi msL'vb c xwZ Ab'K' cix'f'vi I Kvh'Kvi Y e'vL'vi mKj c'Kvi c xwZ I tKSkj mieivn
Kti |

DcvE'i eYb'vg Avgiv GKwU NUBv, e'ev Rbt'Mv'xi mvavi Y 'enkó''_tjv wK Zv Rvb'tZ PvB |
GB mvavi Y 'enkó''_tjv Rvbevi Rb'' th cwi msL'vbMZ cwi gvc'_tjv e'envi Kiv nq,
tm'_tjv tK tK'`'xq c'èYZvi cwi gvc etj | tK'`'xq c'èYZvi weifbæcwi gvc itqtQ, hvi
c'Zw' tK DcvE'i c'KwZ m'ú' tK'ce'Ab'gv'tbi w'w' 'kZ'c'Y Ki'tZ nq | tmB Ab'gvb'_tjv
hw' Dch'p' bv nq, Z'te tK'`'xq c'èYZvi cwi gvc we'á'w'sKi n'tZ cv'ti | GKwU Mw'YwZK Mo
Ggb DcvE'i Rb'' c'q'qM Ki'tZ n'te, thL'v'tb e'w'bgj K gv'tv ev e'w'Bi mgZv'tK w'b't' R
Ki'te | thgb, 'GKRb e'w'3 gv'tm KZevi t'c'f'w'm'tn Qwe t' L'tZ hvb'0, G ai'tYi DcvE'i Rb''
Mw'YwZK Mo e'envi Kiv h't_vch'p' n'te | Kvi Y, GB gv'tvq 'KZevi 0 - Gi gZ msL'v, e'w'Bi
mgZv'tK avi Y Kti | Ab'w' tK, weifbæai'tYi Qwe t' L'vi msL'vi w'f'w'Z c'Q'`'i µg w'by'q
Kivi Rb'' ga'gv c'q'qM KivB t'k't n'te | Kvi Y, th'tnZi c'Q'`'i gv'tvi Ae'v'b'_tjv GKwU
t'_tK Av'ti K'wU mgvb `t'z'z'j bq, t'm'tnZi Mw'YwZK M'toi e'envi, G t'f'f't' c'è'hr'R'' n'te bv |
t'Kvb ai'tYi Qwe t'ekx t' tLb, c'è'k'è D'E'ti i t'f'f't' c'è'z' K n'te Dch'p' cwi gvc |

DcvE'i eYb'vg Avgiv GI Rvb'tZ PvB th, GKwU w'w' 'kZ' NUBv, e'ev e'w'3 tmB NUBv, e'ev
e'w'3 i mvavi Y 'enkó'' t'_tK KZUKz'w'f'b'q' A_@, c'Zw'w' e'w'3 i Qwe t' L'vi c'Q'`' wK GKB i Kg,
bv wK tm t'f'f't' w'f'b'z'v i'tqtQ, Avgiv Zvl Rvb'tZ PvB | tK'`'xq c'èYZvi cwi gvc mg'tni gZ,
w'f'b'z'v cwi gv'tci I weifbæai Y i'tqtQ Ges DcvE'i c'KwZi m'v'_ w'w' 'kZ'ce'Ab'gv'tbi kZ'c'Y
Ki'tj B t'Kej GKwU cwi gvc tK c'q'qM Kiv hv'te | mvavi Y 'enkó'' t'_tK c'Zw'w' DcvE' KZUKz'
we'z, Zv eYb'vi Rb'' th cwi gvc'_tjv e'e'üZ nq, tmB cwi gvc'_tjv tK we'w'zi cwi gvc etj |
tm'_tjv vi g'ta'' cwi mi, PZ'z' R' e'e'avb, Mo e'e'avb I cwi w'gZ e'e'avb 'i'Z'c'Y'q

Avgiv Rvb' th, cwi msL'vbMZ c xwZi m'p'z e'envi'ti, we'b'v'tmi i'f'c I Av'KwZ m'ú' tK'ce'avi Yv
AR'ß Ac'wi nv'h'q' mvavi Y'f'v'te Ab'gvb Kti t'bl qv nq th, th t'Kvb Pj t'Ki Rb'' we'b'v'tmi ti L'w'U
`'f'w'eK | w'K's' c'KZ'c't'f' e'ü Awf'AZvj ä we'b'vm Z'irch'e'Y'f'v'te `'f'w'eKZv t'_tK Avj'v`v
n'tq _v'tK | A_@, th Pj K'w' t'K cwi gvc Kiv n'tqtQ, tmB Pj t'Ki cwi t'c'f'f't'Z t'Mv'xi m'`m'iv
w'K'f'v'te we'b'v'`-i'tqtQ, DcvE' eYb'v Ki'tZ w'w' t'q Avgiv Zvl Rvb'tZ PvB | thgb, t'c'f'w'm'tn Qwe
G'Kev'ti B t' L'tZ hvb bv, Ggb t'jv t'Ki msL'v wK hvi gv'tm w'Zbevi hvb, Z'v't' i c'q'q mgvb? bv
wK Z'j bvgj K'f'v'te t'ek' gv'b'j gv'tm w'Zbevi t' L'tZ hvb, ev A't'c'f'v'KZ Kg gv'b'j G't'Kev'ti B
hvb bv Ges A't'c'f'v'KZ Av' I Kg gv'b'j gv'tm Oq ev Zvi Aw'Kevi hvb?

weifbæPj t'Ki g'ta'' m'ú' tK'c'ix'f'v Kti t' L'vi Rb'' m'ú' tK'p' cwi gvc'_tjv e'envi Kiv n'tq
_v'tK | w'K's' GB cwi gvc'_tjv i'agv't' m'ú' tK'p' eYb'v Ki'tZ m'f'lg nq, m'ú' tK'p' Kvh'Kvi Y
e'vL'v Ki'tZ cv'ti bv | `ß ev Z'tZw'ak e'w'3 ev t'Mv'xi ga'Kvi cv'_R'' eYb'vi Rb'', Avgiv
weifbæc'ix'f'v e'envi Kwi (thgb, t-test, z-test, F-test, χ^2 -test, BZ'w'w') | msM'pxZ Z'_
t'_tK c'ß djv'dt'j i m'v'_ c'KZ NUBvi Z'j bvi Rb'', Avgiv weifbæc'ix'f'v Ki'tZ PvB | b'g'bv
t'_tK c'ß djv'dt'j i w'f'w'Z, th mg'M'K t'_tK b'g'bv Pqb Kiv n'tqtQ, tmB mg'M'Ki Dci

mvaviYxKi†Yi Rb` AbKÍ cixŋv Kiv nq| Kvh©KviY mæú†K® e`vL`vi j†ŋ, eú-Pj K wekó we†k†Yi gva`tg weifbæcwi msL`vbMZ c×wZ e`envi Kiv nq|

mvaviYfvte, DcvĚ msMh I cŋµqvKi†Yi ci, M†elK we†k†Yi Rb` cŋZ nb| DcvĚ we†k†Yi wZbw cāvb cKiY i†q†Q — GK-Pj K wekó we†k†Y, wŦ-Pj K wekó we†k†Y Ges eú-Pj K wekó we†k†Y| hw I mvgwiRK weÁv†bi AwaKusk cwi msL`vbMZ we†k†Y eú-Pj K wekó we†k†Yi gva`tg mæú†Kiv nq, Zeyl GK-Pj K Ges wŦ-Pj K wekó we†k†Y cŋµqv mæú†K©aviYv _vKv cŋqvRb| Zv bv ntj, eú-Pj K wekó we†k†Y†K c†ivcvi fvte Abæveb Kiv hvq bv| GK-Pj K wekó we†k†Y ntj v, GKwU Pj †Ki web`vm†K i`agvĪ GKwU Pj K w`†qb cixŋv Kivi cŋµqv Ges wŦ-Pj K wekó we†k†Y `ŋwU Pj †Ki g†a`Kvi mæúK†K eYŦv K†i | GB wZb ai†Yi cwi msL`vbMZ we†k†Y c×wZi Aax†b weifbæcKvi cwi msL`vbMZ †KŠkj i†q†Q, th_†jv cvW 2, 3 I 4 -G we`wii Zfvte Av†j vPbv Kiv n†e|

mvivsk

DcvĚ†K mviwYex Kivi ci, Zv eYŦv I e`vL`vi cŋqvRbxqZv †`Lv †`q| Dcv†Ěi e`vL`v I we†k†Yi †ŋ†Ī, `ŋwU `wŋfwi/zi cwi Pq Avgiv cvB| GKwU `wŋfwi/zi Ab†hvqx, we†k†Y I e`vL`v `ŋwU wifbæcŋµqv Ges Aci `wŋfwi/zi Ab†hvqx, G `ŋwU A½v½xfvte RwoZ GKwU cŋµqv i`ŋwU Awe†`Q` Dcv vb| AcwivgYmZ DcvĚ mæú†K® `ŋwU `wŋfwi/zi cwi Pq cvlqv hvq| cŋµqv Ab†hvqx, mvgwiRK weÁv†bi mKj Z_†K bwiZMZfvte cwi gvc ev †kYxex Kiv hvq| Aci `wŋfwi/zi Ab†hvqx, cŋZwU NUbv††KB `ZŠfvte A_@n etj g†b Kiv nq| e`Zt, mgvR M†elYvq hZ weZK©ev `wŋfwi/ziB _vKK bv †Kb, cŋß DcvĚ†K A_@n K†i e`vL`v I eYŦv Kivi Dci wbfP K†i M†elYvi h_v_Zv|

cvfVvEi gj`vqb

`be⁹³K cġae

mVVK DĒti i cvfk WJK (√) WPy w`b -

1| ōcŃZUW NUBvġKB `Zšfvtē A_ēn etj gtb Kiv nqŃ — Kvt` i gġZ?

- K. `pēv`xt` i gġZ
- L. Wμqvēv`xt` i gġZ
- M. cġĀēv`xt` i gġZ
- N. gvKŃēv`xt` i gġZ|

2| mġ ūó Abġġi wbtq AKvWġgve× wēl qē`i wētkĤYI mġm`vi mġó KiġZ cvfi | Kvi Y:

- K. `wġj t_ġK GKUW wbr`Ń wēl tqi Z_` ev` cotZ cvfi
- L. Abġġi i mvt_ RwoZ bq Ggb wēl qē`' cŃi cwi gvġY _vKġZ cvfi
- M. K I L Dfqb
- N. AKvWġgve× wēl qē`ġZ eYŃv _vġK cwi wġZ|

3| mavi Yfvte, DcvĒ wētkĤYi _____ cġvb cġKiY i tqŃQ|

- K. `ŃU
- L. wZbwU
- M. Pvi wU
- N. cvPwU

mswŃB cġae

1| tkYxe×KiġYi bwiZgvj v wK?

2| Acwi gvYMZ DcvġĒi `ēnkŃ wK?

i Pbvġj K cġae

1| ġkYxe×KiġYi bwiZgvj v_ġj v D`vni Ymn Avġj vPbv Ki`b|

2| DcvĒġK A_ēn Kġi Dc`vcġbi tŃġġġ, cwi msL`vġbi e`envi D`vni Ymn Avġj vPbv Ki`b|

GK-Pj K weikó weikH
Univariate Analysis

GB cW tkłI hv Rvbn hvte —

- GK-Pj K weikó weikH Yi gva`tg DcvĚi eYĚv
- tk` ħq cĚYZvi cwi gvc
- we`wzi cwi gvc
- web`vġmi ifc I AvKwZ

GK-Pj K weikó weikH Yi gva`tg DcvĚi eYĚv (Description of Data through Univariate Analysis)

GK-Pj K weikó weikH ntjv, GKw gwĪ Pj ħKi Dci wfiĚ Kti tmB Pj ħKi `enkó` ,tjvi web`vmġK cixġv Kti ħ`Lv| GK-Pj K weikó weikH cġquvq, AġbK aiġYi cwi msL`vbMZ c×wZ I tKškj e`envi Kiv ntq `vġK| Gi gġa` Dġ ĒġhvM` c×wZ I tKškj ,tjv ntjv, MYmsL`v wġtekb, tk` ħq cĚYZv I we`wzi wefbcwiv gvcmn web`vġmi ifc I AvKwZi wefbcw cwi gvc| ħġnZi BDwBU 9-Gi cW 3-G DcvĚ mswġġBKiġYi cġquv wmwte mviwYKiY I MYmsL`v wġtekbġi Dci we`wzi Avġj vPbv Kiv ntqġQ, tmġnZi GB cvġV Zv wġq Avgiv Avġj vPbv Kiġev bv| Zġe, iayGUKy ,iġZi mvġ_ Dġ Ē Kiv hvq th, GK ,Q chġġYġġK GKw MYmsL`v mviwYġZ Dc`vcb Kiv ntjv, mvaviYZt th tKvb cġvi DcvĚ weikH Yi cġ`vgK c`ġġc| KLġbv Gw tkl c`ġġcI ntZ cvġi, hw` MYmsL`v wġtekbġi AwZwi³ tKvb weikH Kiv bnq|

GKw MYmsL`v mviwYi Pvġġ chġġYB GKw RbġMvġx ev m=cġvġqi wKQyPgKcġ `enkó` m=úġK`Rvbi Rb` ħġ_ġ ntZ cvġi | GKw MYmsL`v wġtekb chġġY ,tjvi gġa` e`eavb Ges tkYx× tMvġx ,tjvi gġa` we`gvb cv`R`ġK wġġ`R Kti | GKw MYmsL`v mviwY ħ`ġL mnġRB tevSv hvq, tKvb tkYx ev tMvġw chġġY ,tjvi gġa` cġZwġaZġvix| Aweb`-DcvĚ i wġġK tkYx× Kti MYmsL`v wġtekbġi gva`tg Dc`vcb, GKw web`vmġK eYĚvi DcġhvMx cġquv ntj I, eYĚv I weikH Yi jġġ` Avġiv mswġġB cwi gvtci cġqvRb nq, hv GKw GKK msL`v w`ġq GKw cġiv web`vmġK eYĚv Kiġe| G aiġYi GKK msL`v w`ġq web`vġmi eYĚvi Rb` KZ ,tjv mswġġB cwi gvc Avġj vPbv Kti ħ`Lv hvK| Zġe, Dġ Ē Kiv cġqvRb th, DcvĚi weikH Y G mKj cwi msL`vbMZ c×wZ I tKškj cġqvġMi thšw³ KZwġġKB iagvĪ GB cvġV Avġj vPbv Kiv nġe, tm ,tjvi wġYġ c×wZ bq| KviY, tm ,tjv ŐmvgwRK cwi msL`vb cwi vPwZŐ (mgvRZĚġ-4) MŐš we`wzi Zfvte Dc`vcb Kiv ntqġQ| cġqvRbġevta, mswġġB cwi gvtci wġYġ c×wZ ,tjv tevSvi Rb`, tmB MŐš Abymiy Kiv thġZ cvġi |

tk` ħq cĚYZvi cwi gvc (Measures of Central Tendency)

DcvĚiwiki GKw web`vġm wefbcw aiġYi cĚYZv jġġ` Kiv hvq| thgb, tKvb DcvĚiwiki gvb ,tjv GKw we`Z cwi mġi web`-`vKġj I Awakvsk msL`vgvb GKw `vġb tk` ħfZ nevi cĚYZv cġkġ Kti| weikl gvbġK tk`^ Kti Awakvsk DcvĚiwiki tk` ħfZ nevi GB cĚYZwġġK GKw GKK msL`vgvb cwi gvtci gva`tg eYĚv Kiv hvq| G aiġYi cwi gvc ,tjvġK

tk`iq cEYZvi cwi gvc etj | tk`iq cEYZvi wefbaecwi gvtci gta` cPik (mode), ga`gv (median) | MnywZK Mtoi (arithmetic mean) e`envi mvgmRK Mtel Yvq tekx f`Lv hvq |

Gkuw web`vtmi gta` th gvbw mekaKevi Ntu, tmB gvbwK cPik etj |

cPik (Mode): tk`iq cEYZvi mePiq mnRZi cwi gvcwU ntjv cPik | DcvE msMni ci hLb DcvEi vktK GKw MYmsL`v wtektb mrvtbv nq, ZLb f`Lv hvq th, wKQy msL`vgvb tkvb tkYxZ AnaKevi AwefZ ntqtQ | GKw web`vtmi gta` th gvbw mekaKevi Ntu tmB gvbwK cPik etj Ges mekaK msL`vgvb m`oj Z tmB tkYx ev tkYx` dvtK cPik tkYx ejv nq | AwefZ-DcvEi t`tt cPik wYq Lp mnR | thgb, 25, 45, 22, 45, 30, 20, 45, 17, 35 Ges 45 DcvE i vkgvj wUtk chfeY Ki tj j`Kiv hvq th, 45 msL`wU mekaKevi NtuQ | GB 45 msL`wUB ntjv GB DcvEi vki cPik | wKs`web`-DcvEi t`tt GKw wtkl m` e`envi Kti cPik wYq Ki tZ nq, hv ntjv:

$$cPik = L_1 + \frac{\Delta_1}{\Delta_1 + \Delta_2} \times C.I.$$

thLvfb, $L_1 = cPik \text{ tkYxi wbgomxv}$

$$\Delta_1 = cPik \text{ I } cPik - ce`tkYxi \text{ NUBmsL`vi gta` cv`R}$$

$$\Delta_2 = cPik \text{ I } cPik - cieZ`tkYxi \text{ NUBmsL`vi gta` cv`R}$$

$$C.I. = tkYx \text{ e`wB}$$

ga`gv (Median): μgmPK gv`vq cwi gvcKZ Pjtki t`tt, A`bK mgq Avgv`i GKw web`vtmi ga`-gvbwi Ae`vb wYq ci qvRb ntZ cvti | thgb, tgavμg wYq ci, Qv`-Qv`x`i KZKvhZvi Av`cw`K „Zi tevSvi Rb` Avgiv RvbtZ PvbtZ cwi th, wv` GKw msL`vgvbi bxp ev Dcti KZRb, ev KZ kZvsk Qv`-Qv`x i tqtQ | G ai`Yi Av`cw`K Ae`vb wYq Rb`, tk`iq cEYZvi cwi gvc wmvte ga`gv wYq Kiv ntq `vtK | ga`gv GKw DcvEi vktK mgvb `B fvtM fvm Kti | A`f, gvbi EaY`g ev wbg`g Abynvti mrvtbv DcvE i vkgvj vtK th msL`vgvbwU mgvb `B fvtM fvm Kti, tmB msL`vgvbwU ga`gv etj | DcvEi vki tgvU msL`v hw` tetRvo nq, tm t`tt wK gvSLvtbi i vkuU ntjv ga`gv | wKs`hw` DcvEi vki tgvU msL`v tRvo msL`vq nq, tm t`tt DcvEi vki gvSLvtbi `wU gvbi Mo gvbw ga`gvK w` R Kti |

Gkw D`vniY w`iq w`q w`q tevSvi t`Pov Kiv hvK | bqU msL`vi GKw DcvEi vkt ntjv, 3, 8, 11, 12, 15, 18, 22, 25 Ges 36 | msAv Abjvqx, GB bqU msL`v gvbi gvSLvtbi msL`wU ntjv ga`gv, A`f, 15 | wKs`AwZwi³ GKw msL`v, 16, GB DcvE i vkgvj vi mv` thwM Kiv ntj, ZLb tmLvfb Avi tkvb ga`-gvb `vtK bv | μg Abynvti mrvtbv tmB AwZwi³ gvbh³ `kuU gvbi DcvE i vkgvj wU ntjv, 3, 8, 11, 12, 15, 16, 18, 22, 25 Ges 36 | G t`tt ga`gv wYq Ki tZ ntj, DcvE i vkgvj vi gvSLvtbi msL`v gv `wU Mo wYq Ki tZ nte |

$$AZGe, \text{ ga`gv} = \frac{(15 + 16)}{2} = 15.5$$

wefZ-DcvE t`tk ga`gv wYq m`wU ntjv,

$$ga`gv = L_1 + \frac{\frac{n}{2} - F}{f} \times C.I.$$

- thLvfb, L_1 = ga`gv m`oj Z tkYxi wbgomxgv
- F = ga`gv m`oj Z tkYxi wbgomxgvi µgthwRZ MYmsL`v
- f = ga`gv m`oj Z tkYxi e`wßi AŠFß MYmsL`v
- n = tgvU MYmsL`v
- C.I. = ga`gv m`oj Z tkYxi e`wß|

MwYwZK Mo (Arithmetic Mean): MwYwZK Mo ntj v, mvgwRK MtelYvq metPtq tekx Rbwçq Ges euj e`eüz tk`iq çEYZvi cwi gvc | DcvE iwkgvj vi mKj gvtbi thwMdj tK DcvE iwki tgvU msL`v w`tq fivM Ki tj th msL`vgvbwU cvl qv hvq, tmUB ntj v MwYwZK Mo | msAv Abhvqx, Mo wbyqqi exRMwYwZK mfwU ntj v,

DcvE iwkgvj vi mKj gvtbi thwMdj tK DcvE iwki tgvU msL`v w`tq fivM Ki tj th msL`vgvbwU cvl qv hvq, tmUB ntj v MwYwZK Mo |

$$\bar{x} = \frac{\sum_{i=1}^N x_i}{N}$$

- thLvfb, \bar{x} = x Pj tKi Mo
- x_i = x Pj tKi cöZwU gvb
- N = DcvE iwki tgvU msL`v |

ai v hvK, 5wU cwi evti i m`m` msL`v h_vµtg 4, 3, 2, 5 | 6 Rb | AZGe, mfw Abhvqx,

$$\bar{x} = \frac{\sum x_i}{N} = \frac{4+3+2+5+6}{5} = \frac{20}{5} = 4$$

A_w, 5wU cwi evti i Mo AvKvi ntj v 4 |

web`-DcvE t_tK MwYwZK Mo wbyqqi mfwU ntj v,

$$\bar{x} = \frac{\sum f_i x_i}{N}$$

- thLvfb, \bar{x} = x Pj tKi Mo
- f_i = NUbmsL`v
- x_i = x Pj tKi cöZwU gvb
- N = DcvE iwki tgvU msL`v |

DcvE tK wekHv Ki tZ wMtq MtelK tKvb cwigvcwU e`envi Kiteb, Zv wbfP Kti DcvE iwki cöwZ, MtelYvi welqe`, DcvE wekHvYi cöwZ Ges mybw`ö Dti tK` e`eüz tk`iq çEYZvi cö`quUi Dci | DcvE iwkgvj vi web`vnuU hw`mlyg nq, tm tqt t wZbwU cwi gvtci th tKvb GKwU e`envi Kijt B Pjt | Zte MwYwZK Mtoi e`envi memgqB çäv wetePbvq_vKv DvPr | Kvi Y, MwYwZK Mo AtbK tekx wbfPthvM` Ges cöZwvwaZkxj cwi gvc | MwYwZK MotK D`Pzi cwi msL`wbK e`envi cöqvM Kiv hvq | bgbv wePwZ Öviv Kg cfwweZ nq etj MwYwZK Mo tk`iq çEYZvi metPtq w`wZkxj GKwU cwi gvc | wKŠ` me aitYi cwi w`wZtZ, MwYwZK Mo Av`k`tk`iq cwi gvc bq | DcvE iwki hLb bvgmPK gvtvq cwi gvcKZ nq, ZLb cP`K ntj v tk`iq çEYZvi GKgvU cwi gvc | hLb DcvE iwki „YevPK nq, ev µgmPK gvtvq cwi gvcKZ nq, ZLb ga`gv ntj v tk`iq çEYZvi tk`ö cwi gvc | hLb GKwU web`vm Lp tekx ewlg nq, ZLb ga`gv GKwU A_en tk`iq cwi gvc wmwte KvR Kti |

MwYwZK Mo AtbK tekx wbfPthvM` Ges cöZwvwaZkxj cwi gvc |

e`wBggj K gvT`vq cwi gvcKZ Pj tKi t`qT`T, MmYwZK Mo wBY`q nTjv h_vh_ | wKŠ' DcvEiwmki gta` cŠwŠK gvtbi Dcv`wZ _vKtj, GwU GKwU web`vm m`u`K`avš-aviYv w`tq _vtK | hw` wZbwU cwi gvtci gvtbi gta` Lp tekx wfbz`v t`Lv hvq, Zte tm t`qT`T wZbwU cwi gvtcKB wBY`q Kti Dc`vcb Kiv ev`Abxq |

we`wZi cwi gvc (Measures of Dispersion)

tKvb web`vtmi AšfP DcvEiwmk GKwU we`tkl `vtb tK`xfZ nevi c`Yzv c`k`B Ki tj | cŠZwU gvb tmB tK`xq gvbwU t`tK wfb`p we`wZi cwi gvc_tjv, tK`xq c`Yzvi cwi gvc_tjvi cŠZwbwZ`xj Zvi gvT`v m`u`K`GKwU m` aviyv c`vb Kti | DcvEiwmki gvb_tjv hw` tK`xq gvb t`tK Lp tekx Qwotq _vtK, ZLb Avgiv ej tZ cwi th, web`vmlU gta` mgifcZvi Afve itqtQ | Avi hw` gvb_tjv Lp KvQvKwQ _vtK, Zte ejv hvq th, web`vmlU mgifc itqtQ Ges tK`xq gvb G t`qT`T h_vh_fvte cŠZwbwZ`xj fvgKv cvj b Kti tQ | we`wZi wefbcwiv gvc itqtQ | thgb, cwi mi (range), PZL`R e`eavb (quartile deviation), Mo e`eavb (mean deviation), cwi wgz e`eavb (standard deviation) Ges t`v` (variance) |

cwi mi (Range): we`wZi cwi gvtci me`Ptq mnR, m`avi Y Ges `j cwi gvcwU nTjv cwi mi | mS`vgvb_tjvtK gvtbi µg Abjv`ti m`vRtq, mtev`P I mefbcgvgvtbi cv`R` wBY`q Kti Avgiv Lp mnt`RB cwi mti i gvb tctZ cwi | aiv hvK, 10 Rb e`w`i I Rb 55, 57, 60, 65, 63, 56, 67, 70, 75 Ges 71 wKtj vM`g | GLv`b mtev`P gvb nTjv 76 Ges mefbcgvgvb nTjv 55 wKtj vM`g | GB DcvEiwmki cwi mi nTjv, 75 N 55 = 42 wKtj vM`g | A_`P, 10 Rb e`w`i I R`bi e`eavb nTjv 42 wKtj vM`g | A_`P, DcvEiwmki mtev`P I mefbcgvgvtbi ga`Kvi cv`R`B nTjv cwi mi | cwi mS`vb m`u`K`hviv tZgb `Avb ivtLb bv, Zvt`i Rb` cwi mi B we`wZi me`Ptq Dc`thvMx cwi gvc |

PZL`R e`eavb (Quartile Deviation): cwi mi tKvb cwi kwj Z cwi gvc bq | GwU gvT``wU gvtbi wfvE`tZ wBY`Z nq, hv gj Zt DcvEiwmki cŠwŠK `wU gvb | t`tnZi cwi mi wBY`q i agvT` mefbcg`l mtev`P gvtbi c`qvRb nq, t`tnZi ga`eZ`g vb_tjv m`u`K`cwi mi tKvb aviyv w`tZ cvti bv | cwi mti i GB mvgv`xZv `t Kivi Rb` PZL`R e`eavb wBY`q Kiv nq | GwU GK cKvti i cwi mi, Zte DcvEiwmki D`PZg I wbgz`g gvtbi cv`K`i wfvE`tZ bq | GLv`b DcvEiwmki c`g I ZZxq PZL`K i ga`Kvi cv`R` we`Pbv Kiv nq | DcvEiwmktK gvtbi D`P µg Abjv`ti m`vRtq, tgvU gvb_tjvtK mgvb Pvi fvM fvM Kti wbtZ nq | Gi GtKKwU fvm`K PZL`R etj | PZL`R e`eavb nTjv, c`g I ZZxq PZL`K i ga`Kvi e`eavtbi A`taR | ga`gv thgb tK`xq c`Yzvi GKwU Ae`vbgj K cwi gvc (positional measure), PZL`R e`eavb tZgub we`wZi cwi gvtci GKwU Ae`vbgj K cwi gvc | PZL`R e`eavb wBY`qi m`wU nTjv,

$$PZL`R e`eavb = \frac{Q_3 - Q_1}{2}$$

Mo e`eavb nTjv, MmYwZK Mo t`tK cŠZwU gvtbi Abt`c`q wePivZi Mo |

Mo e`eavb (Mean Deviation): cwi mi I PZL`R e`eavb DcvEiwmki me_tjv gvtK we`Pbvq Gtb we`wZi cwi gvc Kti bv | we`wZi GKwU D`Eg cwi gvc wmvte we`PZ nTj nTj, DcvEiwmki me_tjv mS`v gvtK we`Pbvq Avb c`qvRb | hw` Avgiv me gvtK e`envi Ki tZ PvB, Zvntj `wU cŠwŠK w`j ga`Kvi e`eavtbi w`tK `w` w`b`x bv Kti, Avgiv tK`xq c`Yzvi th tKvb GKwU cwi gvc t`tK DcvEiwmki cŠZwU gvtbi Abt`c`q wePivZi (absolute difference) mgw` wBY`q Kti, Zvi GKwU Mo wBY`q Ki tZ cwi | Abt`c`q wePivZi wBY`qi Rb` ,

tKs`iq cêYZvi cwi gvc wnmvte MmYwZK Mo t_KB e`envi Kiv ntq _vtK | cêceAvmtZ cvti th, Abtc¶¶ wePwZ tbqv nq t_Kb? Gi DEti ejv hvq th, thtznZi Mo t_K cêZwU gvtbi avvZK Ges FYvZK wePwZ ,tjvi thvMdj 000 nq, tmtnZi 000 thvMdj t_K GovtZ ntj , FYvZK wPytK t_Kbv bv t_Kvbfvte Dtc¶¶v Ki tZ nte | FYvZK wPy Dtc¶¶v Kivi GKwU c×wZ ntj v, Abtc¶¶ wePwZ wby¶¶ Kiv | AZGe, Mo e`eavb ntj v, MmYwZK Mo t_K cêZwU gvtbi Abtc¶¶ wePwZi Mo | msAv Abhvqx, Mo e`eavb wby¶¶qi exRMmYwZK mfwU ntj v,

$$M.D. = \frac{\sum |x_i - \bar{x}|}{N}$$

thLvfb, M.D. = Mo e`eavb

$$\frac{\sum |x_i - \bar{x}|}{N} = \text{MmYwZK Mo t_K cêZwU gvtbi Abtc¶¶ wePwZ}$$

$$N = \text{DcvEi wki tgvU mSL`v}$$

tKyx web`-DcvEi t¶¶t¶ Mo e`eavb wby¶¶qi mfwU ntj v,

$$M.D. = \frac{\sum f_i (x_i - \bar{x})}{N}$$

thLvfb, M.D. = Mo e`eavb

$$f_i = \text{cêZ tKyx i MYmsL`v}$$

$$N = \text{tgvU NUbmsL`v}$$

$$\frac{\sum f_i (x_i - \bar{x})}{N} = \text{tKyx ga`-we`y t_K MmYwZK Mtoi Abtc¶¶ wePwZ}$$

cwiwgZ e`eavb (Standard Deviation): Mo e`eavb wby¶¶qi mgq, FbvZK wPy Dtc¶¶v Kivi Rb` th Abtc¶¶ wePwZ wby¶¶ Kiv nq, Zv GKwU Kwlg Dcv¶¶ | Gi dtj , ZEMZfvte Mo e`eavtbi t_Kbv e`vL`v t` qv hvq bv Ges cieZ¶¶exRMmYwZK cwi MYbv¶¶ cêqum Kiv hvq bv | FYvZK wPytK Dtc¶¶v Kivi GB Kwlg c×wZi cwi etZ, wePwZ ,tjvi eM°Kti wbtj B FYvZK wPy ,tjv mntRB Govtbn hvq Ges eMRZ wePwZi thvMdtj i Mo wby¶¶ Kti Zvi eM¶¶j wbtj , ZEMZfvte e`vL`v thvM` GKwU cwi gvc wby¶¶ Kiv hvq | tmB cwi gvcwU ntj v cwiwgZ e`eavb | A_¶¶, cwiwgZ e`eavb ntj v, MmYwZK Mo t_K cêZwU gvtbi eMRZ wePwZi Mtoi eM¶¶j | cwiwgZ e`eavb wby¶¶qi exRMmYwZK mfwU ntj v,

cwiwgZ e`eavb ntj v,
MmYwZK Mo t_K cêZwU
gvtbi eMRZ wePwZi Mtoi
eM¶¶j |

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N}}$$

thLvfb, s = cwiwgZ e`eavb

$$\frac{\sum (x_i - \bar{x})^2}{N} = \text{Mo t_K cêZwU gvtbi wePwZi eM°}$$

$$N = \text{tgvU NUbmsL`v}$$

web`-DcvE t_K cwiwgZ e`eavb wby¶¶qi mfwU ntj v,

$$s = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{N}}$$

thLvfb, s = cwiwgZ e`eavb

$$f_i = \text{c}\ddot{\text{O}}\text{Z}\text{W}\ \text{t}\text{k}\text{Y}\text{x}\text{i}\ \text{N}\text{U}\text{b}\text{m}\text{s}\text{L}\ddot{\text{v}}$$

$$(x_i - \bar{x})^2 = \text{M}\text{o}\ \text{t}\text{--}\text{t}\text{K}\ \text{c}\ddot{\text{O}}\text{Z}\text{W}\ \text{t}\text{k}\text{Y}\text{x}\ \text{g}\text{a}\text{--}\text{w}\text{e}\text{--}\text{j}\ \text{w}\text{e}\text{P}\ddot{\text{i}}\text{w}\text{Z}\text{i}\ \text{e}\text{M}^\circ$$

$$N = \text{t}\text{g}\text{v}\text{U}\ \text{N}\text{U}\text{b}\text{m}\text{s}\text{L}\ddot{\text{v}}$$

DcvEiviki Mo t--tK mSL'v
gub,tjvi wePjwZi eMMP
MoB ntjv tF'v4|

tF'v4 (Variance): D'PZi cwi mSL'wobK KvR e'envt'i t'q'it MwiwZK Mo t--tK cOZw gvtbi eMRZ wePjwZi Mtoi eM@j bv wbtq eMRZ wePjwZi Mo wbyq Kiv nq, hv tF'v4 bvtg cwi wPZ| A_w, DcvEiviki Mo t--tK mSL'v gub,tjvi wePjwZi eMMP MoB ntjv tF'v4| tF'v4 tK Mo eMP (mean square) ejv ntq _vtK| cwi wGZ e'eaub I tF'v4i gta' cv_R' ntjv cwi wGZ e'eaub A tkwaZ gvtbi GK tK _vtK, A_P tF'v4 _vtK eMRZ GK tK| we_wZi cwi gvc wmwte cwi wGZ e'eaub Awak e'euZ ntj I cwi wGZ e'eaub Zj bvg tF'v4i AwakZi ZwiEK gj' itqtQ| tF'v4' fivte wbyq Kiv hvq| *clgZt*, cwi wGZ e'eaub eM Kti Ges *wZxqZt*, tF'v4 wbyqi msAvMZ mF' e'envi Kti| cwi wGZ e'eaub I tF'v4 wbyqi c_xZ GKB iKg, i'ay GKwU cv_R' Ovov| cwi wGZ e'eaub t'q'it wePjwZi eMMP Mtoi eM@j wbtZ nq, tF'v4i t'q'it Zv Kiv nq bv| tF'v4 wbyqi msAvMZ mF'w ntjv,

$$s^2 = \frac{\sum(x_i - \bar{x})^2}{N}$$

thLvtb, $s^2 = \text{tF'v4}$

$$(x_i - \bar{x})^2 = \text{M}\text{o}\ \text{t}\text{--}\text{t}\text{K}\ \text{c}\ddot{\text{O}}\text{Z}\text{W}\ \text{g}\text{v}\text{t}\text{b}\text{i}\ \text{w}\text{e}\text{P}\ddot{\text{i}}\text{w}\text{Z}\text{i}\ \text{e}\text{M}^\circ$$

$$N = \text{D}\text{c}\text{v}\text{E}\text{i}\text{v}\text{i}\text{k}\text{i}\ \text{t}\text{g}\text{v}\text{U}\ \text{m}\text{s}\text{L}\ddot{\text{v}}$$

ckentjv th, we_wZi tkb cwi gvc tkvbw? GK K_vq Gi Reve t'qv mae bq| KviY, cwi gvc,tjvi c'qMZ Abb'Zv, MtelYvi D't'k', DcvEi ckwZ Ges DcvE eY@vi t'q'it tm,tjvtK wKfivte e'envi Kiv nte tm mKj wltqi Dci mg'K aviYv tbevi ciB tKej gwI Gi Reve t'qv mae| we_wZi cwi gvc wmwte cwi mti mvi' ntjv Gi c'avb m'eaub| PZL_R e'eaub c'wSK gvb Oviv Kg c'fweZ nq etj GuU Zj bvgj Kfivte AwakZi w_wZkxj cwi gvc| wKs' we_wZi cwi gvc wmwte PZL_R e'eaub Am'eamU ntjv th, GuU GKwU web'vtmi c'g 25 kZvsk Ges tkl 25 kZvsk DcvEiviktK KLBb wetePbvq Avtb bv| Mo e'eaub DcvEiviki me,tjv gvtK wetePbvq Avbtj I GuU ZEMZfivte e'vL'v Kiv hvq bv etj m'gwRK MtelYvq GuU e'envi Lp GKUv j'q' Kiv hvq bv|

t'q'it wtk'tl wtk'l GKwU cwi gvc Dchj' ntj I mwieR wePvti we_wZi cwi gvtci A's'w'wZ h'p' Abhvqx, GKwU web'vtmi we_wi eY@vi Rb' cwi wGZ e'eaub metP'tq tekx Kv'h'Ki, Dc'thvMx Ges M'hY'thvM' cwi gvc| G t'q'it c'avbZt P'v'uU KviY D'tj L' Kiv th'tZ cv'ti| *clgZt*, gj' DcvE th GK tK cwi gvcKZ nq cwi wGZ e'eaub tmB cwi gvtcB c'kwkZ nq; *wZxqZt*, GuU web'vtmi mKj gvtK c'Z'w'j Z Kti; *ZZxqZt*, b'g'bv wePjwZi Oviv Kg c'fweZ nq etj we_wZi Ab'vb' cwi gvtci Zj bvg GuU AwakZi w_wZkxj nq; Ges *PZL_Zt*, cwi wGZ e'eaub exRMw'wZK 'ewk' ,tjv GuU tK R'w'j cwi mSL'wobK KgR'v'U e'envt'i Rb' m'f'vM Kti t'q| Z'te th'tnZi cwi wGZ e'eaub wbyq DcvEiviki mKj gvtK wetePbvq Avbv nq, tm'tnZi GuU c'wSK ev AmvaviY gvb Oviv Lp mnt'RB c'fweZ nq| cwi wGZ e'eaub wbyqi t'q'it MwiwZK Mo tK e'envi Kiv nq etj MwiwZK Mtoi mKj m'gve_xZv cwi wGZ e'eaub gta' _vtK|

e`eavbv¼ (Coefficient of Variation): GKwU web`vtmi Mo t`tk msL`v gvb,tjvi we`wZ cwi gvtci Rb` wbi¼k we`wi cwi gvc,tjv DcthvMx ntj l, tm,tjv `ß ev ZtZwaK DcvEiwki gta` Zj bvi Rb` DcthvMx bq| AZGe, `ŃU DcvEiwki gta` wfbzvi Zj bvi Rb` wbi¼k e`eavb,tjvtK Avtcw¶K ct` ifcvšwi Z Ki tZ nq| Avtcw¶K we`wi cwi gvtci GKwaK cxwZ itqtQ| Zte, Gi gta` metPtq ,i"ZcyGes mefaK e`eüZ cxwZwU ntjv e`eavbv¼ (coefficient of variation)| tKvb DcvEiwki Mo Ges cwi wZ e`eavtbi kZKiv AbjvZtK tmB DcvEiwki e`eavbv¼ etj | A_Ń,

tKvb DcvEiwki Mo Ges cwi wZ e`eavtbi kZKiv AbjvZtK tmB DcvEiwki e`eavbv¼ etj |

$$C.V. = \frac{s}{\bar{x}} \times 100$$

thLvtb, C.V. = e`eavbv¼

$$s = \text{cwi wZ e`eavb}$$

$$\bar{x} = \text{MwYwZK Mo}$$

hLb `ŃU DcvEiwki gta` we`wi cwi gvtci Rb` e`eavbv¼ e`eüZ nq, ZLb th DcvEiwki e`eavbv¼i gvb eo nq, tmB DcvEiwki web`vmlUtk AwaK we`Z ev Amgijc etj MY` Kiv nq| wecxZfvte, th DcvEiwki e`eavbv¼i gvb Kg nte tmB DcvEiwki web`vmlUtk Kg we`Z Ges AwaK mgijc etj MY` Kiv nq| aiv hvK, K I L `ŃU Mötgi bvi xt` i Avtqi Mo I cwi wZ e`eavb h_vµtg $\bar{x}_k = 3,520$ UvKv I $s_k = 2,800$ UvKv Ges $\bar{x}_L = 3,320$ UvKv I $s_L = 2,010$ UvKv| cŃE DcvE e`envi Kti e`eavbv¼ wbyfqi gva`tg `ŃU DcvEiwki gta` we`gvb we`wZi Zj bv Kiv thtZ cvti | mŃ Abjvqx, MÖg ÖKÖ-Gi bvi xt` i Avtqi e`eavbv¼ ntj v,

$$C.V._k = \frac{s}{\bar{x}} \times 100 = \frac{2,840}{3,520} \times 100 = 80.68$$

Ges MÖg ÖLÖ-Gi gwnj vt` i Avtqi e`eavbv¼ ntj v,

$$C.V._L = \frac{s}{\bar{x}} \times 100 = \frac{2,040}{3,520} \times 100 = 60.54$$

thtnZt MÖg ÖKÖ-Gi bvi xt` i gwmK Avtqi e`eavbv¼ (80.68) MÖg ÖLÖ-Gi bvi xt` i gwmK Avtqi e`eavbv¼ (60.54) Atc¶v tekx, tmtnZtDcmsnvti Avgiv ej tZ cwi th, MÖg ÖKÖ-Gi bvi xt` i gwmK Avtqi web`vm MÖg ÖLÖ-Gi bvi xt` i gwmK Avtqi web`vm Atc¶v tekx we`Z |

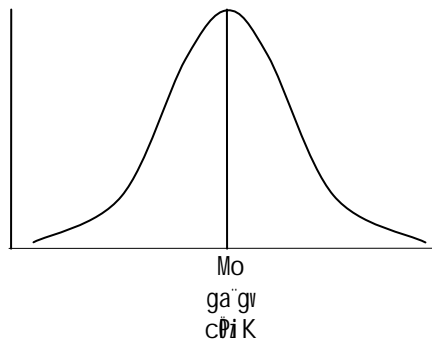
web`vtmi ifc I AvKwZ (Forms and Shapes of a Distribution)

cwi msL`vb cxwZi gva`tg DcvE iwkgvj vi tK` xFZ nevi cŃYZv I we`wZi gvT v cwi gvtci gva`tg, GKwU web`vtmi AŠffß gvb,tjvi gta` mgijcZv I wfbzvi wPŃwU tevSv hvq| wKš` web`vmlU i fc I AvKwZ m`utK¶Kvb `úo avi Yv cvl qv hvq bv| A_Ń, web`vmlU m| gfvte web`- ,bv wK Wvb ev evg w`tk ew¼g, Zv Rvbv hvq bv| AwfÁZvj ä web`vm,tjv web`vtmi KZUky mwbK UeZx`ntqtQ Zv Rvb tZ cvi tj, bgjv gvb,tjvi wfvE tZ ci vgvb tK cŃ` j tbi t¶t¶ Avgvt` i Av`v AtbK tekx ewotq t`q| GKwU web`vtmi ifc I AvKwZ m`utK¶avi Yv cvevi Rb`, ew¼gZv I mPvj Zvi gvT v cwi gvc Kiv nq|

GKwU web`vtmi ifc I AvKwZ m`utK¶avi Yv cvevi Rb`, ew¼gZv I mPvj Zvi gvT v cwi gvc Kiv nq|

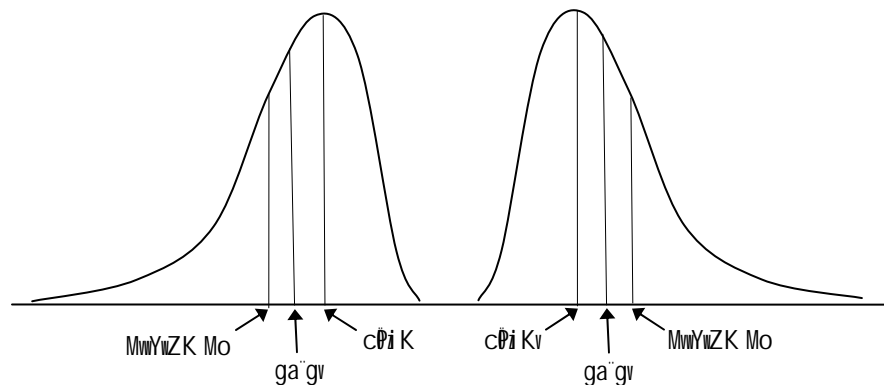
ew/4gZv (Skewness): GKwJ MYmsL'v web'vm m'útk'eY'v t'evi Rb' tK'`iq c'YZv I we'wzi cwi gvc,tjv ht_ó bq| Dcv'É iwkgvjv wKfvte Mtoi Pricv'k web''-itq'Q A_ev Mtoi Dcti tekx Dcv'Éiwk itq'Q, bwK bxp tekx itq'Q Zv Rv'vri c'q'Rb itq'Q| `QwJ web'v'tmi GKB Mo I cwi'vgZ e'eavb_vKv m'Éj web'vm `QwJi ifc I AvKwZ wfb'ent'Z cv'ti | Dcv'Éiwki ifc eY'v'vi Rb' ew/4gZv GKwJ ,i'Zc'Y'Dcv' vb| ew/4gZv ej t'Z GKwJ web'v'tmi Amg'ifcZv'tK (asymmetry) tevSvq| GKwJ web'v'tmi g'ta' m'j'gZvi Afve_vK'tj tmB web'vm'tK ew/4g web'vm etj | A_É, Dcv'Éiwki gvb,tjv Mtoi Pricv'k m'j'gfvte web''-it'ht'Q wK bv, ew/4gZv tm'útk'KB eY'v'v K'ti |

aiv hvK, GKwJ epr msL'vi Dcv'Éiwki Mwy'wZK Mo, ga'gv Ges c'P'i K-Gi gvb GKB ntq'Q| c'P'i web'vm'útk' GKwJ MYmsL'v ti Lvi (frequency curve) g'ta' Dc'v'cb Ki'tj t'Lv hvte th, ti Lw'P'wJ web'vm'útk' m'tev'P we'`t'Z wK mgvb `Q'fv'tM fvM K'ti't'Q| A_É, c'P'i't'Ki Dcti Ges bxp mgvb msL'K Dcv'Éiwk we'`gvb| i'ayZvB bq, ga'gv I Mwy'wZK Mtoi Dcti Ges bxpI mgvb msL'K msL'v gvb cvl'qv hvte | A_É, Dcv'Éiwki gvb,tjv c'P'i K, ga'gv I Mwy'wZK Mtoi `Q'cv'k m'j'gfvte web''-itq'Q (w'P' 10.2.1 `be')|



w'P' 10.2.1: m'j'g web'vm

GKwJ FYvZ'Kfvte ew/4g web'v'tm, c'P'i K Mwy'wZK Mtoi t'P'tq eo nq Ges ga'gv Mwy'wZK Mo I c'P'i't'Ki g'ta' t'Kvb GK `v'tb Ae'v'b K'ti | Mwy'wZK Mo w'bg'gvb m'útbem'sL'vi w'`t'K Ae'v'b K'ti | GKwJ web'v'tm hw' Mwy'wZK Mo c'P'i't'Ki t'P'tq eo nq Ges ga'gv Mo I c'P'i't'Ki gvSL'v'tb t'Kvb GK `v'tb Ae'v'b K'ti, Z'te ej v hvte th, web'vm'ú abvZ'Kfvte ew/4g ntq'Q| c'P'i K, ga'gv I Mwy'wZK Mtoi GB m'útk'wJ ew/4gZvi gv'v'v cwi gvt'ci w'fv'É c'v'v'b K'ti _v'tK (w'P' 10.2.2K I 10.2.2L `be')|

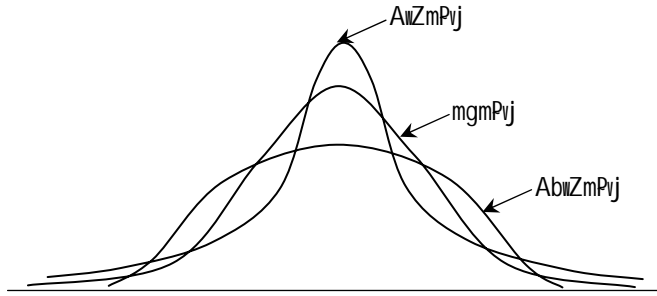


w'P' 10.2.2K: FYvZ'K ew/4gZv

w'P' 10.2.2L: abvZ'K ew/4gZv

mPvj Zv (**Kurtosis**): mPvj Zv GKwJ MYmsL`v tiLv cPřK t`řK mP`Mžvi (peakedness) gvřvi eYřv t`q| GKwJ MYmsL`v tiLv hw` řfweK řiLv Zj bvq řekx mP`Mžnq, Zře řmB tiLwUřK AwZmPvj (leptokurtic) tiLv eřj | hw` tiLwU řfweK tiLv Zj bvq Kg mP`Mžnq, Zře ZvřK AbwZmPvj (platykurtic) tiLv eřj | GKwJ mřg tiLvřK mgmPvj (mesokurtic) tiLv eřj | GB tiLwU GKwJ GK cPřK mřúřwebřvtmi ifc řbq, řhLvřb tiLv gvSLvbwU DPz_vřK Ges cřš`řwU Xvj yntř AbřřwřK tiLvq řbřg hvq Zře řúkřK řiLv bv| A_ř, řfweK tiLv mKj `ewkř` mgmPvj tiLv gřa`_vřK (řPř 10.2.3 `ře`)|

mPvj Zv GKwJ MYmsL`v tiLv cPřK t`řK mP`Mžvi gvřvi eYřv t`q|



řPř 10.2.3: mPvj Zvi weřřbřifc

Avgřv Rwb řh, cwi NřZ GKwJ webřvtmi AvKvi | cřkřZ mřúřK eYřv t`q| wřZřq, ZZřq | PZL`cwi NřZ t`řK wYřřZ `řwU mnM e`envi Kři ewřgZv | mPvj Zvi gvřv cwi gvc Kiv nř| řmB mnM `řwU nřj v, β_1 (weLv₁) Ges β_2 (weLv₂) | β_1 ewřgZvi cwi gvc wnmvře e`eřZ nř| β_1 wYřřqi mřwU nřj v,

$$\beta_1 = \frac{\mu_3^2}{\mu_2^3}$$

GKwJ mřg webřvtm β_1 memřg řřř nř| Zře ewřgZvi cwi gvc wnmvře β_1 -Gi mřgveřZwU nřj v řh, GwU ewřgZvi w`K (direction) mřúřK Avgřř`i tKvb avi Yv t`q bv| GB mřgveřZwU řřřř nř hw` Avgřv Kvj řcřqi mb-Gi γ_1 (Mřgv₁) wYřř Kwi | γ_1 -řK β_1 -Gi eMřj wnmvře msřwřZ Kiv hvř| A_ř,

$$\gamma_1 = \sqrt{\beta_1} = \frac{\mu_3}{\mu_2^{3/2}} = \frac{\mu_3}{\sigma^3}$$

řřřZv ewřgZvi řPřwU wřřř Kři ZZřq cwi NřřZi (μ_3) gvřbi Dci, řmřřZv hw` μ_3 -Gi gřb abvřřK nř, Zře webřvmU abvřřKřvře ewřg nř| Avi hw` FYvřřK nř, Zře webřvmU FYvřřKřvře ewřg nř| β_2 -řK mPvj Zvi cwi gvc wnmvře e`envi Kiv nř| β_2 wYřřqi exRMwřřZK mřwU nřj v,

$$\beta_2 = \frac{\mu^4}{\mu_2^2}$$

$$\gamma_2 = \beta_2 - 3$$

GKwJ mřg | mgmPvj webřvtmi řřřř $\beta_1 = 0$ Ges $\beta_2 = 3$ nř| hw` $\beta_2 < 3$ nř, Zře webřvmUi AvKřZ AwZmPvj nře, Ges $\beta_2 > 3$ nřj, AbwZmPvj nře|

GK „0 chfeŋiYi gta“
 GKu chfeŋY wKfite Ges
 KZUKz wFbeZv Avgvŋ i
 Rvbi cŋqvRb nŋZ cvŋi |
 cwiŋZ gvb wYŋqi gvaŋg
 Avgiv Zv RvŋZ cwi |

cwiŋZ gvb (Standard Score): cwiŋZ e'earb Avgvŋ iŋK Mo t_ŋK msL'v gvb ŋj vi Mo we'wz m'utK'avi Yv t'q | wKŠ' GK „0 chfeŋiYi gta“ GKu chfeŋY wKfite Ges KZUKz wFbeZv Avgvŋ i Rvbi cŋqvRb nŋZ cvŋi | cwiŋZ gvb wYŋqi gvaŋg Avgiv Zv RvŋZ cwi | cwiŋZ gvbŋK z-gvb | ej v nŋq _vŋK |

GKu web'vŋmi cŋZw msL'v gvŋbiB GKu cwiŋZ gvb itqŋQ, hv tmB web'vŋmi Mo I cwiŋZ e'earŋbi gvŋbi Dci wbfŋ Kŋi | GKu DcvEivŋki th tKvb GKu AŋkwaZ gvŋbi (x) cwiŋZ gvb nŋj v D³ AŋkwaZ gvb t_ŋK web'vŋmi Mŋoi cv_R'ŋK (x_i - x̄) DcvEivŋki cwiŋZ e'earb (s) w'ŋq fŋM Kiŋj th msL'v gvŋw cvl qv hvq Zv | GKu D'vni Y w'ŋq Mo t_ŋK th tKvb msL'v gvŋbi gŋa'Kvi AvqZb wYŋŋ Kŋi t'Lv hvK | aiv hvK, GKu 'vŋveK tiLvi Mo nŋj v, 50 Ges cwiŋZ e'earb nŋj v, 10 | GLb, 50 t_ŋK 66 Aŋŋi gŋa' wK cwiŋY chfeŋY itqŋQ ev KZUKz AvqZb itqŋQ Zv t'Lv hvK | cŋŋg Avgvŋ i t'LŋZ nŋe th, 50 t_ŋK 66 KZ cwiŋZ e'earb ŋŋZi iŋqŋQ | Gw wYŋŋ KiŋZ wŋŋq wŋŋe³ m'fŋw e'envi Kiv nq,

$$z = \frac{x_i - \bar{x}}{s}$$

- thLvŋb, z = cwiŋZ gvb
- x_i = cŋZw AŋkwaZ gvb
- x̄ = MwYwZK Mo
- s = cwiŋZ e'earb |

AZGe, z = $\frac{66 - 50}{10} = \frac{16}{10} = 1.6$

A_ŋ, 50 t_ŋK 66 gvŋbi ŋŋZi nŋj v, 1.6 cwiŋZ e'earb | 'vŋveK tiLvi Aaxŋb, 1.6 cwiŋZ e'earŋbi AvqZb nŋj v, 0.4452 (mviwY cwi 2 'ŋ'e) | A_ŋ, 50 t_ŋK 66 gvŋbi gŋa' 44.52 kZvsk chfeŋY Aŋŋŋ iŋqŋQ | thŋZi 50 t_ŋK 66 gvŋw Wvb w'ŋK 1.6 cwiŋZ e'earb ŋŋZi iŋqŋQ, tmŋZi gvŋw abvZŋK nŋqŋQ | wKŠ-hw' 50 t_ŋK 34 gvŋbi gŋa'Kvi AvqZb wYŋŋ KiŋZ nq, ŋm ŋŋŋŋ cŋB cwiŋZ e'earŋbi gvŋw FYvZŋK nŋe, A_ŋ, -1.6 | Ab' K_vq, 50 t_ŋK 66 gvŋw Mo t_ŋK 1.6 cwiŋZ e'earb Dcŋi Ges 50 t_ŋK 34 gvŋw -1.6 cwiŋZ e'earb bŋŋP Ae'vb KiŋQ |

mvi vsk

DcvE cŋŋqvKiY I mŋŋŋBKiŋYi ci, ŋm ŋj v eYŋvi Rb' cŋg c'ŋŋc wŋmŋte GK-Pj K wŋkŋ wŋkŋŋYi Dŋ' wŋ ŋbqv nq | DcvEi 'ewkŋ' ŋj v eYŋvq GKu gvŋ Pj KŋK e'envi Kiv nq | GK-Pj K wŋkŋ eYŋvq th me cwi msL'vbMZ cwiŋ gvc e'eüZ nq, ŋm ŋj v nŋj v, tK'ŋŋ cŋYZvi wŋŋŋcwi gvc, we'wzi cwiŋ gvc Ges web'vŋmi ifc I AvKuzi cwiŋ gvc | eZŋvb cvŋV, GK-Pj K wŋkŋ wŋkŋŋYi gvaŋg DcvEi eYŋvi ŋŋŋŋ wŋŋŋcwi msL'vŋbi e'envi ŋj v we'wzi Zŋŋte Avŋj vPbv Kiv nŋqŋQ | gj e³e'ŋj vŋK mnR Kŋi tZvŋ vi Rb' GB we'wzi Avŋj vPbvi Avkŋ ŋbqv nŋqŋQ |

cvfVvEi gj`vqb

`be⁹³K cċæ

mWVK DĒti i cvfk WJK (√) wPý w` b –

1| th tKvb cċvi DcvĒ wefkĤYi cĉ_wgK c` tċc ntj v:

- K. DcvĒEi Zvwj Kv Kiv
- L. DcvĒEi mvi gg⁹Kiv
- M. DcvĒEi MYmsL`v mvi wY`Zwi Kiv
- N. DcvĒEi msL`v eY⁹v Kiv|

2| DcvĒ wefkĤY Ki tZ wMtq Mtel K tKvb cwi gvcwJ e`envi Ki teb, Zv wbf⁹ Kti :

- K. DcvĒEi wki cċwZi Dci
- L. Mtel Yvi weiqe`i Dci
- M. DcvĒ wefkĤYi cċwZi Dci
- N. Dcti i me|

3| Abtcċ wePzwZ wby⁹qi Rb` tK` ĩq cĉYZvi cwi gvc wmwte:

- K. MwYwZK Mo tK e`envi Kiv nq
- L. Mo e`eavb tK e`envi Kiv nq
- M. cwi wgz e`eavb e`envi Kiv nq
- N. t` v¹/4 tK e`envi Kiv nq|

mswċB cċæ

UxKv wj Lp:

- K. MwYwZK Mo wK?
- L. e`eavbv¹/4 wK?

i Pbv gj K cċæ

1| Mtel Yvi dj vdj eY⁹vq GK-Pj K wewkó wefkĤYi „i”Zi D`vni Ymn Avtj vPbv Ki ”b|

2| DcvĒ wefkĤY tK` ĩq cĉYZvi cwi gvc l we`wZi cwi gvtci „i”Zi Avtj vPbv Ki ”b|

W-Pj K weikó weikH
Bivariate Analysis

GB cW tkfI hv Rvbn hvte —

- W-Pj K weikó weikH wK
- W-Pj K weikó mvi wYi gva'tg m'útK'P weikH
- weiflc wPtT i gva'tg m'útK'P c0 k0
- mn-m'útK'P mnM wBY0
- wbf'PY weikH

W-Pj K weikó weikH wK (What is Bivariate Analysis)?

0K0 I 0L0 Gi gta' m'úK'
i tqfQ Ggb c0'webv ZLbB
Kiv hvte hLb t' Lv hvte th,
0K0 Pj tKi wKQz'ewkó'
wbqgZwšK'fvte 0L0 Pj tKi
wKQz'ewkó'tó' i mvt_ mnMvgx
ntqfQ/

DcvfEi weikH GK-Pj K weikó web'v'tmi eY0vi ci, MtelYv mgm'vi mvt_ msuk0-
Pj K_ t'j vi gta' m'útK'P i'fcuUtK cix'v Kivi c0'qvRb ntq cto| Avgiv Rwb th, Avgv' i
Pvi cvfki RMtZ hv wKQz i tqfQ, Zvi me wKQz tKvb bv tKvbfvte m'úwK'Z | thgb, GKwU wki
tefo DVvi mvt_ mvt_ Zvi I Rb ep'x cvq, M0tgi Zj bvq knfi cwitek `tY tekx ntq_vtK,
wK'v ep'xi mvt_ mvt_ Avq ep'x cvq, BZ'w | G ait'Yi c0ZwU ch'ef'vY `0wU NUBvi gta'
GKwU m'úK'K wbt' R Kti -eqm Ges IRtbi gta', bMivqY I cwitek `t'Yi gta' Ges
wK'v I Avtqi gta' | A_0, 0K0 I 0L0 Gi gta' m'úK'0'iqfQ, Ggb c0'webv ZLbB Kiv hvte,
hLb t' Lv hvte th, 0K0 Pj tKi wKQz'ewkó' wbqgZwšK'fvte 0L0 Pj tKi wKQz'ewkó'tó' i mvt_
mnMvgx ntqfQ| hLb Pj K_ t'j v GKwU i mvt_ Avti KiuU m'úwK'Z nq bv, ZLb Avgiv ejv th,
Zviv GKwU t_ tK Avti KiuU `faxb| A_0, Zviv mnMvgx bq| hw I MtelYvi Mfxi Zi weikH'Y,
eU Pj tKi gta' m'úK'cix'v Kti t' Lv nq, G ch'iq Avgiv m'útK'P weikH'tK `0wU
Pj tKi gta'B mxgve'x i vL'tev| AZGe, GK K_vq ejv hvq th, W-Pj K weikó weikH ntj v,
`0wU Pj tKi gta' m'útK'P Dcv'wZ I Abcv'wZi eY0v Ges e'vL'v|

W-Pj K weikó weikH ntj v,
0wU Pj tKi gta' m'útK'P
Dcv'wZ I Abcv'wZi eY0v
Ges e'vL'v|

W-Pj K weikó mvi wYi gva'tg m'útK'P weikH (Analysing Relationship
through a Bivariate Table)

GKwU W-Pj K weikó mvi wYi
c0ZwU `t'0' t'Yx-`dv'tK
Avj v'vfite GK GKwU GK-
Pj K weikó NUBmsL'vi
web'vm wnmvte wetePbv Kiv
hvq|

`0wU Pj tKi gta' m'úK'0'iqfQ wK bv, Zv cix'v i Rb' c0'g c`t'fcuU ntj v, GKwU W-Pj K
weikó mvi wY MVB| G ait'Yi weikH'tK mvt'c'v mvi wY weikH'v (contingency table
analysis) ejv ntq_vtK| Avgiv BDwU 9 -Gi cW 3 -G tRt'bwQ th, GKwU W-Pj K weikó
mvi wY'tZ, GKwU Pj tKi t'Yx-`dv_ t'j v mvi w'f'w'EK Ges Ab' Pj tKi t'Yx-`dv_ t'j v'tK
`w'f'w'EK Avov-Awofvte Dc'vcb Kiv nq| `w'f'w'EK m'v'v'tbv Pj KiuUtK `faxb Pj K (hv
mvi wYi Dcti Dc'vcb Kiv nq) Ges mvi w'f'w'EK Pj KiuUtK wbf'p'k'j Pj K (mvi wYi eig cvfK
Dc'vcb Kiv nq) etj | GKwU W-Pj K weikó mvi wYi c0ZwU `t'0' t'Yx-`dv'tK Avj v'vfite
GK GKwU GK-Pj K weikó NUBmsL'vi web'vm wnmvte wetePbv Kiv hvq|

mvi wY 10.3.1-G, 140 Rb D'Pc`' miKvix KgRZ0 wj 1/2 w'f'w'EK `eev'nK gh'v i GKwU
web'vm'tK Dc'vcb Kiv ntqfQ| GB mvi wY'tZ, wj 1/2 Pj tKi GKwU gv'tvq i tqfQ, `0wU t'Yx-
`dv — bvix I cj'I Ges `eev'nK gh'v i Ab' gv'tvq i tqfQ, Pvi wU t'Yx-`dv — weev'nZ,
Aw'eev'nZ, Zvj vKc0B/Zvj vKc0Bv Ges weaev/wecZwK| A_0, GuUtZ ch'ef'vY_ t'j v'tK Pvi wU

mvi Ges ḡU ṫḫmrvbv nṫṫQ, hvi cōZwU GK GKwU ṫkYx-`dvtK cōZwbwZ; Kṫi Ges hvi cōZwUṫK, GK GKwU GK-Pj K wekó NUBmsL`vi web`vm wnmvṫe MY` Kiv hvq| cĀg mvi wU ṫḫm msL`v Ges ZZxq ṫḫm mvi i ṫgvU msL`vṫK cōZwbwZ; Kṫi | GB mvi wUṫK 4×2 mvi wY ej v nq| mvi wY 10.3.1 Abḫvqx, D`Pc` ṫmi Kvix KgRZḫ` i wj ½ Ges `eevnK ghṫ vi gṫa` GKwU wfbzvi mḫKḫK ṫófvṫe cō kḫ Kṫi | GLvṫb ṫ`Lv hvṫ`Q th, ḡU GK-Pj K wekó web`vṫmi ijc (bvix I cj`I) GKwU mṫ_ Avṫi KwU wfbzvi cō kḫ Kṫi | ṫghb, bvixiv cj`Iṫ` i Zj bvq Kg weevnZ Ges Awakvṫi Zvj vKcōBv ev weaev|

mvi wY 10.3.1: D`P c` ṫmi Kvix KgRZḫ` i wj ½ wifwĒK `eevnK ghṫ vi web`im|

%eevnK ghṫ v	wj ½		ṫgvU
	bvix	cj`I	
AweevnZ	2	2	4
weevnZ	49	59	108
Zvj vKcōB/Zvj vKcōBv	10	5	15
weaev/ wecZwK	9	4	13
ṫgvU	70	70	140

GZḡY chS-, ḡU Pj ṫKi gṫa` mnMvgxZvi gvṫwU gj`wqZ nṫṫQ, GKwU wU-Pj K wekó mvi wYi ḡU GK-Pj K wekó web`vmṫK gj`vṫṫbi gva`ṫg| wKš` hw` Pj K, ṫj vi ṫkYx-`dvi cwi gvY AṫbK teKx nq (ṫghb, GKwU 12×8 mvi wY), tm ṫḡṫṫ mnMvgxZvi gvṫvi G aiṫYi gj`vqb AṫbK mgq cWkṫK wbi`rmwvZ KiṫZ cvṫi | Kvix, GṫZ Kṫi mnMgṫbi cKZ wṫwU Svcmv nṫq hvq| G Ovov, mvi wYi gva`ṫg wU-Pj K wekó weṫkṫYi ḡU Pj ṫKi gṫa` mḫKḫK GKwU ṫj avi Yv cvl qv ṫṫṫ I mḫKḫK w`K I gvṫv mḫKḫKḡḡ uó ṫKvb avi Yv cvl qv hvq bv| G me mgm`v ṫṫK cwi ṫY cvevi Dcvq wnmvṫe mnMvgxZvi GKwU GKK msvḡB cwi gvṫci cṫqvRb| Pj Kmgṫni gṫa` mḫKḫK Abḫvab, cwi gvṫ I weṫkṫYi Rb` wefwbocxwZ e`eüZ nq| GB c×wZ, ṫj vi gṫa` meṫṫṫq teKx cwi wPZ ḡU c×wZ nṫj v: weṫṫc wṫ A¼b (scatter diagram) Ges mn-mḫKḫK mnM wYḡ (computation of coefficient of correlation)| ḡU Pj ṫKi cōZ ṫRvov chḫḫY ṫj Lwṫṫ Dc`vcb Kṫi mn-mḫKḫK weṫṫc wṫ cvl qv hvq Ges mn-mḫKḫK mnM wYḡ Kṫi, Pj Kḫṫi mn-mḫKḫK w`K I gvṫv mḫw` ḫfvṫe wYḡ Kiv hvq|

ḡU Pj ṫKi cōZ ṫRvov chḫḫY ṫj Lwṫṫ Dc`vcb Kṫi mn-mḫKḫK weṫṫc wṫ cvl qv hvq Ges mn-mḫKḫK mnM wYḡ Kṫi Pj Kḫṫi mn-mḫKḫK w`K I gvṫv mḫw` ḫfvṫe wYḡ Kiv hvq|

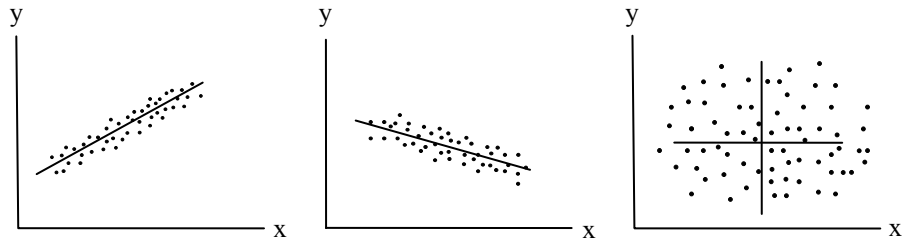
weṫṫc wṫṫṫ i gva`ṫg mn-mḫKḫK cō kḫ (Demonstration of Correlation through Scatter Diagram)

th ṫj LḡwṫK ṫKškj, ḡU Pj ṫKi gṫa` we`gvb mḫKḫK Pvḡṫ fvṫe chḫḫṫYi GKwU cōZ`ḡ mḫḫM cōvb Kṫi, ZvṫK weṫṫc wṫ etj | weṫṫc wṫ A¼ṫbi Rb` ḡU Pj ṫKi wKQy ṫRvov chḫḫṫYi (paired observations) cōqvRb nq, ṫLvṫb mvi YZṫ GKwU Pj KṫK x Ges AciwṫK yaiv nq| hw` cōZwU x gvṫbi Rb` GKwU Kṫi y gvb ṫṫK, Zṫe x I y Pj ṫKi ṫRvov msL`v gvb, ṫj vṫK we`y gva`ṫg wṫwYZ Kṫi ṫj Lwṫṫ Dc`vcb Kiṫj, GKwU weṫṫc wṫ Aw¼Z nq| ṫRvov we`y, ṫj v wKfvṫe, Qe× iṫṫQ, ev weṫṫB iṫṫQ, Zv hvPvB Kṫi ḡU Pj ṫKi gṫa`Kvi mḫKḫK cKwZ mḫKḫKḡYḫv Kiv hvq|

x I y Pj ṫKi ṫRvov gvṫbi we`y, wj hw` Ggbfvṫe web`-nq th, tm, ṫj v thM Kiṫj GKwU mij ṫiLv Aw¼Z nq, Zṫe Zv Pj K ḡU gṫa` wLṫZ, ev cYḡmn-mḫKḫK wḫ`R Kiṫe| ṫRvov

abvZ#K m#u#K# A_#ntj v
th, GK#U Pj #Ki gvb ep#i
mvt_ mvt_ Aci Pj K#U#I
gvb ep# cvl qv Ges FYvZ#K
m#u#K#ej #Z `#U Pj #Ki
gta` #eci#Zg#L# m#u#K#K
tev#q#|

gv#bi we#`y#b#`R#K mij #i L#U#U h#` W#b w` #K EaY#V#G#x nq, Z#e Zv abvZ#K m#u#K# Ges h#`
W#b w` #K v#b#G#V#G#x nq, Z#e Zv FYvZ#K m#u#K#K w#b`R#K #i | A_#r, abvZ#K m#u#K# A_#
ntj v th, GK#U Pj #Ki gvb ep#i mvt_ mvt_ Aci Pj K#U#I gvb ep# cvl qv Ges FYvZ#K
m#u#K#ej #Z `#U Pj #Ki gta` #eci#Zg#L# m#u#K#K tev#q#| #j L#U#U#I Dc`#w#C# we#`y#uj
h#` #K#v# m#y#b#`# ifc c#k#k# b#v# K#i G#j#v#g#j#v# ev #e#V#B#f#v#te Ae`#v# K#i, A_#ev we#`y#uj
th#M# K#i h#` x-#A#q# ev y-#A#q#i #g#v#S#v#j GK#U #i L#v# cvl qv #v#q, Z#e Zv Pj K#U#q#i
m#u#R#n#b#Z#v#K# w#b`R#K #i | A_#r, GK#U Pj #Ki gv#bi c#w#e#Z#bi mvt_ mvt_ h#` Aci
Pj #Ki gv#bi gta` #K#v# c#w#e#Z# b#v# nq, Z#e e#S#Z# n#e# th, Pj K `#U# m#u#K#K#b# (#P#
10.3.1K, L I M`#e#)|



#P# 10.3.1 K, L I M: #e#q#i# #P# c#k#Z# abvZ#K, FYvZ#K I kb` m#u#K#m#u#K#`

#e#q#i# #P#i# #e#P#q# e# #m#e#v# ntj v #h, G#U# `#U# Pj #Ki gta` m#u#K#c#k#k#bi Rb` #e#P#q#
#n#R#, #v#v#i# Y I A#M#v#v#Z#K GK#U# c#x#Z#| L#e# #v#v#i# Y c#w#i#m#L#v#b#M#Z# #v#b#_#v#K#j#, th #K#D#
#e#q#i# #P#i# #v#v#h#` `#U# Pj #Ki m#u#K#m#u#K#U# GK#U# c#k#_#g#K# #v#i# Y#v# w#b#Z# c#v#i#b#| G# Q#v#v#,
A#v#K#v#k# M#v#v#Z#K# c#x#Z#i# g#Z#, #e#q#i# #P# GK#U# w#e#v#t#m#i# P#i#g# g#v#b# #v#i#v# c#f#w#e#Z# nq# b#v#|
#e#q#i# #P#i# A#m#e#v#U# ntj v #h, G#U#i# g#v#t#g# `#U# Pj #Ki gta` #n#-#m#u#K#P# w` K I g#v#i#v#
m#u#K#G#K#U# #v#v#i# Y# #v#i# Y#v# cvl qv #t#j# I, #m#e#f#v#te# Z#v# w#b#Y#Q# K#i#v# #v#q# b#v#| #m# #q#i# #P#, M#v#v#Z#K#
#n#M# w#b#Y#Q# c#x#Z# e`#n#v#i# K#i#v# A#v#i#v#h#q#i#q# c#t#o#|

mn-m#u#K#P# #n#M# w#b#Y#Q# (Computing Coefficient of Correlation)

GK#U# Pj #Ki #m#v#h#`
A#v#i# K#U# Pj #Ki
#f#i#e#l# `#v#Y#K#i# #Y# #I#`#U#i# g#v#i#v#
K#Z#U#K#K#t#g#, ev #f#i#e#l# `#v#Y#i#
D#b#q#t#b# K#Z#U#K#f#i#g#K#v#i#v#L#,
j`#v#v#v# #n#M# Z#v#i# g#v#i#v#K#
c#k#v#k# K#i#|

j`#v#v#v# #n#M# (Lambda Coefficient): b#v#g#m#P#K# g#v#i#v#q# c#w#i# g#v#c#K#Z# `#U# Pj #Ki gta` m#u#K#
w#b#Y#Q#i# Rb` GK#U# R#b#i#c#q# c#w#i# g#v#c# ntj v #f#i#e#l# `#v#Y#x#g#j# K# M#v#U#g#v#b# #n#M#O# (Guttman
coefficient of predictability), ev j`#v#v#v# #n#M# (Lambda coefficient), #v# M#O#K# e#Y#Q#v#j#v#i#
#l#.#A#q#i#w#`#t#q# #P#w#Y#Z# K#i#v# nq#| j`#v#v#v# #n#M# GK#U# A#c#k#Z#m#v#g#` (asymmetrical) c#w#i# g#v#c#
Ges G#U# #e#v#i#S#f# #g#v#b#j#v#Z#K# #v#m#K#i#Y#O# (proportional reduction in error) b#v#Z#g#v#j#v#i# D#i#
c#k#Z#w#b#Z#| GK#U# Pj #Ki #m#v#h#` A#v#i# K#U# Pj #Ki #f#i#e#l# `#v#Y#K#i# #Y# #I#`#U#i# g#v#i#v# K#Z#U#K#K#t#g#, ev
#f#i#e#l# `#v#Y#i# D#b#q#t#b# K#Z#U#K#f#i#g#K#v#i#v#L#, j`#v#v#v# #n#M# Z#v#i# g#v#i#v#K# c#k#v#k# K#i#| j`#v#v#v#i# g#v#b#
#O#O# #t#_#K# #I#O# c#h#S#-#e#Z#| h#` GK#U# Pj K# #t#_#K# A#v#i# K#U# Pj #Ki #f#i#e#l# `#v#Y#K#i# #Y# #I#`#U#i# g#v#i#v#
b#v# K#t#g#, Z#L# j`#v#v#v#i# g#v#b# #O#O# nq#| j`#v#v#v#i# #m#x#g#v#e#x#Z#w#U# ntj v #h, h#L#b# N#U#b#m#L#v#_#t#j#v# `#v#x#b#
Pj #Ki GK#U# #k#Y#x#`#d#v#q# N#b#x#F#Z# nq#, Z#L# #n#-#m#u#K#P# c#w#i# g#v#c# #n#m#v#te# G#U# D#c#f#h#M#x#Z#v#
#v#i#v#t#q# #t#d#j#| K#v#i# Y, G# #i#t#Y#i# c#w#i#w#Z#t#Z# c#k#Z#c#t#q# `#U# Pj K# m#u#K#Z# ntj I j`#v#v#v#i# g#v#b#
#O#O# n#e#| j`#v#v#v# w#b#Y#Q#i# #f#i#U# ntj v#,

$$\lambda = \frac{\sum m_y - M_y}{N - M_y}$$

#h#L#v#t#b#, $\lambda = j`#v#v#v# #n#M#$

$$\begin{aligned}
 M_y &= \text{wbfPkxj Pj K, y-Gi mweR cPai K NUbmsL'v} \\
 m_y &= \text{`faxb Pj K, y-Gi wfbawfbatkyx-`dvi gta` wbfPkxj Pj K, y-Gi} \\
 &\quad \text{Dci cPai K NUbmsL'v} \\
 N &= \text{bgpvi tgvU msL'v}
 \end{aligned}$$

KvB-eM©cix¶v (Chi-Square Test): GKwU w0-Pj K wekó mvi wYtZ Dc`wicz `¶U Pj tKi GKwU hLb bvgmPK gvIvq Ges Ab`wU µgmPK gvIvq cwi gvcKZ nq, ZLb tm `¶U Pj tKi gta` m`úKfxbZvi Abgv`bi wfwÉtZ, chfe¶YKZ NUbmsL'vi mvt_ cZ`wKZ NUbmsL'vi Zj bv Kti, GKwU `faxbZvi Zvrch©cix¶v Kti t`LtZ nte th, Pj K `¶Uvi GKwU t`tK Avti KwU `faxb wK bv| th m`tebv web`vm e`envi Kti cix¶wU cwi Pj bv Kiv nq, tmwU KvB-eM©(χ²) web`vm bvtg cwi wPZ| web`vm bvtg cwi wPZ| KvB-eM©web`vm ntj v, Wwbr`tK ewAg GKwU AwewQbæm`tebv web`vm, hv abvZK w`tK kb` t`tK Amxg gvb chS`we`Z| Gi tKvb FYvZK gvb tbB| Kvi Y, KvB-eM©gvbwU cZ`wKZ Ges chfe¶YgJ K NUbmsL'vi cv`R`tK eM©Kti wbyxZ nq| A`w, cZ`wkv I chfe¶Yi gta` th e`eavb `Zwi nq, tmwU wK chfe¶YKZ gv`bi mvt_ ZtÉj mvgÁm`Zvi Afvte ntqtQ, bv wK `ðeµtg NtUtQ, KvB-eM© cix¶vi gva`tg Avgiv Zv Rvb`Z cwi| hw` KvB-eM© gvb 000 nq, Zte eS`tZ nte th, cZ`wKZ I chfe¶YKZ NUbmsL'vi gta` úeu wj ntqtQ| KvB-eM© gvb hZ eo nte, cZ`wKZ I chfe¶YKZ NUbmsL'vi gta` e`eavb ZZ tekx i`qtQ etj ati wbtZ nte| KvB-eM©by¶qi exRMwYwZK m`wU ntj v,

$$\chi^2 = \sum \frac{(f_0 - f_e)^2}{f_e}$$

$$\begin{aligned}
 \text{thLv}t_b, \chi^2 &= \text{KvB-eM©} \\
 f_0 &= \text{chfe¶YKZ NUbmsL'v} \\
 f_e &= \text{cZ`wKZ NUbmsL'v}
 \end{aligned}$$

dvB mnM (Phi Coefficient): KvB-eM© Dci wfwÉ Kti m`úK¶ gvIvK tevSvi Rb` dvB mnM wby¶ Kiv nq| GKwU 2×2 mvi wYtZ Dc`wicz `¶U w0-wefwvRZ (dichotomous) Pj tKi gta` m`úK¶ gvIv cwi gv`ci Rb` dvB mnM ntj v GKwU Dc`thvMx cwi gvc| dvB mnM wby¶qi m`wU ntj v,

$$\phi = \left(\frac{\chi^2}{N} \right)^{\frac{1}{2}}$$

$$\begin{aligned}
 \text{thLv}t_b, \phi &= \text{dvB mnM} \\
 \chi^2 &= \text{KvB-eM©} \\
 N &= \text{tgvU NUbmsL'v}
 \end{aligned}$$

dvB mnM gvb 000 t`tK 010 chS`we`Z| hw` `¶U Pj tKi gta` tKvb m`úK¶bv `vK, Zte φ = 0 nq Ges cY`abvZK m`úK¶ntj φ = 1 nq| dvB mnM mgm`v ntj v th, th`nZi 2×2 mvi wYi tKvb D`PmXgv tbB, tm`nZi 2×2 mvi wYi tP`q eo mvi wYi t¶t` GwU c0qvm Kiv hvq bv|

μggj K gvīvq cwi gvcKZ
 ̂U Pj tKi gta m=úK
 cwi gvtci Rb th cwi gvcU
 euj cPwj Z tmlU ntj v M'vgy
 mnM/

M'vgy mnM (**Gamma Coefficient**): mvgvRK weÁvbi Mtel Yvq Avgiv cūkt Ggb AtbK Pj K vbtq KvR Kvi, th tjtK i agvī μggj K gvīvq web -Kiv hvq thgb, gtbvfe, c`ghPv, tkYx Ae^{-vb}, BZ^w | μggj K gvīvq cwi gvcKZ ̂U Pj tKi gta m=úK[©] cwi gvtci Rb th cwi gvcU euj cPwj Z, tmlU ntj v, M'vgy mnM (Gamma coefficient), hv MōK eYgvjvi 0γ 0 A^qiU w tq wPwYZ Kiv nq | GwJ GKU cūZmvg (symmetrical) cwi gvc | thtnZi Mtel K GKU Pj tKi chfe^qtYi tRvovi Ae^{-vb}, Ab⁻ Pj tKi chfe^qtYi tRvovi Ae^{-vb}tK fwe^l 0vYx Kivi t^qt^l Dc^{thv}Mx wK bv, Zv RvbtZ AvMōx nb, tmtnZi M'vgy mnM wBY^qi t^qt^l, ̂U μggj K Pj tKi chfe^qY tjtvi tRvovi μg Ae^{-vbi} cūZ i "Zi t^l qv nq | M'vgy mnM gvb 00 t^l tK th ±1 ch^s-w^{-Z} | GKU Pj tKi chfe^qtYi tRvovi μg Ae^{-vb}, Ab⁻ Pj tKi chfe^qtYi tRvovi μg Ae^{-vb} wBY^q hv tKv fvgKv bv ivtL, ZLb M'vgy mnM gvb 00 nq | hLb mggvīvi tRvov tjt v AwacZ⁻ w⁻ Kti, ZLb M'vgy mnM gvbU nq avZ^K Ges hLb Amggvīvi tRvov tjt vi cwi gvY tekx nq, ZLb mnMU FYvZ^K gvtbi nq | M'vgy mnM wBY^qi m^lU ntj v,

$$\gamma = \frac{N_c - N_d}{N_c + N_d}$$

thLv^{tb}, $\gamma =$ M'vgy mnM

$$N_c = \text{mggvīvi tRvov}$$

$$N_d = \text{Amggvīvi tRvov}$$

hw⁻ $N_c = 0$, Zte $\gamma = -1$, hw⁻ $N_d = 0$, Zte $\gamma = 1$ Ges hw⁻ $N_c = N_d$ nq, Zte $\gamma = 0$ nq |

tKŪvtj i UvD-we mnM (**Kendall's τ_b Coefficient**): M'vgy mnM cāvb `e^qZwU ntj v th, GwU wBY^q Ki tZ w^ltq chfe^qtYi th tRvov tjt v GKB i Kg (tied pairs) nq, tm tjtK ev⁻ t^l qv nq | etj ̂U Pj tKi gta m=úK[©] v⁻Kv mtEj | M'vgy mnM gvb +1 t^l tK ũ 1 ntq v⁻tK | GB mgn^wU t^l Kivi Rb GKU m^st^kvabx h^y Kti tKŪvtj i UvD-we (Kendall's τ_b) mnM wBY^q Kiv hvq, hvi exRMwYwZK Awfe^wU wlog^{ie}fc:

$$\tau_b = \frac{N_c - N_d}{\sqrt{(N_a + N_d + N_x)(N_c + N_d + N_y)}}$$

thLv^{tb}, $\tau_b =$ tKŪvtj i UvD-we

$$N_c = \text{mggvīvi tRvov}$$

$$N_d = \text{Amggvīvi tRvov}$$

$$N_x = \text{v⁻abx Pj K, x-Gi Dci GKB i Kg tRvovi (tied pairs) m^sL^v}$$

$$N_y = \text{w⁻f^qkj Pj K, y-Gi Dci GKB i Kg tRvovi m^sL^v}$$

w⁻úqvi g^vb rho (**Spearman rho**): μgmPK gvīvq cwi gvcKZ Pj tKi t^qt^l Avti Kiu cwi m^sL^v w^bK c^xw^zi gva^{tg} mn-m=ú^tK^p mnM wBY^q Kiv nq, Zv ntj v Spearman Rank-Difference Correlation Coefficient, msv^qlBfvte hv w⁻úqvi g^vb rho, ev ρ bvtg cwi wPZ | GwU tK Rb^wc^qf^vte Rank-Correlation | ej v ntq v⁻tK | w⁻úqvi g^vb rho-Gi wBY^q c^xw^ztZ, x l y-Pj tKi gvb^tK e⁻envi bv Kti, Pj K ̂U μggvbgj K c⁻t^mcw^bK

Ae`vbi (hierarchical rank-order) cv`R`K e`envi Kti | x l y Pj K `ŃU gvbmgñi gta` mn-m`úK`vcb bv Kti, w`úqvi g`vb rho eis Zv`i µgweb`-Ae`vbmgní (ranks) gta` mn-m`úK`c0 kß Kti | c0tg gvtbi µggvbgj K Ae`vbi cv`R` MhY Kwi, Zvi ci, tmB cv`R` tji etM` thvMdj tK GKU m`f` c0qM Kti w`úqvi g`vb rho-Gi gvbU wby` Kwi | w`úqvi g`vb rho-Gi e`vL`v mn-m`c`K` Ab`vb` mnMi mavi Y e`vL`vi B Abjfc | A`Ń, `ŃU Pj tKi mn-m`úK` wby`Z gvb (+) wKsev (-) ntj Zv h`vµtg Pj K0tqi gta` avZ`K ev FYvZ`K m`úK`K wbt`R Kti | hw` `ŃU Pj tKi c0ZU µggvbgj K Ae`vb c0ZU mvt` wgtj hvq, Zte w`úqvi g`vb rho-Gi gvb nte +1, hw` c0ZU mvt` c0ZU Avgj NtU, Zte gvbU nte -1 Ges hw` tKvb m`úK`B bv `vtK, Zte gvbU nte 00 | w`úqvi g`vb rho wby`qi exRMwYvZK m`f`U ntj v,

x l y Pj K `ŃU gvbmgñi gta` mn-m`úK`vcb bv Kti, w`úqvi g`vb rho eis Zv`i µgweb`-Ae`vbmgní gta` mn-m`úK`c0 kß Kti |

$$\rho = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$

- thLvbtb, ρ = w`úqvi g`vb rho-Gi mnM
- D^2 = `ŃU Pj tKi gvbmgñi µgweb`-Ae`vbi cv`K`i eM`
- 6 = GKU a`eK
- N = tRvo evav ch`e`ŃYi tgvU msL`v |

c0qU evBtmijj mn-m`úK` mnM (Point Biserial Correlation Coefficient): mvgwRK Mtel Yvq Avgiv th mKj Pj K wbtq KvR Kwi, Zvi AwKvskB bvgmPK ev µgmPK gv`vq ch`e`ŃY Kiv nq | µgmPK gv`vq cwigvckZ Pj Kmgñi t`Ńt, Spearman rank-difference correlation coefficient, ev w`úqvi g`vb rho wby`qi tKŠkj U GKU thŠv`K wbe`Pb wnmvte weteWZ ntqtQ | wKŠ` mn-m`úK` wby`qi t`Ńt, hw` `ŃU Pj tKi gta` GKU bvgmPK, ev µgmPK gv`vq cwigvckZ nq Ges tmB Pj KU hw` w0-wefwRZ (dichotomous) nq, tm t`Ńt w`úqvi g`vb rho wby`q c`wZU c0qM Kiv hvq bv | c0qU evBtmijj mn-m`úK` mnM wby`qi gva`tg G ai`Yi m`U t`K D`Ewi Z nq hvq Ges Gi gva`tg mvgwRK m`úK` e`vea ifc eY`v Kiv hvq | A`Ń, Avgiv GKU Awew`Qb`Pj K Ges GKU w0-wefwRZ bvgmPK ev µgmPK Pj tKi gta` mn-m`úK` wby`qi Rb` c0qU evBtmijj mn-m`úK` mnM (point biserial correlation coefficient) e`envi Kitz cwi, hv`K ms`ŃBfvte r_{pb} c0Z`Ki gva`tg wPwYZ Kiv nq |

Avgiv GKU Awew`Qb`Pj K Ges GKU w0-wefwRZ bvgmPK ev µgmPK Pj tKi gta` mn-m`úK` wby`qi Rb` c0qU evBtmijj mn-m`úK` mnM e`envi Kitz cwi |

aiv hvK, GKRb MtelK Rb`hvi mvt` AvajbK t`vM`cY` (thgb, tUij wfkb, wfwAvi, tiwI, tiwRv`iUi, BZ`w`) e`envi m`úK` cwigvck Kti t`L`Z Pvb | tm t`Ńt, Rb`hvi GKU e`wBj`K ev AbjcvZg`K Pj tKi ifc t`te Ges AvajbK t`vM`cY`i e`envi w0-wefwRZ (n`wv) bvgmPK Pj tKi ifc t`te | hw` t`Lv hvq th, D`P n`ti AvajbK t`vM`cY` e`envi Kvix`i AwKvskB Rb`hvi wbg` Zte e`stZ nte th, AvajbK t`vM`cY` e`envi mvt` Rb`hvi GKU D`P avZ`K m`úK`i tqtQ | Avi hw` t`Lv hvq th, AvajbK t`vM`cY` e`envi Kvix e`w`3`i Atb`Ki Rb`hvi D`P, Zte tevSv hvte th, m`úK`U `p` Ggb wK, FYvZ`KI n`Z cvti | KvRB, r_{pb} wby`q Kti w`lqU cix`v Kti t`Lv t`Z cvti | c0qU evBtmijj mn-m`úK` mnM wby`qi exRMwYvZK m`f`U ntj v,

$$r_{pb} = \frac{\bar{x}_p - \bar{x}_q}{s_x} \sqrt{pq}$$

KviY, Zv RvbZ cwi bv| hw` I mn-máúK©Kvh©KviY máúK©bq, Zeyl mn-máúK©cZ`tqi gta` fweI`ÖvYxKiYi aviYwU AšwbnZ i`tqtQ| `ŃU Pj K hLb mnMvgx nq, ZLb GKwU Pj K w`tq Ab`wU`K fweI`ÖvYx Kiv hvq| hw` Pj K `ŃU mnMvgx bv nq, Zte GKwU Dcti cÜB Z` Ab`wU fweI`ÖvYxKiY mvrnh` Kti bv| th cwimsL`vbMZ tKŠktj i mvrnh` Avgiv GKwU Pj tKi Rvrv gvb t`tK Ab` GKwU Pj tKi ARvrv gvb`K cÜ`j tbi gva`tg fweI`ÖvYx Ki tZ cwi, tmb tKŠkj wU`K wbfPY wekH etj |

wbfPY wekH gj Zt wcvimb r-Gi aviYvi Dci wfvE` Kti wovgZ| wcvimb r wvYqci t`tI, `ŃU Pj K tK th mKj ce`kZ`ciY Ki tZ nq, wbfPY wekH`Yi t`tI tmb mKj kZ`ciY Ki tZ nq| A`Ń, `ŃU Pj K tKB Kgc`t` e`wßgj K gv`vq cwi gvcKZ n`Z nte, `ŃU Pj tKi B t` v`i mgwe`wZ `vK tZ nte Ges `ŃU Pj tKi máúK© mij %wLK n`Z nte| wbfPY wekH` i agv`I `ŃU Pj tKi gta`B mvgv`x bq| GKwU wbfPY Pj K tK e`vL`v Kivi Rb` eü`v`x Pj K `vq `vK tZ cvti | wekH`Yi gta` hLb `ß-Gi Awak Pj K Ašfß nq, ZLb ZvtK eüav wbfPY wekH` (multiple regression analysis) etj, hv cieZP cvtV Avtj vPbv Kiv nte|

Avgiv Rwb th, `ŃU Pj tKi gta` mn-máúK©`vK tZ, Zv Pj K `ŃU gta` máúK© GKwU c` wbt` R Kti | GB c`tK eYÖv Kivi Rb` GKwU ti Lv e`envi Kiv nq, th ti LwU`K wbfPY ti Lv etj | máúK© c`kZ Abjv`i, GB ti Lv mij ev eµ n`Z cvti | wbfPY ti Lvi exRMwvZK Awfe`wßB ntj v, wbfPY mgxKiY| fweI`ÖvYxi Rb` th Pj K wU ARvrv gvb`K cÜ`j b Kiv nq, tm Pj K wU`K wbfPY Pj K (y) Ges th Pj K wU Rvrv gvb e`envi Kti ARvrv gvb wU`K cÜ`j Z Kiv nq tm Pj K wU`K `v`x Pj K (x) ej v nq| mij %wLK wbfPY ti Lv wvYqci mvavi Y m`wU ntj v,

$$\hat{Y} = a + bX$$

thLv`b, $\hat{Y} = cÜ`j Z Y Pj K$

$$X = \text{v`x Pj K}$$

$$a = tQ`K$$

$$b = wbfPY$$

a l b (tQ`K l wbfPY) ntj v `ŃU a`eK, hv wbfPY ti Lvi Ae`v`b`K wbañY Kti Ges GB a`eK `ŃU`K wbfPY ti Lvi Pwi`I`-wbañK `ewkó` etj wPwYZ Kiv nq| a Ges b a`eK`i gvb wvYq Kiv t`tj wbfPY ti LwU máúY`v`te wbañY Kiv máe | `tj`Zg etM`P c`wZi gva`tg GB a`eK `ŃU`i gvb wvYq Kiv nq| a`eK `ŃU`i, ev Gi th tKvb GKwU gvb cwi ewZ n`j, bZb GKwU wbfPY ti Lvi Rb` t`te| a a`eK wU wbfPY ti Lvi gv`v`K (A`Ń ti Lvi DrcwE` t`j i Dcti i ev bxtPi `iZ) Ges b a`eK wU wbfPY ti Lvi wZh`KZvtK (A`Ń x Pj tK GK GKK cwi eZ`bi dtj y Pj tK cwi eZ`bi cwi gvY) wbañY Kti | a l b a`eK `ŃU wvYqci exRMwvZK m`wU ntj v,

$$a = \frac{\sum Y - b \sum X}{N}$$

$$b = \frac{N \sum XY - \sum X \sum Y}{N \sum X^2 - (\sum X)^2}$$

Gm Gm GBP Gj

thLvtb, a = tQ`K
b = wbfPv¼
X = ~axb Pj tKi cãZwU gvb
Y = wbfPkxj Pj tKi cãZwU gvb
N = tgvU NUbmsL`v|

mvisk

`wU Pj tKi mæútK® wfwÉtZ th wetkH Kiv nq, ZvtK w0-Pj K weukó wetkH ejv nq|
w0-Pj K weukó wetkH eYbvi cvkvcwik, e`vL`vl Kiv ntq _vtK| Zte gtb ivLtZ nte th,
e`vL`vi t¶t¶I `wU Pj KtKB e`envi Kiv nq| A_®r, GKwU Pj tKi mv_ mv_ Ab` Pj tKi
mæúK®Ges GKwU Pj K w`tq Ab` Pj tKi gvtbi cwieZBtK e`vL`v Kiv| GB mæútK® gvÎv
wba¶tYi Rb` cwimsL`vtbi weifbæ_ i`ZcY®c×wZ e`envi Kiv nq| w0-Pj K weukó wetkH
th me cwimsL`vbMZ c×wZ e`eüZ ntq _vtK, tm_ tjjv ntjv, KvB-eM®cix¶v, M`vgv mnM,
wcvimbr, Ges wbfPY wetkH| eZgvb cvtV, w0-Pj K weukó wetkH eYi mv_ mæúK®
cwimsL`vb c×wZ_ tjjv Avtj vPbv Kiv ntqtQ|

cvřVvĚi gj`vqb

`be³K cċæ

mnVK DĚti i cvřk WJK (√) wPý w`b –

1| `ŃU Pj řKi gřa` mřúK⁹řřřř Q wKbv Zv cixřřvi Rb` cĉg c`řřc nřj v:

- K. DcvřĚi Mo řei Kiv
- L. `ŃU Pj řKi mřúK⁹ wLřř řj LwPĚ `Zwi Kiv
- M. wŃ-Pj K weřkó mvi wY Mvb Kiv
- N. Dcři i me|

2| weřřc wPĚi AmjeawU nřj v th:

- K. mn-mřúK⁹mřúřK⁹mřavi Y Ávb ARĚ Kiv hvq bv
- L. mn-mřúK⁹mřúřK⁹ p-avi Yv cvl qv hvq bv
- M. mn-mřúřK⁹ gvĚ v mřúřK⁹MwYwZK gvb cvl qv hvq bv
- N. Dcři i me|

3| hw` ŃU Pj řKi cĉZwUi řggvbgj K Ae`vb cĉZwUi mřř_ wřřj hvq, Zře w`úqvi g`vb řho-Gi gvb nře:

- K. +1
- L. -1
- M. +0
- N. -0|

msřřřB cċæ

UřKv wj Lř:

- K. weřřc wPĚ |
- L. cřřřU evBřřmvi qvj mn-mřúřK⁹ mnM|

i Pbvřř K cċæ

1| wŃ-Pj K weřkó weřřřř wK? wŃ-Pj K weřkó mvi wYi e`envi Avřř vPbv Ki`b|

2| wŃ-Pj K weřkó mvi wY e`vL`vq řh cwi mřL`vbMZ weřřřř e`envi Kiv nq, řm_řř v Avřř vPbv Ki`b|

eÙ-Pj K weikó weikH
Multivariate Analysis

GB cW tkfI hv Rvbn hvte —

- eÙ-Pj K weikó weikH wK
- eÙav wbfPY weikH
- c_ weikH
- Dcv`vb weikH
- tf`vfi weikH
- cwimsl`vbMZ ZvrcthP cixqv

eÙ-Pj K weikó weikH wK (What is Multivariate Analysis)?

GKw wbfPkj Pj tKi gta`
 cwieZbi Rb` `vqx eÙ
 Pj tKi hMcr cfrtei
 cixqvB ntjv eÙ-Pj K weikó
 weikH/

cW 2-G Avgiv MYmsL`v wbtckb, tk>`iq cEYZv I we`wZi cwivgtci gva`tg GKw Pj tKi
 `tfj I Aw`fzi eYBv KtiwQ Ges cW 3-G `wU Pj tKi gta` mautKp eYBv I e`vL`vi weifbæ
 cwimsl`vbMZ tKskj AvtjvPbv KtiwQ| hw` GKRb MteltKi gj AvMhuU `iagvI `wU
 Pj tKi gta` mautKp eYBv I e`vL`vi gta`B mvgvex `vtK, Zte wÙ-Pj K weikó weikHYB
 ht_ó| wKs` mvgwRK cEAmgtni e`vL`vq `iagvI `wU Pj tKi gta`B GKRb MtelK wbtRtK
 mvgvex ivLtz cftib bv| KviY, wÙ-Pj K weikó weikHY `iay`wU Pj tKi gta` mautK eYBv
 Kiv nq Ges tmB `wU Pj tKi GKwUtK w`tq Ab`wUtK e`vL`v Kiv nq| wKs` mvgwRK ev`
 eZvq t`Lv hvq th, weifbæcwimwZtZ GKw wbfPkj Pj tKi gta` th cwieZB NtU, Zv
 e`vL`vi Rb` GKw `vaxb Pj KB ht_ó bq| tm KviY MtelK Zvi weikHY Avtiv AtpK Pj K
 AšfP Ktib| mvgwRK MtelYvq, GKw wbfPkj Pj tKi gta` cwieZbi Rb` `vqx eÙ
 Pj tKi hMcr cfrtei cixqvB ntjv, eÙ-Pj K weikó weikH|

eÙ Pj K weikó weikHYi tek wKQz cwimsl`vbMZ tKskj itqtQ| Gi gta` th tKskj `tjv
 tekx e`eüz nq, tm `tjv ntjv eÙav wbfPY weikH, c_ weikH, Dcv`vb weikH, tf`vfi
 weikH, BZ`w` | G me tKskj mautKpAvtjvPbvi cteGwU Dti L-Kiv cOqvRb th, eÙ-Pj K
 weikó weikH D`Pzi cwimsl`wbK weikHY cOqM Kiv nq Ges G `tjv Kj vtKskj MZ w`K
 t`tK wKQzv RwJ | AZGe, G me tKsktj i Lp tekx Mfxti bv wMtq, `iagvI GKw cOwgK
 aviYv t`evi Rb`B tm `tjvi Dc`vcv Kiv nte|

eÙav wbfPY weikH (Multiple Regression Analysis)

cW 3 - G Avgiv tRtbnQ th, wbfPY weikHYi gva`tg GKw Pj tKi Dci AwRZ Avtbi
 wfwEtZ Ab` GKw Pj KtK e`vL`v Kiv hvq| th Pj KwU Rvbn gvb e`envi Kti Ab` GKw
 Pj tKi ARvbn gvbtk cO`wj Z Kiv nq, tm Pj KwUtK `vaxb Pj K Ges th Pj KwU ARvbn
 gvbtk cO`j b Kiv nq, tm Pj KwUtK wbfPkj Pj K ejv nq| Ab` K`vq, th Pj KwU cfwieZ
 nq, tmUtK wbfPkj Pj K (y) Ges th Pj KwU cfwieZ Kti, tmUtK `vaxb Pj K (x)
 etj | G tftt` j`Yxq wclqW ntjv th, `iagvI GKw Pj K w`tq AvtiKw Pj tKi gta`
 cwieZBtK e`vL`v Kiv nq| wKs` Avgiv GI Rvnb th, eÙ-Pj K weikó weikHYi AštbnZ hy³
 Abjhvqx, GKw wbfPkj Pj KtK e`vL`v Kivi Rb` eÙ `vaxb Pj K `vqx `vtK| AZGe,

e`vL`vKvix GKwaK `vaxb Pj KtK $x_1, x_2, x_3, \dots, x_n$ cŁZtKi gva`tg wPwYZ Kiv nq Ges cŁZwU `vaxb Pj tKi cŁvtei gvT`v wbaŃ YKvix wbfPv¼,tj vK h_vµtg $b_1, b_2, b_3, \dots, b_n$ cŁZtKi gva`tg wPwYZ Kiv nq|

aiv hvK, GKRb MtelK wewfbeZÉj I MtelYv mwnZ` chŃj vPbv Ges wbr`^ AwfÁZvi Avtj vK t`Ltj b th, mšŃbi wkŃvMZ thvM`Zvi gvT`v wbaŃi Z nq, cŁvbZt Pvi wU wbcvgK Dcv`vŃbi gva`tg| tmB Dcv`vb,tj v ntjv mšŃbi wj ½-cwi Pq, wczv-gvZvi wkŃvMZ thvM`Zv, tckv I Avq| A_Ń, mšŃb cŃ`I ntj, wczv-gvZv tmB mšŃbi tj Lv covi wcltq tekx hZevb nb, wczv-gvZv hw` D`P wkuŃZ nb, D`PZi tckvq KgPZ _vtKb Ges D`P Avq m`ubwb nb, Zte `vfweKfŃteB tm mKj wczv-gvZvi mšŃb D`P wkuŃZ nŃe| AZGe, Mtel tKi ZwiÉK cŁvev AbŃvqx, G tŃtI mšŃbi wkŃvMZ thvM`Zv ntj v, wbfPkvj Pj K Őy Ő Ges mšŃbi wj ½-cwi Pq, wczv-gvZvi wkŃvMZ thvM`Zv, tckv I Avq ntj v, `vaxb Pj K, hv h_vµtg x_1, x_2, x_3 Ges x_4 | GLvŃb gŃb ivLv cŁqvRb th, `vaxb Pj K,tj vi `i`tZi µg Ae`vb wbfP Ktj tm,tj v wbfPkvj Pj tKi cwi eZŃtK KZUKz cŃweZ Ki tZ cvŃi, Zvi gvT`vi Dci | AZGe, Mtel tKi ZwiÉK cŁvevbi cwi t cŃtZ eúav wbfPY weŃkŃYi exRMwYwZK mgxKi YwU wbgwŃ wLZfvte cŁkv Kiv tŃtZ cvŃi :

$$\hat{Y} = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4$$

thLvŃb, $\hat{Y} =$ wbfPkvj Pj tKi cŁ`wj Z gvb

$$a = tQ`K$$

$$b_1, b_2, b_3, b_4 = `vaxb Pj K,tj vi wbfPv¼$$

$$x_1, x_2, x_3 \text{ I } x_4 = `vaxb Pj KmgŃ$$

$$e = \text{áwšgŃ K cŃve|}$$

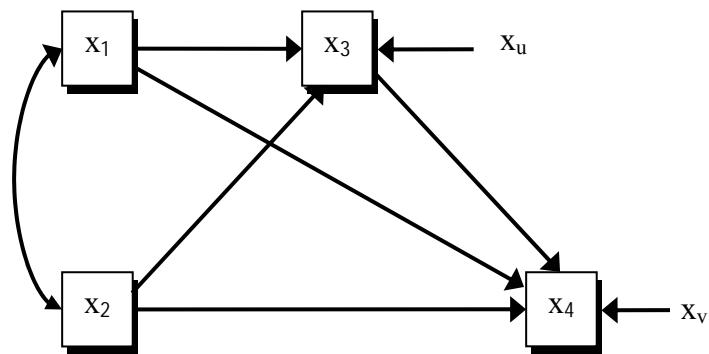
cŁZwU `vaxb Pj tKi mŃ_ Zvi cŃvtei gvT`v wbaŃ YKvix mšŃb-wbfPv¼tK (b_1, b_2, b_3, b_4) AvsŃkK wbfPv¼ ejv ntq _vtK| th `vaxb Pj K wU cŃvtei gvT`v wYxZ nt`Q, tmwU Qvov Ab` `vaxb Pj K,tj vK wbcšY Ktj AvsŃkK wbfPv¼,tj v wYxZ nq| A_Ń, Avgt`i D`vni tYi tŃtI, mšŃbi wj tZi cŃvev wbaŃi Z nq wczvgvZvi wkŃvMZ thvM`Zv, tckv I Avtqi cŃvteŃK wbcšZ Ktj | GB AvsŃkK wbfPv¼,tj vK mšŃb-`vaxb Pj tKi bxU cŃvev ejv ntq _vtK| cŁZwU AvsŃkK wbfPv¼ ev bxU cŃvteŃK thvM Ktj cY`cŃvtei gvT`v wU cvl qv hvq| AZGe, eúav wbfPY mgxKi YwU ntj v thvRbgj K (additive)|

wKš` thŃZvmgwRK cŁtÁi e`vL`vq GKwU cŁtÁi cwi eZŃb th mKj Dcv`vb cŃweZ Ktj Zvi me,tj vŃKB wbfPY mgxKi tYi AšŃP Kiv hvq bv, tmŃZi wbfikvj Pj tKi gŃ` cwi eZŃbi wKQz gvT`v Ae`vL`vZ t`tK hvq| GB Ae`vL`vMZ cwi eZŃbi cwi gvYwU tKB Avgiv áwšgŃ K cŃve (e) etj wPwYZ Kw | GB e`vL`v Ki tZ bv cvivi wclq wU wbfP Ktj DcvŃÉi AcŃc`Zv I wbfPkvj Pj tKi e`vL`vq Am`úY`ÁvŃbi Kv i tY| Zte thŃZi cwi mS`vbMZ wmxvŃšt` Rb` wbfPY weŃkŃYi e`envi wcvimb r-Gi AšŃbŃZ avi Yvi Dci cŁZwŃZ, tmŃZymgwRK Mtel Yvq wcvimb r-Gi AšŃbŃZ avi Yvi mKj kZ,tj v cŃY Kiv memgq m`e nq bv etj wbfPY weŃkŃYi dj v dj gj`vqŃb mZKZv AeŃ b Ki tZ nq|

C_ weikH (Path Analysis)

*c_ weikH ntjv, weifba
Pj tKi gta m'ukPK
tevSvi Rb GKU KvhKvi Y
m'ukKZ gtWj |*

eU-Pj K weikó weikH Yi tKŠkj wnmrte mva'c0ZKKvtj mgvRieAvtb, c_ weikH tek RbwcdZv tctqtQ | c_ weikH ntjv, weifba Pj tKi gta m'ukPK tevSvi Rb GKU KvhKvi Y m'ukKZ gtWj | GKU wbfPKj Pj tKi Dci faxb Pj K, tjvi cZ'fl, ctivfl I tgmK (spurious) cfve wYfqi Rb c_ weikH LpB DcthvMx | Ab th tKvb Dcvtqi Zj bvg c_ weikH Yi gva'tg weifba Pj tKi m'ukPK Mu_ybi GKU m'uo wP' cvlqv hvq | GKU D'vni'tYi gva'tg weiqm tevSv hvK | aiv hvK, GKRB MtelK tgvU Rbhtii gv'vK awgZv, bMivqtYi nvi I bixi wetqi eqm, G wZbu Pj K w'tq e'vL'v Ki'tZ Pvb | tm t'f't, GB Pj K, tjvtK wZwb GKU c_ bKkvi (path diagramme) gta Dc'vcb Ki'teb, hv wbg'e'c:



W'P' 10.4.1: tgvU Rbhtii e'vL'vi GKU c_ bKkvi

- thLv'tb, x_1 = awgKZv
- x_2 = bMivqtYi nvi
- x_3 = bixi wetqi eqm
- x_4 = tgvU Rbhtii
- x_u | x_v = awšgj K cfve |

GB c_ bKkvi gva'tg, Zxi wPy, tjv w'tq Pj K, tjvi gta'Kvi KvhKvi Y m'ukPK Rvj w m'uo'vte c0Rb Kiv hvq | i'ay Zvb bq, GB c_ bKkviq tgvU Rbhtii Dci tKvb Pj K, tjvi cZ'fl, I ctivfl cfve itqtQ, Zv k'gvb ntq D'tv | KvhKvi Y m'ukPK gv'v, ev kw'w wYfZ nq GKU Pj tKi Dci Ab Pj tKi cfvtei gv'v w't' RK wbf'v't'i gva'tg, hv 0c_ mnM0 (path coefficient) etj cw'wPZ | e'vav wbf'v' weikH Yi Dci w'vE K'ti c_ mnM, tjv wYf' Kiv ntq v'tK | m'vavi Yf'vte, c_ weikH wbf'PKj Pj tKi Dci ctizw faxb Pj tKi cfve m'oj Z KZ, tjv wbf'v' m'vKi'tYi mg'q | th'tnZi c_ weikH Yi we'wi Z Av'tj vPbv GB M0'si cw'wai e'vB'ti, tm'tnZi cfvtei c_ wba't'Yi Rb weifba m'vKi Y Avni'tYi avc, tjv GLv'tb Av'tj vPbv Kiv nte bv |

Dcv`vb weikH (Factor Analysis)

Dcv`vb weikH ntjv, eU-Pj K weikó weikH Yi Avi GKU wfbetKŠkj | G chŠ-Avgiv th mKj tKŠkj Av'tj vPbv K'tiwQ, tm me tKŠkj t_tK Dcv`vb weikH Yi cw'wmsL'vbmZ w'vE

tek wfbæ Ges RñUj | Dcv`vb wekH wewfbæ Pj tKi gvtbi wfbævi gta` wbow ijc
Awẽv`ti i Rb` e`envi Kiv ntq `vtK | wKQz Kwĩg gvĭv (Dcv`vb) D`Mteb`i gva`tg Dcv`vb
wekH Kiv nq, th` ,tjv cKZ Pj tKi mvt_ D`P gvĭvq mn-m`múKZ nq Ges th` ,tjv GKñU
t`_tK Avti KñU `faxb | aiv hvK, GKñU DcvEiviki gta` e`w`i c`qcvZgj K, ev ms`vir`Qbæ
AvPitYi tek wKQz mPK itqtQ | G me mP`tKi cõZñU `dv ms`vir`QbæAvPitYi wKQz BwZ
t`q, wKŠ` tKvñUB wLz wbt` Rbv t`q bv Ges `dv` ,tjv cvi`úwi Kfvte D`P gvĭvq
m`múKñß | G t`qĭt, MtelK Dcv`vb wekH`Yi gva`tg GKñU Kwĩg gvĭv (Dcv`vb) `Zwi
Ki`eb, hv ms`vir`QbæAvPitYi cwigvcKvix cõZñU `dvi mvt_ D`P gvĭvq m`múKZ `vKte |
Pj K ,tjvi gta` ch`e`qYKZ m`múK`Ges Dcv`vb ,tjvi mvt_ Pj K ,tjvi mn-m`múK`t`_tK
cõB GB Kwĩg gvĭv ,tjvi gvb`tk factor loadings etj | cõB factor loading ,tjv t`_tK
GKRb MtelK mnt`RB ešZ cvtib th, tm ,tjv tKvb Dcv`vb`tk cõZñwaZi Kti |

Dcv`vb wekH`Yi gva`tg th Dcv`vb ,tjv`tk (Kwĩg gvĭv) D`Mteb`i Kiv nq, tm ,tjvi tKvb
cKZ A`_`vtK bv | Dcv`vb ,tjv`tk e`vL`vi gva`tg A`_`cõvb Ki`Z nq | tm Rb` GB
Dcv`vb ,tjvi mPK wbe`Pb LpB `i`ZcY` KviY, mñK mPK wbe`Pb bv Ki`j, D`MteZ Kwĩg
gvĭv ,tjv ev`e Ae`vi mvt_ m`ñZcY`nq bv | Zte, GñU gtb ivL`tZ nte th, th`tnZi
Dcv`vb ,tjv cKZ A`_`QovB `Zwi nq, tm`tnZi MtelK Zj bv Kiv hvq bv, Ggb wKQz Pj tKi
Rb` D`P gvĭvi factor loading m`múw`Dcv`vb tctZ cvtib, hv Dcv`vb wekH`Yi gj
Dc`thwZv`tk bõ Kti td`j |

t`v`v`i wekH (Analysis of Variance)

hLb bvgmPK Pj K Ges e`w`Bggj K Pj tKi gta` Kvh`KviY m`múK`e`vL`vi Rb` GKñU
cwi msL`vbMZ cix`qv Kiv nq, ZLb t`v`v`i wekH`Yi GKñU `i`ZcY`t`KŠkj wñmvt`e Kiv R
Kti | t`v`v`i wekH`Yi mst`qĭc ANOVA ejv nq | t`v`v`i wekH`Yi gva`tg cix`qY
cwi Pjv bvi mjeavñU ntjv th, GñU `ñU`i tekx `tj i t`qĭt cõqM Kiv hvq | A`_`r, `ñU`i tekx
`tj i gta` cix`qY cwi Pjv bvi gva`tg wbf`Pkj | `faxb Pj tKi gta` m`múK`P Ggb wKQz
welq D`bñPZ nq, hv `ñU `j wekõ cix`qY`Yi gva`tg cvl qv hvq bv | cix`qY`Yi c`e`Ges
cti `j `ñU bvgmPK Pj tKi `ñU tkYx``dv`tk cõZñwaZi Kti Ges e`w`Bggj K Pj KñU cõZñU
tkYx``dvq GKñU Mo gvb`tk cõZñwaZi Kti | tkYx``dv `ñU`i cõZñU t`qĭt Mo gvb, cõZñU
`tj i Rb` Mo c`eYZv`tk cKvk Kti |

*hLb bvgmPK Pj K Ges
e`w`Bggj K Pj tKi gta` Kvh`
KviY m`múK`e`vL`vi Rb`
GKñU cwi msL`vbMZ cix`qv
Kiv nq, ZLb t`v`v`i
wekH`Yi GKñU `i`ZcY`
t`KŠkj wñmvt`e Kiv R Kti |*

GKñU D`vniY t`qv hvK | aiv hvK, GKRb MtelK gvtqi et`Ki `p` Lvl qv`bvi mvt_ wki i
D`PZv e`pxi m`múK`cix`qv Kti t`L`tZ Pvb | tm t`qĭt, cix`qY`Yi maviY c`ñZ Ab`hvq`ñU
`j `Zwi Kiv nq | GKñU cix`qY `j, thLvtb R`tb`i ci t`_tK wki`tk wbcwqZ gvtqi et`Ki `p`
Lvl qv`bv nq Ges Ab`ñU wbcšY `j, thLvtb wki`tk gvtqi et`Ki `p` Lvl qv`bv nq bv | GKñU
wbow i mg`tqi cti, `ñU `tj i wki`t`i | Rb` tbqv nq | hv` t`Lv hvq th, `ñU `tj i gta`
cix`qY`Yi c`e`P Zj bvq cti | R`tb`i gta` cv`R` `Zwi ntqtQ, tm t`qĭt MtelK ej`Z
cvtib th, gvtqi et`Ki `p` Lvl qv`bvi GKñU av`ZK c`fve wki i | Rb` e`pxi Dci ctotQ |
GLb c`k`ent`jv, ch`e`qYKZ GB ZdvñU wK gvtqi et`Ki `p` Lvl qv`bvi dtj ntqtQ, bv wK
i`agvĭ bgbñMZ wfbævi KviY ntqtQ? Av`tiv AwZwi` `tj i Dci cix`qY Pjv`bvi gva`tg
t`v`v`i wekH`Yi Avgv` i G cõk`e Reve tctZ mñvñ` Kti |

t`v`v`i wekH`Yi cwigv`ci gvĭvñU th web`v`mi gva`tg gj`wqZ nq, tmB web`vñU`tk
F-web`vm etj | t`v`v`i wekH`Yi `j ,tjvi gta` we`g`vb wfbæv`tk cõZñU `tj i gta`Kvi
wfbæv` w`tq fñM Kti GKñU Ab`civZ wby`q Kti, hv F-Ab`civZ bvtg cwi wPZ | t-web`vm |

*t`v`v`i wekH`Yi cwigv`ci
gvĭvñU th web`v`mi gva`tg
gj`wqZ nq, tmB
web`vñU`tk F- web`vm etj |*

KvB-eM^oweb^ov^otmi gZ, F-web^ovmI KZ_otjv bgbv web^ov^otmi cwi evi, GKw GKK web^ovm bq| tm Kvi^otY ^ov^oaxbZvi gv^ovi Dci wfw^oE Kti KvB-eM^oweb^ovm I t-web^ov^otmi gZ, F-web^ov^otmi I GK GKw web^ovm %Zwi nq| F-AbcvZ wby^oqi m^ofwU ntjv:

$$F = \frac{s_b^2}{s_w^2}$$

thLv^otb, F = F-AbcvZi gvb

$$s_b^2 = \text{`j_otjvi gta^o tf^ov^oi ev wfb^oZvi cwi gvY}$$

$$s_w^2 = \text{`j_otjvi Af^oš^oti i tf^ov^oi ev wfb^oZvi cwi gvY}$$

G t^oq^ot^o, F-AbcvZi gvbw^otK ^ov^oaxbZvi gv^ovi wfw^oE^oZ F-web^ov^otmi Zwi^oE^oK gv^otbi mv^ot_oZj bv Kiv nq| ^oj_otjvi gta^oKvi wfb^oZvi Rb^o ^ov^oaxbZvi gv^oiv ntjv, k-1 Ges ^oj_otjvi Af^oš^oti i wfb^oZvi Rb^o ^ov^oaxbZvi gv^oiv ntjv N-k | hw ^oj_otjvi gta^o tKv wfb^oZv t^oLv bv hvq, Zvtj F-AbcvZ kb^o nte| AbcvZwU hZ eo nte, ^oj_otjv nte ZZ tekx wfb^ofc| hLb GKw ^ov^oaxb Pj K wbtq cix^oq^oYwU cwi Pj bv Kiv nq, ZLb tmB tf^ov^oi w^otk^oH^otK GK-g^olx tf^ov^oi w^otk^oH^o etj | hLb ^ofwU ^ov^oaxb Pj K wbtq w^otk^oH^o Kti, ZLb tmU^otK w^o-g^olx tf^ov^oi w^otk^oH^o etj | GB gj bwZ^otK Abj^oni Y Kti e^o-Pj K w^otk^oo^o tf^ov^oi w^otk^oH^o Kiv hvq, hv msw^oq^oBfv^ote MANOVA (multiple analysis of variance) etj cwi wPZ |

cwi msL^ovbMZ Zvrct^oh^o cix^oq^ov (Statistical Tests of Significance)

eY^ovgj K cwi msL^ovbMZ cwi gvc_otjv t_otK Dcmsnvgj K w^oxvš-M^ohY Ki^otZ ntj, tmB cwi gvc_otjvi c^oB gvb_otjv cwi msL^ovbMZfv^ote Zvrch^oEY^owK bv, tmU wba^oq^oY Kiv c^oq^oRb| KviY, cwi msL^ovb_otjv hw GKw w^obw^o g^oiv^oq Zvrch^oEY^onq, tKej gv^o ZLbB tm_otjvi wfw^oE^oZ mvavi YxKiY Kiv m^oe| Avgiv w^ofw^ob^oe gv^oiv^oq cwi gvcKZ ^ofwU Pj tKi gta^o mn-m^out^oK^o mnM wby^oqi gva^otg mn-m^out^oK^o w^oK I gv^oiv m^out^oK^ot^oR^obw^oQ| wKš^o th^otnZi mgM^oK t_otK msM^opxZ bgbvi gva^otg mn-m^out^oK^o mnM_otjv^otK wby^oq Kiv ntqt^oQ, tm^otnZy ^ov^ofw^oekfv^oteB c^ok^oe^otZjv th^otZ cv^oti th, ^ofwU Pj tKi gta^o wby^oxZ mn-m^out^oK^o mnM^ow^oK cwi msL^ovbMZfv^ote Zvrch^oEY^o, hvi wfw^oE^oZ mvavi YxKiY Kiv hvq? A_oev e^o-Pj K w^otk^oo^o w^otk^oH^oYi Kv^oh^oKviY m^out^oK^owby^oqi wfw^oE^oZ th me c^oo^oj b cvl qv hvq, tm_otjv wK GKw w^obw^o g^oiv^oq cwi msL^ovbMZfv^ote Zvrch^oEY^o w^ofw^ob^oe^oem^okt^ooi wfw^oE^oZ ejv hvq wK th, w^ofw^ob^oe tMv^oxi gta^o w^og^ovb cv^oR^o wK m^ouz^oKvi, bv wK tm_otjv bgbvMZ cv^oq^oK^o Kvi^otY N^otU^ot^oQ? cwi msL^ovbMZ Abj^oK^o cix^oq^ovi gva^otg G c^ok^oe^otjv DEi tLwRv th^otZ cv^oti |

Abj^oK^o cix^oq^ovi w^ofw^ob^oe^oxwZ itqt^oQ| tm c^oxwZ_otjv^otK c^obwZt ^ofwU e^opr cwi ev^oti w^of^o Kiv hvq N^o c^ovgw^otK (parametric) I Ac^ovgw^otK (non-parametric)| c^ovgw^otK cix^oq^ov_otjvi gta^o e^ouj e^oe^ouz c^oxwZ_otjv ntjv z-cix^oq^ov, t-cix^oq^ov Ges F-cix^oq^ov| Ac^ovgw^otK cix^oq^ov_otjvi gta^o met^optq tekx e^oe^ouz c^oxwZwU ntjv, KvB-eM^o(χ^2) cix^oq^ov| G mKj Abj^oK^o cix^oq^ovi Aš^obw^ohZ thš^oo^oKZv I wby^oq c^oxwZ ^omv^ogv^ork cwi msL^ovb cwi wPwZ^o (mgvRZE-4) M^oš^o w^owi Zfv^ote Av^otj vPbv Kiv ntqt^oQ etj, GLv^otb tKej gv^o tm_otjvi D^otj ^o-Kiv ntjv| Avgiv th^otnZi cv^o 3-G w^o-Pj K w^otk^oo^o w^otk^oH^oY KvB-eM^ocix^oq^ov Ges GB cv^ov^o tf^ov^oi w^otk^oH^oY F-cix^oq^ovi D^otj ^o-K^otiw^o, tm^otnZi GB ^ofwU cwi msL^ovbMZ cix^oq^ovi c^opv^oew^oE Avgiv Ki^otev bv|

AbKí cixŋv KitZ wMtg, Avgiv ci`úi wecixZgŁx`ŋU AbKí wbgŋY Kwi Ges cwi msL`vbMZ cixŋvi gva`tg cŮB dj vdtj i wfwÉtZ tKvb AbKí wU mwK, Zv wbaŋY Kwi | cŮg aitYi AbKí wU tK bw`-AbKí etj, thLvfb Abgvb Kiv nq th, GKwU mgMŮKi`ŋU Pj tKi gta` cv`R` tbB, ev civgvtbi mvf_ bgbv gvtbi tKvb cv`R` tbB | bw`-AbKí i weKí wnmvte wŮZxq AbKí wU wbgŋY Kiv nq, hv MtelYv AbKí, ev weKí AbKí wnmvte weŋwPZ nq | Gi mvf_, wefwbæbgbv web`vm e`envi Kti wefwbæZvrch`gvi vq AbKí, tj vi mwKZvi mævevi gvŋv cixŋv Kiv nq | GB ZvrcthP gvŋvi wfwÉtZ Avgiv bw`-AbKí tK nq cŮvLvB Kwi, bZev MŮhY Kwi | Zte bw`-AbKí cŮvLvB tŋtŋ, wmxvš-MŮtY fj nŋZ cvŋi | hw` GKwU mZ` bw`-AbKí tK cŮvLvB Kiv nq, Zte tmB wmxvštK UvBc-1 áwš-, ev Avj dv (α) áwš-etj | wKš`hw` GKwU wgv_ v bw`-AbKí tK cŮvLvB Ki tZ e`_`nB, ZLb tmB wmxvštK UvBc-2 áwš-, ev weUv (β) áwš-etj | G`ŋaitYi áwšt SmK wecixZfvte mæúKŋß | A_ŋ, UvBc-1 áwšt SmK hZ Kg nŋe, UvBc-2 áwšt mævev ZZ teŋo hvte | Kvi Y, Avgiv Rvb bv th, bw`-AbKí wU cKZctŋB mZ`, ev wgv_ v wK bv |

z-cixŋv (z-test): enr bgbv mæŋj Z AbKí cixŋvi tŋtŋ, z-cixŋv cwi Pj bv Kiv nq | z-cixŋv cwi Pj bvi Rb` AšwŋZ avi Yv, tj v nŋj v, GKwU bgbv tK`ŋe-PwqZ fvte wbaŋi Z nŋZ nŋe, bgbv web`vmU`ŋfwek nŋZ nŋe Ges Pj K, tj vtK e`wßgj K gvŋvq cwi gvcKZ nŋZ nŋe | GKwU bgbv Rb` z-cixŋvi mŋwU nŋj v,

$$z = \frac{\bar{x} - \mu}{\sigma_{\bar{x}}}$$

thLvfb z = ŋfwek gvb

$$\bar{x} = \text{bgbv Mo}$$

$$\mu = \text{mgMŮK Mo}$$

$$\sigma_{\bar{x}} = \text{Mŋoi cwi wgvZ áwšt}$$

`ŋU bgbv Mŋoi gta` cv`K`i cwi msL`vbMZ Zvrch`cixŋvi Rb` z-cixŋvi mŋwU nŋj v,

$$z = \frac{\bar{x}_1 - \bar{x}_2}{\hat{\sigma}_{\bar{x}_1 - \bar{x}_2}}$$

thLvfb, z = ŋfwek gvb

$$\bar{x}_1 = \text{cŮg bgbv Mo}$$

$$\bar{x}_2 = \text{wŮZxq bgbv Mo}$$

$$\hat{\sigma}_{\bar{x}_1 - \bar{x}_2} = \text{cv`K`i cŮwŋj Z cwi wgvZ áwšt}$$

t-cixŋv (t-test): z-cixŋv wbyŋqi tŋtŋ Avgiv t`tLuŮ th, mgMŮKwU tK`ŋfwek fvte web`-nŋZ nq Ges mgMŮKi cwi wgvZ e`eavtbi gvbU Rvbv_ v tK | wKš` mvgwRK MtelYvq, Lŋ Kg tŋtŋB mgMŮKi cwi wgvZ e`eavb, ev tŋv`vŋi gvbU Rvbv_ v tK | hLb mgMŮKi cwi wgvZ e`eavtbi gvbU Rvbv_ v tK bv Ges bgbv AvKvi wU tŮvU nq, ZLb Avgiv t`web`vŋmi gva`tg mgMŮKi Mo mæúwKŋ AbKí cixŋv, `ŋU Mŋoi gta` cv`R` mæúwKŋ AbKí cixŋv, wbf`Kxj Pj K mæŋj Z `ŋU Mŋoi gta` cv`R` mæŋj Z AbKí cixŋv Ges mn-mæúwKŋ mnM mæúwKŋ AbKí cixŋv cwi Pj bv Kti_ wK | t`web`vŋmi mvf_ mæúwKŋ GKwU_ i`Zcy` cŮv nŋj v, ŋxvZvi gvŋv | GB ŋxvZvi gvŋvi wfwÉtZB t-cixŋvq cŮB gvtbi ZvrcthP

wełtq wmxvš-MóY Kiv ntq _vřK | GKwU bğbvi Rb" AbKři cixŕvi tŕřřř, t-cixŕv cwi msL"vb wbyřqi mřwU ntj v,

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n-1}}}$$

řhLvřb, t = t-web"řřmi chřeŕŕYKZ gvb

$$\bar{x} = \text{bğbv Mo}$$

$$\mu = \text{mgMřK Mo}$$

$$\frac{s}{\sqrt{n-1}} = \text{bğbv řřK cř"wj Z cwi vğZ e"eavb |}$$

řwU bğbvi gřa" cv_řK"i Zvrch"cxŕŕvi Rb" t-cixŕv cwi msL"vb wbyřqi mřwU ntj v,

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2 - 2} \frac{n_1 + n_2}{(n_1)(n_2)}}$$

řhLvřb, t = t-web"řřmi chřeŕŕYKZ gvb

$$\bar{x}_1 = \text{cřg bğbvi Mo gvb}$$

$$\bar{x}_2 = \text{wřZřq bğbvi Mo gvb}$$

$$n_1 = \text{cřg bğbvi AvKvi}$$

$$n_2 = \text{wřZřq bğbvi AvKvi}$$

$$s_1^2 = \text{cřg bğbvi řř" vř}$$

$$s_2^2 = \text{wřZřq bğbvi řř" vř}$$

$$n_1 + n_2 - 2 = \text{řwU bğbvi řřaxbZvi gvřv |}$$

mn-mřřřKř mnřřMi Zvrch"cxŕŕvi exRMwYwZK mřwU ntj v,

$$t = r \frac{\sqrt{n-2}}{\sqrt{1-r^2}}$$

řhLvřb, t = t-cwi msL"vb

$$r = \text{wřqvi mb r mnM}$$

$$n-2 = \text{řřaxbZvi gvřv |}$$

mviřsk

řř-Gi AwaK Pj K wbtq řh weřkřY Kiv nq, ZřřK eř-Pj K weřkř weřkřY eřj | eř-Pj K weřkř weřkřY, Pj Kmgřni gřa" Kvh"Kvi Y mřřřK"řvovl mřřřKř gvřřřK e"vL"v Kiv mře | Kvh"Kvi Y mřřřK"e"vL"vi tŕřřř, cwi msL"řřbi GKwaK cřwZ e"eřř ntq _vřK | řhgb, eřav wbfřY weřkřY, c_ weřkřY, Dcv"vb weřkřY, BZ"vř | cřřřř tŕřřřB, řřel Křř řřel Yvi mgm"v Ges Dcvřři e"envi mřřřK"řřbK řekř mřeavb _vKřř nq | řřvb Dcvřři tŕřřř řřvb ařři cwi msL"vb cřwZ řřřř dj řřř, Zř wbfř Křř Dcvřři h_v_řř Ges wbfřřřř Zřř Dci |

cvřVvĚi gj`vqb

`be⁹³K cċke

mWk DĚti i cvřk Wk (v) WPy`w`b -

1| c_ weřkH ntjv:

- K. Mřel Křk cċnkZ Mřel Yvi c_
- L. W-Pj K weřkó GKW gřWj
- M. Pj K_řj vi gřa` mřúKřK řevSvi GKW KvHřKvi Y mřúWkZ gřWj
- N. Dčři i me|

2| Dcv`vb weřkH e`eüZ nq:

- K. weřfbřPj řKi gřa` mřúřKř gvřv WPyřZ Kivi Rb`
- L. weřfbřPj řKi gřřbi wřbřřvi gřa` wřv`ř iřc WPyřZ Kivi Rb`
- M. weřfbřPj řKi mřL`v Wk Kivi Rb`
- N. weřfbřPj řKi gřv WPyřZ Kivi Rb`|

3| hLb mgMċKi cwi wřZ e`eavřbi gřvW Rvřv _vřK bř, ZLb Avgiv _____ gřa`řg mgMċKi Mo mřúWkZ Abří cixřřv cwi Pj bř Kři _Wk|

- K. KvB-eřMř
- L. řř`vř weřkHřYi
- M. t-weř`vřmi
- N. z-cixřřvi

mřřřB cċke

UřKv wř Lp:

- K. Dcv`vb weřkH
- L. eü-Pj K weřkó weřkH

i Pbvřj K cċke

1| eü-Pj K weřkó weřkHřYi , i "Zj D`vni Ymn Avřj vPbv Ki "b|

2| Dcv`vb weřkH Wk? Avgřř` i ř`řk Avřřb Kvřřbi cċZ gřbřřve wřařřřY Dcv`vb weřkH řKgb dj ř`ře eřj Avřřb gřb Kři b? Avřj vPbv Ki "b|

Mtel Yv cOZte` b
Research Report

GB cW tkfi hv Rvbr hvte —

- Mtel Yv cOZte` b
- GKwU cOZte` tb wK _vKv DvPr
- cOZte` tbi i Pbv`kx
- msw`fB cOZte` b

Mtel Yv cOZte` b (Research Report)

hZ`fY chS-bv cOZte` b tj Lv nq, ZZ`fY chS-Mtel Yv Kg`fkl ntqtQ ejj gtb Kiv hvte
 bv| hZ ep`x` xB AbKí wbg`fY Kiv tnvK bv tKb, hZ mZKZvi mvt_ Mtel Yv bKkv cV`qb Ges
 KvhRi Kiv tnvK bv tKb, hZ PgKc0 DcvEB msM0 Kiv tnvK bv tKb, G mtei tKvb „i“ZB
 _vKte bv, hw` tm`_tjv cKvk bv Kiv nq| Mtel Yvi djvdj cPvi Mtel tKi `wqtZi gta`
 GKwU „i“ZcY`KvR| KviY, Gi gva`tg c0B djvdj tK Avb fvUvii Ask wmvte cwiYZ
 Kiv hvq| wKs` AtbK mvgwRK weAvbx gtb Ktib th, Mtel Yv cOZte` b cV`qtb gZ GKwU
 ActmZKi Kvr tK Mtel Yvi mvt_ h`B Kti t`lqv nq, GwU Mtel Yvi Awet`Q` Ask bq|
 DcvEi wetk`Y t`_tK hLb `w0U cOZte` b cV`qtb w`tK wbx Kiv nq, ZLb Awet`vii
 mKj D`ERbv AtbK Mtel tKi ga` t`_tK Dte hvq|

*cOZte` b cV`qtb gj
 Dfi`k`wU wbtRi mvt_B
 wbtRi K_v ejv bq eis
 cv`tKi mvt_ GKwU
 thwMvthwM `vcb Kiv|*

Ab`vb` ch`fqi Zj bvq, Mtel Yvi GB ch`fqi wfb`eai`yi `fZvi c0qvRb nq| Mtel Yv
 cOZte` tbi gva`tg djvdj cKvk, Mtel Yvi Ab`vb` ch`fqi gtZvB htZie `vex ivtL|
 cOZte` b cV`qtb hw` ch`fB mgq t`qv nq, Zte wewfbwUKtiv UKtiv Z`_`_tj vtK GKwU epEi
 t`c`fvcU c0qv`Mi m`fhwMwU Mtel K Dct`fwm KitZ cv`tib| i ayZvB bq, djvdj i cOZ`w`qv,
 Gi gva`tg we`gvb Avtbi kb`Zv c`Y, bZb c0k0e D`l vcb l fvel`r Mtel Yvi wK t`f`f` Zwi
 ntZ cv`ti, Zvl Mtel KtK ht_0 Avb`w`j Z KitZ cv`ti | cOZte` b cV`qtb mgq, th wel qwU
 metP`tq „i“tZi mvt_ gtb ivLv c0qvRb, tmwU ntjv cOZte` tbi Kvh`ejx| cOZte` b cV`qtb
 gj Dfi`k`wU wbtRi mvt_B wbtRi K_v ejv bq eis cv`tKi mvt_ GKwU thwMvthwM `vcb Kiv|
 hw` l G Dfi`k`wU mKj Mtel tKi gtbB _v`K, wKs` mvgwRK Mtel Yvi wewfb`e cOZte` b
 ch`fj vPbv Kitj t`Lv hvq th, Awakvsk cOZte` tb Mtel K, ev cOZte` b cV`qbKvix Zvi
 wBR`^P`Sv-fivevi e`vL`v w`tZ wM`tqB Mj`Ng`ntqtQb| tm ai`yi Mtel Yv cOZte` b cv`tKi
 gtb tKvb Jrm`fK`i Rb`f`q bv|

cv`tKi mvt_ thwMvthwM cOZ`ovi gj kZ0U ntjv, cOZte` bwU tKvb ai`yi cv`tKi Rb` %Zwi
 Kiv nt`Q, tm m`utK`cOZte` b cV`qbKvixi GKwU `^Q aviYv _vKv c0qvRb| Mtel Yvi
 djvdj i wfwE`tZ wewfb`eKgRvU ev`evqbKvix ch`vktKi Dfi`tk` cV`xZ cOZte` tbi Zj bvq,
 mnKg`mvgwRK weAvbx` i Dfi`tk` cV`xZ Mtel Yv cOZte` b AtbK t`f`f`B wfbont`e| Avevi
 mvariY gvb| tK AeMzKi`yi Dfi`tk` cV`xZ Mtel Yv cOZte` b, Dcwi`w`Z `jai`yi
 cOZte` b t`_tK wfbont`e| th ai`yi cv`tKi tnvK bv tKb, cOZte` b cV`qtb cwi Kí bvq `0U
 c0vb wel q „i“tZi mvt_ wetePbvq wbtZ nte| c0`gZt, Mtel Yvi tKvb w` KwU m`utK`cV`K

RvbŕZ Pvb, ev Zvŕ` i Rvbn cŕqvRb Ges wŕZxqZt, DcvĒŕK KZUKz DĒgfvŕe Dc`vcb Kiv hvq| A_ŕ, GKw Mŕel Yv cŕZte` ŕb wK _vKv DvPr Ges cŕZte` ŕbi i Pbv%kj xw wK nŕe?

GKw cŕZte` ŕb wK _vKv DvPr (What a Report Should Contain)?

GKw Mŕel Yv cŕZte` ŕb, Mŕel Yv mġm`vi GKw `uó I we`wi Z eYŕv _vKŕZ nŕe; Mŕel Yv c`wZ Ges Pj Kmgŕni Rb` wevfbeġvŕvq e`eüZ cwi gvc c`wZi chŕßZvi thŕwŕKZv Zŕj aiŕZ nŕe; bġbv wbeŕPb Ges DcvĒ msMŕh KZ mZKŕv I hŕZie mvt_ Kiv ntqŕQ, Zvi weeiY _vKŕZ nŕe; DcvĒ weŕkŕY I e`vL`vi gra`tg djvdtj i thŕwŕKZv I h_v_Zvi cŕjvY Dc`vcb KiŕZ nŕe; Ges djvdtj i AšŕbŕZ A_ŕ I Gi m`te` cŕve`_ŕj vtK Avŕj vPbv KiŕZ nŕe| wel q_ŕj v wKŕv we`wi Zfvŕe Avŕj vPbv Kiv hvK|

mġm`vi eYŕv (Statement of the Problem): Avgiv Rvb th, Mŕel Yv cŕqvri cŕg c`ŕŕcŕw nŕj v, Mŕel Yv mġm`vi m` mŕexKiY Kiv| mvari Yfvŕe, Mŕel Yv cŕZte` bl `i` nq th mġm`v wŕtq Mŕel Yv Kiv ntqŕQ, Zvi eYŕv w`ŕq| ŕKb GB mġm`wŕŕK wŕtq Mŕel Yv Rb` weŕePbv Kiv ntqŕQ tm m`úŕK`cŕwKŕK `uó avi Yv ŕ`evi Rb` chŕß cŕfġġġ K Z_` w`ŕZ nŕe| thŕnZi GKrb mġvRwe`Ávbx GKw wŕw`ŕ ev`e mġm`v mġvavŕbi PvbŕZ, gŕbe AvPitŕi mvariY Ávbfvŕvŕi Mŕel Ywŕi Ae`vb m`úŕK`ŕekx AvMŕh ntq _vŕKb, tmŕnZi cŕvŕKi Rb` mġvRZwĒĖK ZŕĒi mvt_ Mŕel Yv mġm`vi cŕmŕZKZvŕK cŕZŕv KiŕZ nŕe| wKŕ` Gwŕi `ŕKvi KiŕZ nŕe th, me Mŕel Yv DciB miwmi ZĒMZ weŕŕq cŕve _vŕK bv| cŕmŕZKZvUKzZLbB cŕZxqgvb nq, hLb Mŕel K Zvi djvdtj ŕK ŕKv ZwĒĖK KvVŕgvi wfvĒŕZ eŕŕZ Pvb| mġvRwĒ we`Ávŕb, eü Mŕel Yv cwi Pwŕj Z nq GKw mġm`sex ZŕĒi wŕŕ` Rbv QvovB| tm ŕŕŕŕ, ZwĒĖK cŕmŕZKZv cŕZŕvi Rb` AŕnZK fvb Kivi ŕKv cŕqvRb ŕbB| ZwĒĖK I ev`em`ŕZ `i`ŕZi cŕkŕcŕk, Ab`vb` cŕmŕZK Mŕel Yv GKw chŕŕj vPbv mġm`vi eYŕv Ašŕŕ Kiv DvPr| GŕZ Kŕi, Mŕel Yv cwi ŕcŕŕZwŕ teŕSv hvq| hw` ŕKv AbKŕi wġŕŕ Kiv nq, Zŕe tm AbKŕi `ŕj v Ges AbKŕi e`eüZ c`vb c`vb cŕ`q_ŕj vi m`ÁvŕK I m`úŕfvŕe eYŕv KiŕZ nŕe|

Mŕel Yv c`wZ (Research Methodology): wKfvŕe Mŕel Ywŕi cwi Pvj bv Kiv ntqŕQ, GKrb we`Ávbm`ŕZ cŕwK Zv RvbŕZ Pvb| G m`úŕK`Z Z_` mieivn KiŕZ wŕŕq Mŕel KŕK Mŕel Yv bKkvi cŕkŕZwŕ wK wŕŕj v, Zv eYŕv KiŕZ nŕe| Mŕel Yv bKkŕwŕ hw` cŕxŕŕYġġ K ntq _vŕK, Zŕe cŕxŕŕY`ŕj v wKfvŕe cwi Pvj bv Kiv ntqŕQŕj v, cŕxŕŕŕi mvt_ m`úŕK`Z cwi gvc cŕqvŕwŕ K Lb Ges wKfvŕe cwi Pvj bv Kiv ntqŕQŕj v, Zvi c`wZMZ cŕqvri Dŕj ŕ KiŕZ nŕe| hw` cŕġŕj v ev mŕŕŕvŕvi AbŕmPxi gra`tg DcvĒ msMŕh Kiv ntq _vŕK, Zŕe cŕKZcŕŕ wK wK cŕke Kiv ntqŕQŕj v, cŕwKŕK Zvi GKw avi Yv w`ŕZ nŕe| G ŕŕŕŕ, cŕġŕj v ev mŕŕŕvŕvi AbŕmPxi GKw Abŕj w` cwi wŕŕó mŕŕwŕZ Kiv thŕZ cŕŕi| mŕŕŕvŕvi MŕhYKviŕ`i wbeŕPb cŕqv, Zvŕ`i thŕM`Zv wbaŕŕY I cŕkŕŕY cŕqvri eYŕv w`ŕZ nŕe|

cwi gvc `ŕj v hw` chŕŕŕŕŕi wfvĒŕZ ntq _vŕK, Zŕe chŕŕŕKŕK wK wŕŕ`ŕvej x ŕ`I qv ntqŕQŕj v Ges chŕŕŕY ev cŕke DĒi `ŕj v wKfvŕe Mŕel Yv mvt_ m`úŕK`Z Pj K_ŕj vi cwi gŕc iŕcŕŕ Kiv ntqŕQŕj v, tm mKj weŕŕq Rvbvi Rb` cŕwK Drmŕx ntq _vŕKb| Kvŕ`i ŕK bġbv wŕmŕe wbeŕPb Kiv ntqŕQŕj v, bġbv mSL`v wK wŕŕj v Ges Zvŕ`i wKfvŕe wbeŕPb Kiv ntqŕQŕj v, G m`úŕK`Z Z_`ŕj v djvdtj i mvari YxKiY thŕM`Zvi gŕŕv wŕŕŕŕY LŕB `i`ZŕYŕ Aŕi mSL`K bġbvi Dci wfvĒ Kŕi e`vcK Dcŕmŕvi Uvbv ntqŕQŕj v wK bv, ntq _vKŕj Zvi thŕwŕKZv wK wŕŕj v, G me Z_` cŕvŕKi Rb` Rvbv `i`ZŕYŕ Kvi Y, G wel q_ŕj v Mŕel Yvq Ašŕŕ bġbvi cŕZwŕwZŕj ZŕŕKB wŕŕ`ŕ Kŕi| bġbvq Ašŕŕ RbŕMŕxi `ewkó`

m=útk©chfß eYbV_vKv c0qvRb, hvfZ Kti Ab'vb" RbtMvöxi t¶¶T GB dj vdj c0qvM Kiv hvte wK bv, cvWK wbtRB tm m=útk©Dcmsnvi UvbTZ cvtibi| DcvEi cwi msL'vbMZ wetkH¥i tKSkj ,tj v wK wQtj v, weÁvbm=SZ cvWK tm wetq| RvbtZ PvBteb| A_¶, wewfbee tMvöxi `ewktó'i gta" cv_R" wbaft¥i Rb" wK tKSkj e'envi Kiv ntqvQtj v Zv eYbV Kitz nte| mvavi Yfvte, tKSkj ,tj v Ges Gi mvt_ msuké-Av'vi gvIv Dtj E-Kitj B Ptj , wKš' hw' tKSkj wU bZb ev D"vebxgj K ntq_vtK, tm t¶¶T Zvi e'vL'v c0qvRb|

weÁvbm=SZ tj LK wK wj Lteb Ges wK wj Lteb bv, Gi Dci wmvš-tbl qvi e'vcvti Ab'vb" tj LKt' i gZ wZwb `faxb bb|

dj vdj (Results): Mtel Yvi dj vdj Dc'vcibi gj bwxZgvj wU ntj v, Mtel Yv mgm'vi mvt_ m=útk© Mtel Yvi me c0vYtK Dc'vcb Kitz nte, Zv Mtel tKi gtzi mvt_ m/zwZcY'¶nvK ev bv tnvK| weÁvbm=SZ c0Zte`b c0vq¶bi GwU ntj v GKwU Acwi nvh©kZ¶ weÁvbm=SZ tj LK wK wj Lteb Ges wK wj Lteb bv, Gi Dci wmvš-tbl qvi e'vcvti Ab'vb" tj LKt' i gZ wZwb `faxb bb| wKš' Zvicti l Mtel KtK wbe¶b Kitz nq th, c0Zte`tb Dc'vcb Kivi Rb" wK c0m½K, wK bq| DcvE wetkH¥i ch¶q c0ZKZ c0ZwU mvi wY c0Zte`tb `vb cvq bv, ev cvl qv DiPr bq| tm t¶¶T, c0Zte`tb Dc'vcibi Rb" wK wK mvi wY e'envi Kiv nte, Zv m¶PvšZfvte wbaft¥i Kitz nte| Zvntj c0k¶ntj v, tKvb mvi wYwU c0m½K tm wetq Mtel K wKfvte wmvš-tbteb? G c0nt½, Mtel Yv mgm'v, Mtel Yvi D¶tK", DcvEi c0KwZ Ges hw' tKvb AbKí wbg¶¶ Kiv ntq_vtK, tm ,tj vi wfvE¶Z wbt`RbwU AvmtZ cvti |

hLb Mtel Yv mgm'wU tK mfxKiY Kiv ntqvQtj v, ZLb Mtel YwU c0wU tKi gZ `°o l `úo wQtj v bv| Mtel Yv cwi Pvj bv Kitz w¶q mgm'vi eYbVwU chfßZvi w tK G_s tZ_vtK, bZb AbKtí i Rb¶ nq Ges cte¶Pšv Kiv nq wb, Ggb m=úK¶ aiv cto| AZGe, mgm'vi gj mfxKiYwU c0Zte`b i tgš¶j K `š¶i K wnmvte KvR Kitz l, cieZ©ch¶qi weKvK ,tj vtK Gi gta" Ašf¶¶ Kitz nte| Pj tKi gta" m=úK© ev wewfbee tMvöxi gta" Zj bvi mvt_ m=útk© c0ZwU dj vdtj i wetkH¥ l e'vL'v Ges Gi mvt_ msuké-cwi msL'vbMZ Zvrcth¶ gvIvtK Dtj E-Kitz nte| mvavi Yfvte, GKwU wbw`© cvWK`tj i Rb" c0ZKZ we`wi Z c0Zte`tb, th mKj dj vdj ,i"ZcY'g¶b nq tm ,tj vi mvt_ m=útk© mvi wY, tj Lv¶I ev QK nq gj c0Zte`tb, ev cwi wktó Ašf¶¶ Kitz nte|

Avgiv GZ¶¶Y Ggb me Mtel Yv c0Zte`b i K_v Avtj vPbv Kti wQ, hvi gj wbt`RbwU GtmtQ Mtel Yv mgm'vi c0_wgK mfxKiY, dj vdtj i cwi msL'vbMZ wetkH¥, Ges AbKí t_tK| wKš' me Mtel YvB Mtel Yv mgm'vi mfxKiYti we`wi Z weeiY w tq' i i" nq bv Ges me Mtel YvB cwi msL'vbMZ DcvE e'envi Kti bv| thgb, GKwU AbjwUvbgj K Mtel Yvq, c0Zte`b i welqe`i h_vh_ Kiv wgtv wK nte, Zv Mtel Yv bKkv, ev DcvEi wetkH¥ mY'úofvte wbt`R Kitz cvti bv| G t¶¶T, c0Zte`b i fcti LwU wK nte, tm wetq wmvš-Mh¶Yi Rb" Mtel KtK wbtRi wetePbv c0hZ wmvš-tš¶ Dci B wbf¶ Kitz nte| Zte, th ai¶Yi Mtel YvB tnvK bv tKb, mgm'vi th welq ,tj v Mtel Yv cwi Pvj bvq cfve we`vi Kvix Dcv'v wnmvte KvR Kti wQtj v, tm ,tj vmn th c×wZtZ Mtel Yv cwi Pvj bv Kiv ntqvQtj v, th Dcmsnvi Uvbv ntqvQtj v Ges Pevš-Dcmsnvi i wfvE wK wQtj v, Zv `úofvte Dtj E-Kitz nte|

AšwbnZ c¶vtei Avtj vPbv (Discussion of Implications): dj vdtj i c0KZ A_©enb Kivi Rb", dj vdtj i m'vqvUv eYbVb ht_ó bq| gvbe AvPiYtK Dcj wai Rb" cvWK dj vdtj i AšwbnZ A_©l Gi c¶vte¶K RvbtZ Pvb| G ai¶Yi AšwbnZ c¶vtei Avtj vPbv, KLt¶v KLt¶v DcvE wetkH¥ l e'vL'vi mvt_ Dc'vcb Kiv nq, Avevi KLt¶v Zv wfbce Abt'Qt` l Dc'vcb Kiv nq| thLv¶bB GB Avtj vPbv Dc'vcb Kiv tnvK bv tKb, GwU mvavi YZt Pvi wU c0vb welqtK Ašf¶¶ Kti| c0_gZt, GKwU wetkl cwi w`wZi dj vdj t_tK Avnwi Z wmvš-gj K Dcmsnvi, hv GKB iKg Ab'vb" cwi w`wZtZ c0hvr" nte etj c0'vkv

Kiv thZ cvti | G aiYi Dcmsnvi , DcvEi Lp KvQvKwQ gvIvq nZ cvti , A_ev wegZvvi D`PgvIvql nZ cvti | wQxqZt, G mKj wvšgK Dcmsnvi i e`vL`v wmvte, MtelYvq cÜB djvdj i mvaviYvKiYi mxgexZvi gvIv th mKj kZ`Øviv cFweZ nq, MtelKtK tm_tjvi Dtj E-KitZ nte| MtelYvq AšfP bgbvi `enkó` epEi RbtMvöx t_tK KZUK wfbøZvi Dtj E-KitZ nte| c×wMZ mxgexZv_vKtj , Zv e`wZµgagP djvdj wK cFve we`vi KitiQ, tm_tjv Dtj E-KitZ nte| ZZxqZt, th mKj cÜm½K cÜkæ DEi cvlqv hvqub, ev th mKj bZb cÜæDl wcz nqtQ, tm mKj cÜkæ DEi fivel`tZ wK aiYi MtelYvi gra`tg cvlqv hte, djvdj i AšbñZ cFvtei Avtj vPbvq Zvi wbt`Rbv_vKtZ nte| PZL`Zt, MtelYvi djvdj ZmE`K meKvK wK tgšuj K Ae`vb ivLte, ev bwiZ wbañtYi tñtñ wK cFve we`vi Kite, Zvi mý`úó Dtj E_vKtZ nte|

mvimstñc I Dcmsnvi (Summary and Conclusions): cÜv Abñvqx, GKw mswñB mvimstñtci gra`tg Dcmsnvi UvbtZ nte| G cñt½, mgm`vi GKw mswñB cpeYØv, MtelYv c×wZ, cÜbv djvdj Ges tm me djvdj t_tK Avwi Z Dcmsnvi _tj vK AšfP KitZ nte| cñiv MtelYw mæútk`GKw mweR aviYv tbevi Rb` e`-cvK, gj Zt GB AskwB co`teb| tm Rb` mvimstñc I Dcmsnvi tj Lvi mgq, wKQlv AwZwi³ _i`Zi w`tq cñiv MtelYvi GKw mwK Ges wbfP wPÍ Dc`vcb Kiv ep`xvgtbi KvR nte| GB Aštk, cÜZte`b cÜqbKvix Lp i xwZexfite MtelYvi djvdj tK mswñB AvKvñi Dc`vcb Kiteb| MtelYvi i`tZ MtelYv cÜæ`tj v thfvte cÜve Kiv nqtQ, tmB cÜvebvi cwi tçñtZ djvdj _tj vK Dc`vcb KitZ nte| cÜqvRbxq Dcmsnvi _tj v Dc`vctbi ci, th mgm`vi Dci MtelYv cwi Pwj Z nqtQ tm mgm`wñtK wKfvte mgvavb Kiv hvq, ev Avtj v Mfvi fvte Dcj w× Kiv hte, MtelK tm mæútk`Z wKQzmvavi Y Ges mñw` Ø mpcwi k cÜvb Kiteb|

MŠ`-švi K (References): ciZw MtelYv cÜZte`tbB GKw MŠ`-švi K mwbteñK nlqv DwPr| th mKj MŠ, MtelYv cÜZte`b, cÜÜ, wbeÜ, BZ`w` cÜZte`tb e`envi Kiv nqtQ, tm_tjvi GKw cY`Zwv Kv eYØvjvi µg Abñvqx MtelYv cÜZte`tbi tktl Dc`vcb KitZ nte, hvfZ Kti cvK cÜZte`tb Dwj wE Z MŠ`-švi tKi gj Drtm wMtq, wclqv mæútk`Avtj v we`wi Zfvte RvbtZ cvtib| MŠ`-švi K Dc`vctbi wewfbei wZ itqtQ| thgb, nvFw`i wZ, f`vYfv i wZ, BZ`w` i K_v Dtj E-Kiv thZ cvti | th i wZB Abñi Y Kiv tñvK bv tKb, Zv thb weÁvbmæZ cvK mgvRi KvQ MñYthvM` GKw i wZ nq| MŠ`-švi K tKvb i wZtZ `Zwi Kiv nte, Zv wbfP Kti cÜZte`bw Kvi Dñt`k` tj Lv n`Q, Zvi Dci | hw` MŠ` AvKvñi cÜvñki Rb` tj Lv nq, tm tñtñ cÜvñk th i wZw Abñi Y KitZ ej`teb, tmw KitZ nte| hw` mvgwqKtZ cÜvñki Rb` tj Lv nq, tm tñtñ mvgwqKxi mæútk` thfvte PvBteb, tm i wZtZ Dc`vcb KitZ nte| Avi hw` e`w`MZ Dñt`vñM cÜvñk, ev tKvb cÜZövtbi Dñt`k` tj Lv nq, tm tñtñ cÜZte`b cÜqbKvixi wR`^cQ` i i wZw Abñi Y KitZ cvtib| th Dñt`k`B tj Lv tñvK bv tKb, cÜZte`b cÜqbKvixK jñ` ivLte nte th, Zv thb mvavi Yfvte MpxZ I cwi wPZ i wZwñtK Abñi Y Kti |

cÜZte`tbi i Pbvñkj x (Style of the Report)

GKw fvjv weÁvbmæZ tj Lvi tgšuj K _vejx ntjv, mwKZv I `úóZv| bv`wbK ev mwnñZ`i `wofw½ t_tK cÜwZKi i Pbvñkj x ntjv, Gi GKw Dcwi cvl bv| GKw cÜZte`btK i Oxb I i`wPñj Kti tZjvi Rb` MtelKti tKvb eva`evaKZv bv_vKtj I, cvKtK `xN, A`úó I evMvo`ctY`evK`, ev Abt`Qt` i gta` w`tq AwZµg KitZ eva` Kivi gra`tg, ZvñK `ñi mwi`q t`qvi tKvb thšw`KZv tbB| MtelKtK wvš-ñbtZ nte th, tKvb Z` wZwb cvñki KvQ tçñvZ Pvb| wewfbañelq_tjv ci`úti i mvñ_ wKfvte mæútk`ß, Zvi e`vL`v

c0vb KiZ nte| G KvRwJ mWKFvte m0uv`b KiZ cvi tj , AtaR mgm`vi mgvavb ntq hvq| G chRq, c0Zte`tbi Rb` GKwJ we`wvi Z ifctiLv c0Yqb Kiv LpB „i“ZcYQ WKQ AwfA MtelK itqtOb, hviv c0Zte`tbi P0vS-ifcWJ WK nte, tm m0utK`GKwJ avi Yv gv_vq wbtq KvMR-Kj g ev GKwJ Kw0DUvi wbtq etm cotj B, Zv`i MtelYvi GKwJ `u0 Ges mYnsMWZ eY0v wj tL tdj tZ cvi b| WKŠ` Awakvsk MtelKti t0t0, wefkl Kti be` MtelKt`i t0t0, GwJ GKwJ AKvhRi c0wZ| fvmvfvmv avi Yv t_tK c0Zte`b tj Lvi KvR `i` Ki tj , Zv Ggb GKwJ Am0uY` Amsj Mael A_0xb c0Zte`tbi cwYZ nte, hv Avevi bZb Kti tj Lvi c0qvRb ntq cote|

GKwJ ifctiLv, GKwJ c0h1/2 t_tK Ab` c0h1/2 WKFvte D0Evi Y NtU, Zv c0 k0bi gva`tg GKwJ c0h1/2 gta` WK WK wela q Avtj wPZ nte, Zv tMvQvZ mrvh` Kti |

GKwJ we`wvi Z ifctiLv, GKRb MtelK ev c0Zte`b c0YqbKvixtK 0c0Zte`b WKFvte wj LtZ nte0, tm welaq `w0Zv bv Kti, 0WK wj LtZ nte0, Zvi Dci wbi0kfvte gtbwtek KiZ mrvh` Kti | Gi Rb` c0tg, c0Zte`tbi GKwJ K0vj mvi KwVtgv wbg0Y KiZ nte Ges Gici cix0v Kti t LtZ nte th, Avt0v tKvb „i“ZcYQwelaq tmLvtb h0 Kivi c0qvRb itqt0 WK bv| ifctiLvi AŠf0 c0vb c0h1/2, Dc-c0h1/2 Ges Zvi Dc-c0h1/2,tjv, GKRb MtelKtK tm mKj c0h1/2 gta` m0utK0 thŠ0KZvtK t LtZ eva` Kti| GKRb c0Zte`b c0YqbKvix h0 GKwJ ifctiLv Qvov tj Lv `i` Ktib, Zte tm c0Zte`bwJ nte, LvcQvov aitYi | thgb, wZwb bgbvqtbi Dci `0WJ ev wZbwJ Abt`Q` tj Lvi ci, DcvE msM0ni tKŠktj i eY0vq Ptj hvteb Ges wPŠvi avivi gta` WK NtU0 Zvi w`tK `w0 bv w`tqb, bgbv m0utK`nVv gtb cto hvl qv welaqK wj LtZ `i` Kiteb| GKwJ ifctiLv, GKwJ c0h1/2 t_tK Ab` c0h1/2 WKFvte D0Evi Y NtU, Zv c0 k0bi gva`tg GKwJ c0h1/2 gta` WK WK wela q Avtj wPZ nte, Zv tMvQvZ mrvh` Kti |

GKevi hLb ifctiLwJ c0Yqb Kiv ntq hvq, ZLb „i“ZcYQKvb WKQyev` cto00 WK bv Ges avi Yv,tj vtK thŠ0Kfvte wef0 Kiv ntqt0 WK bv, Zv t`Lvi Rb` GwJtK Avevi chRj vPbv Kti t`Lv fv0jv| GtZ Kti, tj Lv `i` Kivi cte`c0qvRbxq mstkvab,tjv Kti tbqv hvq| c0g Lmov `Zwi i chRq, GKRb MtelK c0Zte`tbi Am0K I i Pbv0kj x wbtq `w0Sv-Kiteb WK bv, Zv e`w0 welaqti `fve I`ewkt0i Dci wbf0 Kti | tKvb tKvb c0Zte`b c0YqbKvix c0ZwJ evK`i Rb` `xN0mgq e`q Ktib Ges mZKZvi mvt_ k0 Pqb Ktib, hvZ Kti tm,tjvi A_0K metPtq DEg0f0c c0kvk Kiv hvq| GtZ tKvb t`vli WKQv tbB, WKŠ` hLb mrvwZ`K g0j`i tPtq Z_`tK cvVtKi Kv0 t0t0 t`qvB c0vb D0f`k` nq, ZLb c0g LmowJ hZ ZvovZwo m0e wj tL tdj vB h0m0Z| GtZ Kti, mg0qi mvk0 nq AtbK tekx| hLb nvtZi Kv0 GKwJ Lmov_vtK, ZLb evK` ev Abt`Q`tK c0`mB Kti tj Lvi Rb` cieZ0Z chR0 mgq e`q Kiv thZ cvi |

KtqKwJ RU cvKv0v evK`vsk w`tq `Zwi GKwJ R0Lj evK`i cwetZ`0`0 ev wZbwJ mij evK` GKwJ avi YvtK AtbK tekx m0u0fvte c0kvk Kti |

wKŠ` GKmgq bv GKmgq, i Pbv0kj xi c0Z gtbvthwM t` I qv AZ`vek`Kvq ntq cto| G c0h1/2, th welaqWtK c0tgB „i“Zi t`qv c0qvRb, Zv ntjv mij Zv Ges i`x e`vKiYMZ KvVtgv| G chRq, th maviY t`wJwJ tj LK Ktib, tmwJ ntjv, `w0KZvi mvt_ KwZtEj `vex Kiv| mvgwRK weAvtb „i“Zi itqt0, Ggb Kj vtKŠkjMZ k0 ev c`vejxi e`envi Aek`B c0ivc0i fvte h_vh_, wKŠ` mvgwRK weAvtbi Awakvsk c0Zte`b R0Lj I `te0a` Kj vtKŠkjMZ fv0vi mg0tq i wPZ nq bv| GK GKK m00j Z k0 (one syllable word) e`envt0i cwetZ`0`0 AtnZK Pvi GKK m00j Z k0 e`envi Kti R0Lj evK` MVtbi c0qvRb tbB| Kvi Y, KtqKwJ RU cvKv0v evK`vsk w`tq `Zwi GKwJ R0Lj evK`i cwetZ`0`0`0 ev wZbwJ mij evK` GKwJ avi YvtK AtbK tekx m0u0fvte c0kvk Kti |

Atb0K gtb Ktib th, e`vKiYMZ w0qgvex x ntjv cw0Zt`i Avl Zvaxb, hv Bsti Rx wK0K Qvov Ab` Kv0v 0v0v `0Zvi mvt_ e`envi Kiv m0e bq| GwJ GKwJ gvivZ0K fj avi Yv| Kvi Y,

e`vKiYMZ wbgvej xi Ab`Zg cāvb KivR ntjv, fvlv e`envti Avgvt`i Ggbfivte mrvh` Kiv, hvZ Kti Zv hZUKzmæ Kg A`úoZvi mvt_ A`K cāZfvZ Kti tZvtj | tKvb GKUW wv`θ evK`vstki ci, weivZiPy e`envi Kiv tKvb t`QvPvix wv`vS-bq| GuU th kāUUtK weKwZ Kti, Zvi mvt_ evK`vstki m`úKkK mjbv`θ Kti | kā Pqb, evK` KvVvtgv, Abj`Q` wbgvY, mstkvab Ges weivZiPtýi h_vh_ e`envti i j`T, GKUW fvtjv Awfavb I GKUW fvtjv i Pbv%kj xi wbt`KkV, tj LtKi Rb`_ i`ZcY`nwiZqvi wmvte KivR Kti | mviwY, tj LwPĪ, wPĪ I weivbāQK wbgvY ht_ó hZātbqv cāqvRb| mKj mviwY Ges wPĪK mý`úofvte wktivbvghß ntZ nte| wktivbvq_ tj vtK mswĪBfvte mviwYtZ Dc`wmcZ wclqtK aviY Ki tZ nte| mviwYi cv`wJKvq cāqvRbxq e`vL`v cāvb Ki tZ nte| `æ I mviwYi wktivbvq_ tj vtK DcvĒEi mvt_ mswĪB ntZ nte| hLb DcvĒK kZKiv nvti Dc`vcb Kiv nq, ZLb Zvi cvkvcwk NUbmsL`vtK Dtj ĒKi tZ nte|

hLb h_vh_ mviwY I tj LwPĪ mshß Kti cāZte`b cāqtb i KivR mgvB Kiv nq, ZLb cāZte`b wUUtK cpivq Av`cvs-cāo KZ_ tjjv cāKā DĒi tctZ nte| thgb, evK`_ tjjv wK `úo ntqtQ? tm_ tjjv wK e`vKiYMZfvte i`x ntqtQ? hv cāZte`K ej tZ tPtqtQb, Zv wK evK`_ tjjv gva`tg cāKwKZ ntqtQ? wclq_ tjjv wK Avtjv mij fvte e`³ Kiv thZ? mviwYi gta` Dc`wmcZ DcvĒ_ tjjv wK, th Dcmsvni Uvbn ntqtQ, Zvi thšw³KZvtK cāgvY Kti? BZ`w` | cāZte`btK PōvS-Kivi cæ; AšZtctĪ GKRB mnKgxK w`tq Zv cwtq tbqv DvPr| th evK`_ tjjv tj LtKi KvQ ūwJK-`Q gtb nq, Aþ`i KvQ Zv weāwSki gtb ntZ cvti | tj LtKi KvQ gtb nI qv thšw³K m`úK_ tjjv vtK, Ab`i i KvQ Athšw³K I cvi`úhāxb gtb ntZ cvti | A`Q I Athšw³K Abj`Q`_ tjjv vtK wPvYZ Kiv I tm_ tjjv tkvaiþbvi wbt`Rbvi gva`tg GKUW eÜZcY`ngvtj vPbv, h_vh_ thwMvthwM cāZōvi Rb` Agj` ntq Dv|

mswĪB cāZte`b (Shorter Report)

AþK mgq, wKQy wKQy MtelYvi tĪtĪ, A`Ges mgq e`q Kti we`wi Z cāZte`b cāqtb i cāqvRb cāo bv, ev hv`³hvß nq bv| KviY, nqtZv MtelYwU ZtZvUv_ i`ZcY`bq th, Zv e`vcK RbtMvōxi gta` cāvi Ki tZ nte| weKl Kti, MtelYv mvgvqKtZ cKvtki Rb` cāU AvKvti wj wLZ cāZte`b, KtqK cvZvi gta` mxgve`_ vKtj B Ptj | GtZ Kti, GKBMvt_ MtelYvi djvdj m`úK`mswK-cvVKtK Rvbtbvi DĪ k`wU AwRZ nq Ges mgq I A`_`Ītqi B mvtq NtU| G ai`Yi cāZte`b, LpB mswĪB ntq_ vtK| MtelYv mvgvqKtZ cKvtki Rb` wj wLZ cāU, MtelYv mwntZ`i we`wi Z Dc`vcb i cāqvRb tbB| Ab` th me cKvkvbq Gi mswĪBmvi cKwKZ ntqtQ, tm me cKvkvb, ev gj MtelYv_ tjjv i DĪ ĒKi tj B Ptj | hw` eZĪvb MtelYwU Ab` MtelYvi avivwvKZvi Ask wmvte cwi PwĪ Z ntq_ vtK, tm tĪtĪ_ i`ZcY`cāmwK wclq_ tjjv i DĪ ĒKti we`wi Z Zt`i Rb`, tmB MtelYv cāZte`b_ tjjv vtK wbt`R Kiv thZ cvti | MtelYvi djvdj i mvt_ ZwiĒK KwVvtgvi m`úK`P Avtj vPbvU mswĪBfvte Ki tZ nte|

DcvĒ msMōni nwiZqvi I c`wZi Avtj vPvtK cwi nvi Kiv thZ cvti | Zte cvKtK mvari Yfvte wK c`wZtZ DcvĒ msMō Kiv ntqQ tjjv, tm wcltq KtqKwU evK`i gva`tg AewZ Kiv thZ cvti | wK wK wcltqi Dci DcvĒ msMō Kiv ntqQ tjjv, tmB wclqvĒEK wktivbvq_ tjjv DĪ ĒKiv thZ cvti | th MtelYvi Dci cāUwU tj Lv ntqtQ, tmwU hw` Ab` tKvb MtelYvq e`eÜZ c`wZ AbmiY Kti cwi Pvj bv Kiv ntq_ vtK, Zte c`wZMZ wcltq tKvb Avtj vPbv bv Kti, tmB MtelYvi `š i K DĪ ĒKiv thZ cvti | hw` c`wZi Dci tKvb wj wLZ weeiY cKwKZ ntq bv_ vtK, ev hw` D`wēbxgj K c`wZi e`envi Kiv ntq_ vtK, tm tĪtĪ tj LK Zvi bZb tKŠktj i weeiY w`tq wfbfvte GKUW cāU cKvk Ki tZ cvti b|

MtelYv mvguqKxtZ `vb msKj vtbi mvgve×Zvi KvitY, msuflB cōZte`tb wK wK wetq
 Avtj vPbv Kiv nte, Zvi wbePtb tj LKtK Lp tekx mZK©ntZ nte| Zte avvZK Ges
 FYvZK, `ŃaitYi djvdj tK Dc`vcibi wclquw wbowōZ KitZ nte| wKS'G tflfl, FYvZK
 djvdj ,tjv mviwY, ev tj LwPĪ Qvov msuflBfvte eYŃv KitZ nte| MtelYwU hw` epr l
 e`vck nq, tm tflfl tKejgvĪ metPtq ,i"Zcy©cñtzi Dci cōB djvdj ,tjv Dc`vcb
 KitZ nte| th mkj wclq ,i"Zcy©Ges Avtj vPbvi cōqvRb itqtQ etj gtb nq, A_P DcvĒ
 tKvb wbow`Ń w`K wbt`Rbv w`tZ cvti bv, MtelYv mvguqKxtZ cēŪ cKvtki Rb` tm ,tj vtK ev`
 t`qv thtZ cvti | `xN©cōZte`tbi Zj bva, MtelYv mvguqKxtZ cKvtki Rb` wj wLZ cēŪ,
 Lp Kg msL`K mviwY, tj LwPĪ, QK, Zvuj Kv, BZ`w` e`envi KitZ nte| MtelYv mvguqKxi
 Rb`, MtelYv cōZte`tbi tkfl Dc`wcz mvi mstflcī cwi etZ©cōZte`tbi iitZ, GKkō ev
 Zvi tPtq Kg kā w`tq GKwU msuflBmvi msthvRb KitZ nte|

mvisk

GB cvtV, Avgiv MtelYv cōZte`tbi ,i"Z;l Gi cōqvRbxqZv wbtq Avtj vPbv KtiwQ| wetkl
 Kti, GKwU DĒg MtelYv cōZte`tb wK wK `vKv DmPr Ges Gi Dc`vcibi iwxZ tKgb nte|
 DcvĒ msMōh Kti hw` cōZte`b `Zwi bv Kiv nq, Zvntj cŃiv MtelYv cōquwU A`ixb ntq
 cto| MtelYvi tkl chŃq Gtm MtelYv cōZte`b cŃqb Mteltki Rb` GKwU ,i"Zcy©
 KgRvŪ, thLvtb MtelK DcvĒtK msuflB Kti AbKti i Avtj vtK eYŃv l e`vL`v Ktib| GKwU
 DĒg MtelYv cōZte`tb, mgm`vi eYŃv, MtelYv c×wZ, cōB djvdj, djvdjtj i AšwŃZ
 cŃve, MtelYvi mvi mstflc l MŃs-`Ńi K w`tq cōZte`tbi mgwB Uvbn nq|

cvfVvEi gj`vqb

`be⁹³K cke

mvVK DEti i cvfk WJK (√) wPy w` b –

1| MtelYv cŹte` tbi gj Dti k` n`Q:

- K. wbtRi mvt_ wbtR K_v ej v
- L. cvfKi mvt_ thvMvthvM `vcb Kiv
- M. cŹte` b e`envi Kti PvKwi tZ cŹgvkb tbqv
- N. cŹte` tbi e^{3e} Abhvqx mgvR-bwZ `Zwi Kiv|

2| MtelYvi cŹg c` tŹcwU ntj v:

- K. mgm`vi m`exKiY
- L. MtelYv cwi Pvj bvi A_`msMh Kiv
- M. DcvE msmhni Rb` MtelYv-mnKgPwbtqM t` qv
- N. mi Kvti i Dcti i gntj i AbgvZ tbqv|

3| MtelYvq bZb AbKti i Rb`nq, hLb:

- K. bgbvi msL`v tekx _vtK
- L. DcvEi RMtZ cwi gvYMZ DcvEi Awak` _vtK
- M. mgm`vi eYwU chfZvi w` tK G_ tZ _vtK
- N. Mtel tKi `^Q `wfw/2 _vtK|

msvŹB cke

UxKv wj Lp:

- K. MtelYv cŹte` b
- L. cŹte` b i Pbv`kj x

i Pbv gj K cke

1| MtelYv cŹte` b wK? Gi cŹqvRbxqZv D`vni Ymn Avtj vPbv Ki `b|

2| GKwU DEg cŹte` tbi wK wK _vKv DvPr? D`vni Ymn Avtj vPbv Ki `b|

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cwi wkó th me mvi wY Dc⁻wcZ ntq†0 tm_„tj v ntj v:

- ◆ mvi wY cwi -1 : %Øe msL^ˆvi mvi wY
 - ◆ mvi wY cwi -2 : ⁻†fwieK web^ˆv†mi Aax†b AvqZb
 - ◆ mvi wY cwi -3 : t-web^ˆvm mvi wY
 - ◆ mvi wY cwi -4 : χ^2 -web^ˆvm mvi wY
-

mviwY cwi -1: %e mSL`vi mviwY

10480	15011	01536	02011	81647	91646	69179	14194	62590	36207	20969	99570
22368	46573	25595	85393	30995	89198	27982	53402	93965	34095	52666	19174
24130	48360	22527	97265	76393	64809	15179	24830	49340	32081	30680	19655
42167	93093	06243	61680	07856	16376	39440	53537	71341	57004	00849	74917
37570	39975	81837	16656	06121	91782	60468	81305	49684	60672	14110	06927
91291	90700	77921	06907	11008	42751	27756	53498	18602	70659	90655	15053
39615	99505	99562	72905	56420	69994	98872	31016	71194	18738	44013	48840
63348	58629	96301	91977	05463	07972	18876	20922	94595	56869	69014	60045
97758	16379	89579	14342	63661	10281	17453	18103	57740	84378	25331	12566
01263	54613	85475	36857	43342	53988	53060	59533	38867	62300	08158	17983
21916	81825	44394	42880	28918	69578	88231	33276	70997	79936	56865	05859
63213	21069	10634	12952	63553	40961	48235	03427	49626	69445	18663	72695
18425	84903	42508	32307	09429	93969	52636	92737	88974	33488	36320	17617
58678	44947	05585	56941	10365	61129	87529	85689	48237	52267	67689	93394
16439	11458	18593	64952	07119	97336	71048	08178	77233	13916	47564	81056
90106	31595	01547	85590	91610	78188	51085	12765	51821	51259	77452	16308
52180	20847	12234	90511	33703	90322	02368	21382	52404	60268	89368	19885
30015	08272	84115	27156	30613	74952	01011	54092	33362	94904	31273	04146
01511	26358	85104	20285	29975	89868	52162	53916	46369	58586	23216	14513
97735	85977	29372	74461	28551	90707	07056	97628	33787	09998	42698	06691
60756	92144	49442	53900	70960	63990	75601	40719	48663	91245	85828	14346
55322	44819	01188	65255	64835	44919	05944	55157	54164	58492	22421	74103
18594	29852	71585	85030	51132	01915	92747	64951	32639	32363	05597	24200
83149	98736	23495	64350	94738	17752	35156	35749	29334	27001	87637	87308
76988	13602	51851	46104	88916	19509	25625	58104	02488	33062	28834	07351
09172	30168	90229	04734	59193	22178	30421	61666	99904	32812	81525	72295
47070	25306	76468	26384	58151	06646	21524	13227	96909	44592	29676	20591
13363	38005	94342	28728	35806	06912	17012	64161	18296	22851	00742	57392
58731	00256	45834	15398	46557	41135	10367	07684	36188	18510	05366	04213
19731	92420	60952	62180	50001	67658	32586	86679	50720	94953	91921	26418
04839	96423	24878	82651	66566	14778	76797	14780	13300	87074	79666	95725
68086	26432	46901	20849	89768	81536	86645	12659	92259	57102	80428	25280
39064	66432	84673	40027	32832	61362	98947	96067	64760	64584	96096	98253
25669	26422	44407	44048	37937	63904	45766	66134	75470	66520	34693	90449
64117	94305	26766	25940	39972	22209	71500	64568	91402	42416	07844	69618
00582	04711	87917	77341	42206	35126	74087	99547	81817	42607	43808	76655
00725	69884	62797	56170	86324	88072	76222	36086	84637	93161	76038	65855
69011	65797	95876	55293	18988	27354	26575	08625	40801	59920	29841	80150
25976	57948	29888	88604	67917	48708	18912	82271	65424	69774	33611	54262
09763	83473	73577	12908	30883	18317	28290	35797	05998	41688	34952	37888

mviwY cwi-1: %e msL`vi mviwY (Pj gvb)

62028	76630	91567	42595	27958	30134	04024	86385	29880	99730	55536	84855
77919	88006	17955	56349	90999	49127	20044	59931	06115	20542	18059	02008
12777	48501	46503	18584	18845	49618	02304	51038	20655	58727	28168	15475
85963	03547	92157	89634	94824	78171	84610	82834	09922	25417	44137	48413
38917	88050	14577	62765	35605	81263	39667	47358	56873	56307	61607	49518
29080	09250	79656	73211	98427	07523	33362	64270	01638	92477	66969	98420
73708	83517	36103	42791	34914	63976	88720	82765	34476	17032	87589	40836
56942	53389	20562	87338	70060	28277	39475	46473	23219	53416	94970	25832
25555	21246	35509	20468	53976	54914	06990	67245	68350	82948	11398	42878
89656	20103	77490	18062	76072	29515	40980	07391	58745	25774	22987	80059
04880	45585	46565	04102	46880	45709	90725	52210	83974	29992	65831	38857
32427	70002	70663	88863	77775	69348	64364	67412	33339	31926	14883	24413
69975	94884	19661	72828	00102	66794	08962	00358	31662	25388	61642	34072
80287	88267	47363	46634	06541	97809	95012	68379	93526	70765	10593	04542
39911	96189	41151	14222	60697	59583	15664	10493	20492	38391	91132	21999
50490	83765	55657	14361	31720	57375	56228	41546	16408	81899	04153	53381
59744	92351	97473	89286	35931	04110	23726	51900	18629	81953	05520	91962
81249	35648	56891	69352	48373	45578	78547	81788	73115	35101	47498	87637
76463	54328	02349	17247	28865	14777	62730	92277	57491	16703	23167	49323
59516	81652	27195	48223	46751	22923	32261	85653	30405	83946	23792	14422
79401	21438	83035	92350	36693	31238	59649	91754	72772	02338	16631	35006
04739	13092	97662	24822	94730	06496	35090	04822	86772	98289	96773	20206
99016	71060	88824	71013	18735	20286	23153	72924	35165	43040	38935	64202
45021	33132	12544	41035	80780	45393	44812	12515	98931	91202	31624	76384
15059	45799	22716	19792	09983	74353	68668	30429	70735	25499	78919	19474
85900	98275	32388	52390	16815	69298	82732	38480	73817	32523	41961	44437
42559	78985	05300	22164	24369	54224	35083	19687	11052	91491	60383	19746
14349	82674	66523	44133	00697	35552	35970	19124	63318	29686	03387	59846
17403	53363	44167	64486	64758	75366	76554	31601	12614	33072	60332	92325
23632	27889	47914	02584	37680	20801	72152	39339	34806	08930	85001	87820
03931	33309	57047	74211	63445	17361	62825	39908	05607	91284	68833	25570
74426	33278	43972	10119	89917	15665	52872	73823	73144	88662	88970	74492
09066	00903	20795	95452	92648	45454	09552	88815	16553	51125	79375	97596
42238	12426	87025	14267	20979	04508	64535	31355	86064	29472	47689	05974
16153	08002	26504	41744	81959	65642	74240	56302	00033	67107	77510	70625
38818	46920	21457	40742	29820	96783	29400	21840	15035	34537	33310	06116
51805	99378	21581	57802	02050	89728	17937	37621	47075	42080	97403	48626
16296	66092	55612	78095	83197	33732	05810	24813	86902	60397	16489	03264
52468	16834	44657	66999	99324	51281	84463	60563	79312	93454	68876	25471
28725	34191	91340	84979	46949	81973	37949	61023	43997	15263	80644	43942

mvi wY cwi -1: %Øe msL vi mvi wY (Pj gvb)

95240	15957	16572	06004	91227	21199	31935	27022	84067	05462	35216	14486
68995	43805	33386	21597	50001	38140	66321	19924	72163	09538	12151	06878
88525	42786	05269	92532	65390	05224	72958	28609	81406	39147	25549	48542
93911	25650	12682	73572	27504	96131	83944	41575	10573	08619	64482	73923
89203	71795	99533	50501	37169	94851	39117	89632	00959	16487	65536	49071
29891	68607	41867	14951	91696	85065	11508	70225	51111	38351	19444	66499
91903	18749	34405	56087	82790	70925	37449	30362	06694	54690	04052	53115
42627	45233	57202	94617	23772	07896	46515	70331	85922	38329	57015	15765
36152	05184	94142	25299	84387	34925	30986	81223	42416	58353	21532	30502
39782	17095	02330	74301	00275	48280	63798	64995	46583	09765	44160	78128
71945	05422	13442	78675	84081	66938	93656	59894	82486	84846	99254	67632
62757	95348	78662	11163	81651	50245	34971	52924	21885	32906	92431	09060
97161	17869	45349	61796	66345	81073	49106	79860	60336	98782	07408	53458
32305	86482	05174	07901	54339	58861	74818	46942	43937	46891	24010	25560
83991	42865	92520	83531	80377	35909	81250	54238	97656	63175	89303	16275
43218	50076	21361	64816	51202	88124	41870	52689	51275	83556	03299	01221
64297	51674	64126	62570	26123	05155	59194	52799	28225	85762	79626	06486
13564	59089	26445	29789	85205	41001	12535	12133	14645	23541	85636	68335
86355	33941	25786	54990	71899	15475	95434	98227	21824	19585	18039	14367
07100	92063	21942	18611	47348	20203	18534	03862	78095	50136	08362	15656
05418	38982	55758	92237	26759	86367	21216	98442	08303	56613	91511	75928
03574	17668	07785	76020	79924	25651	83325	88428	85076	72811	22717	50585
47539	03129	65651	11977	02510	26113	99447	68645	34327	15152	55230	93448
61337	06177	12143	46609	32989	74014	64708	00533	35398	58408	13261	47908
60627	36478	65648	16764	53412	09013	07832	41574	17639	82163	60859	75567
79556	29068	04142	16268	15387	12856	66227	38358	22478	73373	88732	09443
92608	82674	27072	32534	17075	27698	98204	63863	11951	34648	88022	56148
23982	25835	40055	67006	12293	02753	14827	22235	35071	99704	37543	11601
09915	96306	05908	97901	28395	14186	00821	80803	70426	75647	76310	88717
50937	33300	26695	62247	69927	76123	50842	43834	86654	70959	79725	93872
82558	05250	42488	78077	69882	61657	34136	79180	97526	43092	04098	73571
34925	57031	46764	86273	63003	93017	31204	36692	40202	35275	57306	55543
35503	85171	03237	45430	55417	63282	90816	17349	88298	90183	36600	78406
37890	40129	86591	81482	52667	61583	14972	90053	89534	76036	49199	43716
28117	19233	38534	01715	94964	87288	65680	43772	39560	12918	86537	62738

Drn: Schmidt, Marty J. 1979. *Understanding and Using Statistics: Basic Concepts* (Second Edition). Lexington, Massachusetts: D.C. Heath and Company. Table H. Pp. 444-445.

mvi wY cwi -2: ~fwek web`vtmi Aaxtb AvqZb (Pj gvb)

z-gvb	z-gvb I Mtoi ga'eZP AvqZb	z-gvbi eiBji i AvqZb	z-gvb	z-gvb I Mtoi ga'eZP AvqZb	z-gvbi eiBji i AvqZb	z-gvb	z-gvb I Mtoi ga'eZP AvqZb	z-gvbi eiBji i AvqZb
0.00	.0000	5000	0.45	.1736	.3264	0.90	.3159	.1841
0.01	.0040	.4960	0.46	.1772	.3228	0.91	.3186	.1814
0.02	.0080	.4920	0.47	.1808	.3192	0.92	.3212	.1788
0.03	.0120	.4880	0.48	.1844	.3156	0.93	.3238	.1762
0.04	.0160	.4840	0.49	.1879	.3121	0.94	.3264	.1736
0.05	.0199	.4801	0.50	.1915	.3085	0.95	.3289	.1711
0.06	.0239	.4761	0.51	.1950	.3050	0.96	.3315	.1685
0.07	.0279	.4721	0.52	.1985	.3015	0.97	.3340	.1660
0.08	.0319	.4681	0.53	.2019	.2981	0.98	.3365	.1635
0.09	.0359	.4641	0.54	.2054	.2946	0.99	.3389	.1611
0.10	.0398	.4602	0.55	.2088	.2912	1.00	.3413	.1587
0.11	.0438	.4562	0.56	.2123	.2877	1.01	.3438	.1562
0.12	.0478	.4522	0.57	.2157	.2843	1.02	.3461	.1539
0.13	.0517	.4483	0.58	.2190	.2810	1.03	.3485	.1515
0.14	.0557	.4443	0.59	.2224	.2776	1.04	.3508	.1492
0.15	.0596	.4404	0.60	.2257	.2743	1.05	.3531	.1469
0.16	.0636	.4364	0.61	.2291	.2709	1.06	.3554	.1446
0.17	.0675	.4325	0.62	.2324	.2676	1.07	.3577	.1423
0.18	.0714	.4286	0.63	.2357	.2643	1.08	.3599	.1401
0.19	.0753	.4247	0.64	.2389	.2611	1.09	.3621	.1379
0.20	.0793	.4207	0.65	.2422	.2578	1.10	.3643	.1357
0.21	.0832	.4168	0.66	.2454	.2546	1.11	.3665	.1335
0.22	.0871	.4129	0.67	.2486	.2514	1.12	.3686	.1314
0.23	.0910	.4090	0.68	.2517	.2483	1.13	.3708	.1292
0.24	.0948	.4052	0.69	.2549	.2451	1.14	.3729	.1271
0.25	.0987	.4013	0.70	.2580	.2420	1.15	.3749	.1251
0.26	.1026	.3974	0.71	.2611	.2389	1.16	.3770	.1230
0.27	.1064	.3936	0.72	.2642	.2358	1.17	.3790	.1210
0.28	.1103	.3897	0.73	.2673	.2327	1.18	.3810	.1190
0.29	.1141	.3859	0.74	.2704	.2296	1.19	.3830	.1170
0.30	.1179	.3821	0.75	.2734	.2266	1.20	.3849	.1151
0.31	.1217	.3783	0.76	.2764	.2236	1.21	.3869	.1131
0.32	.1255	.3745	0.77	.2794	.2206	1.22	.3888	.1112
0.33	.1293	.3707	0.78	.2823	.2177	1.23	.3907	.1093
0.34	.1331	.3669	0.79	.2852	.2148	1.24	.3925	.1075
0.35	.1368	.3632	0.80	.2881	.2119	1.25	.3944	.1056
0.36	.1406	.3594	0.81	.2910	.2090	1.26	.3962	.1038
0.37	.1443	.3557	0.82	.2939	.2061	1.27	.3980	.1020
0.38	.1480	.3520	0.83	.2967	.2033	1.28	.3997	.1003
0.39	.1517	.3483	0.84	.2995	.2005	1.29	.4015	.0985
0.40	.1554	.3446	0.85	.3023	.1977	1.30	.4032	.0968
0.41	.1591	.3409	0.86	.3051	.1949	1.31	.4049	.0951
0.42	.1628	.3372	0.87	.3078	.1922	1.32	.4066	.0934
0.43	.1664	.3336	0.88	.3106	.1894	1.33	.4082	.0918
0.44	.1700	.3300	0.89	.3133	.1867	1.34	.4099	.0901

mvi wY cwi -2: 7fweK web vtmi Aaxtb AvqZb (Pj gvb)

1.35	.4115	.0885	1.85	.4678	.0322	2.35	.4906	.0094
1.36	.4131	.0869	1.86	.4686	.0314	2.36	.4909	.0091
1.37	.4147	.0853	1.87	.4693	.0307	2.37	.4911	.0089
1.38	.4162	.0838	1.88	.4699	.0301	2.38	.4913	.0087
1.39	.4177	.0823	1.89	.4706	.0294	2.39	.4916	.0084
1.40	.4192	.0808	1.90	.4713	.0287	2.40	.4918	.0082
1.41	.4207	.0793	1.91	.4719	.0281	2.41	.4920	.0080
1.42	.4222	.0778	1.92	.4726	.0274	2.42	.4922	.0078
1.43	.4236	.0764	1.93	.4732	.0268	2.43	.4925	.0075
1.44	.4251	.0749	1.94	.4738	.0262	2.44	.4927	.0073
1.45	.4265	.0735	1.95	.4744	.0256	2.45	.4929	.0071
1.46	.4279	.0721	1.96	.4750	.0250	2.46	.4931	.0069
1.47	.4292	.0708	1.97	.4756	.0244	2.47	.4932	.0068
1.48	.4306	.0694	1.98	.4761	.0239	2.48	.4934	.0066
1.49	.4319	.0681	1.99	.4767	.0233	2.49	.4936	.0064
1.50	.4332	.0668	2.00	.4772	.0228	2.50	.4938	.0062
1.51	.4345	.0655	2.01	.4778	.0222	2.51	.4940	.0060
1.52	.4357	.0643	2.02	.4783	.0217	2.52	.4941	.0059
1.53	.4370	.0630	2.03	.4788	.0212	2.53	.4943	.0057
1.54	.4382	.0618	2.04	.4793	.0207	2.54	.4945	.0055
1.55	.4394	.0606	2.05	.4798	.0202	2.55	.4946	.0054
1.56	.4406	.0594	2.06	.4803	.0197	2.56	.4948	.0052
1.57	.4418	.0582	2.07	.4808	.0192	2.57	.4949	.0051
1.58	.4429	.0571	2.08	.4812	.0188	2.58	.4951	.0049
1.59	.4441	.0559	2.09	.4817	.0183	2.59	.4952	.0048
1.60	.4452	.0548	2.10	.4821	.0179	2.60	.4953	.0047
1.61	.4463	.0537	2.11	.4826	.0174	2.61	.4955	.0045
1.62	.4474	.0526	2.12	.4830	.0170	2.62	.4956	.0044
1.63	.4484	.0516	2.13	.4834	.0166	2.63	.4957	.0043
1.64	.4495	.0505	2.14	.4838	.0162	2.64	.4959	.0041
1.65	.4505	.0495	2.15	.4842	.0158	2.65	.4960	.0040
1.66	.4515	.0485	2.16	.4846	.0154	2.66	.4961	.0039
1.67	.4525	.0475	2.17	.4850	.0150	2.67	.4962	.0038
1.68	.4535	.0465	2.18	.4854	.0146	2.68	.4963	.0037
1.69	.4545	.0455	2.19	.4857	.0143	2.69	.4964	.0036
1.70	.4554	.0446	2.20	.4861	.0139	2.70	.4965	.0035
1.71	.4564	.0436	2.21	.4864	.0136	2.71	.4966	.0034
1.72	.4573	.0427	2.22	.4868	.0132	2.72	.4967	.0033
1.73	.4582	.0418	2.23	.4871	.0129	2.73	.4968	.0032
1.74	.4591	.0409	2.24	.4875	.0125	2.74	.4969	.0031
1.75	.4599	.0401	2.25	.4878	.0122	2.75	.4970	.0030
1.76	.4608	.0392	2.26	.4881	.0119	2.76	.4971	.0029
1.77	.4616	.0384	2.27	.4884	.0116	2.77	.4972	.0028
1.78	.4625	.0375	2.28	.4887	.0113	2.78	.4973	.0027
1.79	.4633	.0367	2.29	.4890	.0110	2.79	.4974	.0026
1.80	.4641	.0359	2.30	.4893	.0107	2.80	.4974	.0026
1.81	.4649	.0351	2.31	.4896	.0104	2.81	.4975	.0025
1.82	.4656	.0344	2.32	.4898	.0102	2.82	.4976	.0024
1.83	.4664	.0336	2.33	.4901	.0099	2.83	.4977	.0023
1.84	.4671	.0329	2.34	.4904	.0096	2.84	.4977	.0023

mvi wY cwi -2: ~fweK web`v`mi Aaxtb AvqZb (Pj gvb)

2.85	.4978	.0022	3.05	.4989	.0011	3.25	.4994	.0006
2.86	.4979	.0021	3.06	.4989	.0011	3.30	.4995	.0005
2.87	.4979	.0021	3.07	.4989	.0011	3.35	.4996	.0004
2.88	.4980	.0020	3.08	.4990	.0010	3.40	.4997	.0003
2.89	.4981	.0019	3.09	.4990	.0010	3.45	.4997	.0003
2.90	.4981	.0019	3.10	.4990	.0010	3.50	.4998	.0002
2.91	.4982	.0018	3.11	.4991	.0009	3.60	.4998	.0002
2.92	.4982	.0018	3.12	.4991	.0009	3.70	.4999	.0001
2.93	.4983	.0017	3.13	.4991	.0009	3.80	.4999	.0001
2.94	.4984	.0016	3.14	.4992	.0008	3.90	.49995	.00005
2.95	.4984	.0016	3.15	.4992	.0008	4.00	.49997	.00003
2.96	.4985	.0015	3.16	.4992	.0008			
2.97	.4985	.0015	3.17	.4992	.0008			
2.98	.4986	.0014	3.18	.4993	.0007			
2.99	.4986	.0014	3.19	.4993	.0007			
3.00	.4987	.0013	3.20	.4993	.0007			
3.01	.4987	.0013	3.21	.4993	.0007			
3.02	.4987	.0013	3.22	.4994	.0006			
3.03	.4988	.0012	3.23	.4994	.0006			
3.04	.4988	.0012	3.24	.4994	.0006			

Drm: Schmidt, Marty J. 1979. *Understanding and Using Statistics: Basic Concepts* (Second Edition). Lexington, Massachusetts: D.C. Heath and Company. Table A. Pp. 430-432.

mvi wY cwi -3: t-web'vm mvi wY

t'abZri grIV	GK-cuSK ciw'ivi Rb' Zirch'grIV(α)					
	0.10	0.05	0.025	0.01	0.005	0.0005
	u-cuSK ciw'ivi Rb' Zirch'grIV(α)					
	0.20	0.10	0.05	0.02	0.01	0.001
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.941
4	1.533	2.132	2.776	3.747	4.604	8.610
5	1.476	2.015	2.571	3.365	4.032	6.859
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.405
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.992
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.473	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.551
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	1.980	2.358	2.617	3.373
α	1.282	1.645	1.960	2.326	2.576	3.291

Drn: Schmidt, Marty J. 1979 *Understanding and Using Statistics: Basic Concepts* (Second Edition). Lexington, Massachusetts: D.C. Heath and Company. Table B. P. 433.

mvi wY cwi -4: χ^2 -web`vm mvi wY

Zirch`griv(α)							
$\tilde{t}abZri\ griv$	0.50	0.30	0.20	0.10	0.05	0.02	0.01
1	0.455	1.074	1.642	2.706	3.841	5.412	6.635
2	1.386	2.408	3.219	4.605	5.991	7.824	9.210
3	2.366	3.665	4.642	6.251	7.815	9.837	11.341
4	3.357	4.878	5.989	7.779	9.488	11.668	13.277
5	4.351	6.064	7.289	9.236	11.070	13.388	15.086
6	5.348	7.231	8.558	10.645	12.592	15.033	16.812
7	6.346	8.383	9.803	12.017	14.067	16.622	18.475
8	7.344	9.524	11.030	13.362	15.507	18.168	20.090
9	8.343	10.656	12.242	14.684	16.919	19.679	21.666
10	9.342	11.781	13.442	15.987	18.307	21.161	23.209
11	10.341	12.899	14.631	17.275	19.675	22.618	24.725
12	11.340	14.011	15.812	18.549	21.026	24.054	26.217
13	12.340	15.119	16.985	19.812	22.362	25.472	27.688
14	13.339	16.222	18.151	21.064	23.685	26.873	29.141
15	14.339	17.322	19.311	22.307	24.996	28.259	30.578
16	15.338	18.418	20.465	23.542	26.296	29.633	32.000
17	16.338	19.511	21.615	24.769	27.587	30.995	33.409
18	17.338	20.601	22.760	25.989	28.869	32.346	34.805
19	18.338	21.689	23.900	27.204	30.144	33.687	36.191
20	19.337	22.775	25.038	28.412	31.410	35.020	37.566
21	20.337	23.858	26.171	29.615	32.671	36.343	38.932
22	21.337	24.939	27.301	30.813	33.924	37.659	40.289
23	22.337	26.018	28.429	32.007	35.172	38.968	41.638
24	23.337	27.096	29.553	33.196	36.415	40.270	42.980
25	24.337	28.172	30.675	34.382	37.652	41.566	44.314
26	25.336	29.246	31.795	35.563	38.885	42.856	45.642
27	26.336	30.319	32.912	36.741	40.113	44.140	46.963
28	27.336	31.391	34.027	37.916	41.337	45.419	48.278
29	28.336	32.461	35.139	39.087	42.557	46.693	49.588
30	29.336	33.530	36.250	40.256	43.773	47.962	50.892

Drn: Schmidt, Marty J. 1979. *Understanding and Using Statistics: Basic Concepts* (Second Edition).
Lexington, Massachusetts: D.C. Heath and Company. Table C. P. 434.