

*Kwl..l cj # Dbqb ~z*  
SCHOOL OF AGRICULTURE AND RURAL DEVELOPMENT  
*ersj vt` k Dbqy wekte`ij q*

**BAE 2106**

***eb I Rie%wPI`***  
**FOREST & BIODIVERSITY**

*tj LK*  
***W. Gm Gg iij Augb***  
*ersj vt` k Kwl..MteI Yv KiDwYj*

*muv`K*  
***W. tgv tZudv4j Bmj ug***  
***W. Av b g Augby ingub***  
*Kwl..l cj # Dbqb ~z*  
*ersj vt` k Dbqy wekte`ij q*

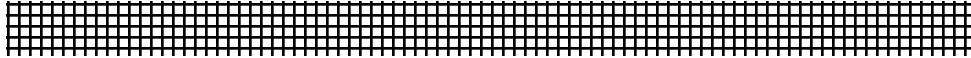
*i Pbv%kj x muv`K*  
***W. tgv tZudv4j Bmj ug***  
*Kwl..l cj # Dbqb ~z*  
*ersj vt` k Dbqy wekte`ij q*

*muv`K (wZiq ms`i Y)*  
***W. tgv AveZvtje***  
*Kwl..l cj # Dbqb ~z*  
*ersj vt` k Dbqy wekte`ij q*



This book is licensed under a  
Creative Commons Attribution 4.0 International License.

G tKim@BilU tidwii KZ& ubix#Yi ci evsj it`k Db&# nekpe` ij tqi Kul.  
I cj#Dbqb -z Gi QvTf`i Rb" gnyZ ntqtQ|



*eb I Rie%aPI*

**FOREST & BIODIVERSITY**

**BAE 2106**

*Kul. I cj # Dbqb -z*

**SCHOOL OF AGRICULTURE AND RURAL DEVELOPMENT**



ಎಸ್‌ಜಿ‌ವಿಠ್‌ಕೆ ಡಿ>ಗ್ಯೆ ಐಕೆ|ಠೆ`'ವ್‌ಜಿ‌q

# eb I Rie%aPI

(BON O JEEBABOICHITRA)  
FOREST & BIODIVERSITY

**m=úr bv cwi I**

mfvciZ t **W. Aveynbv tgv dvi k**  
 ersj vt`k DbkÑ nekÑe`ij q

m`m t **W. tgv tZvdv%j Bmj vg**  
 ersj vt`k DbkÑ nekÑe`ij q

**W. Av b g Augby ingub**  
 ersj vt`k DbkÑ nekÑe`ij q

**W. tgv tgvk%y ingub**  
 ersj vt`k DbkÑ nekÑe`ij q

**tgv mi l qui tnvmb tP%aj**  
 ersj vt`k DbkÑ nekÑe`ij q

**W. tgv kun Avj g mi Kvi**  
 ersj vt`k DbkÑ nekÑe`ij q

**W. tgv m%qmDvi b vgqv**  
 e%eÚzkL gyRey ingub Kwl .nekÑe`ij q

mmeR ZÉyartb  
 Wxb  
 Kwl .I cj # Dbqb`z  
 ersj vt`k DbkÑ nekÑe`ij q

---

Bon o Jeebaboichitra (Forest & Biodiversity), a 1-Credit Coursebook for the Bachelor of Agricultural Education Programme, Written by Dr. S. M. Ruhul Amin, Edited by Dr. Md. Abu Taleb (2<sup>nd</sup> edition), Dr. Md. Tofazzal Islam & Dr. A N M Aminoor Rahman (1<sup>st</sup> edition), Style Edited by Dr. Md. Tofazzal Islam, Published by Publishing, Printing & Distribution Division, Bangladesh Open University, Gazipur-1705. © Bangladesh Open University. First edition : July, 1997, Second Edition : September, 2005. Printing Time: 2013, Computer Compose & D T P: Md. Al Amin (2<sup>nd</sup> edition), Md. Kazi Md.

Giasuddin (1<sup>st</sup> edition). Cover Design : Md. Monirul Islam. Illustration : Dr. A N M Aminoor Rahman and Raisul Islam Khan. Printed by: Al-Kader Offset Printers, 57 Rishikash Das Road, Dhaka-1100.

**ISBN 984-34-5009-4**

All rights reserved. No part of this book may be reproduced in any means without prior permission of the copyright holder.

**B A E 2106**

## ***eb I Rxe%aPÎ***

### **FOREST AND BIODIVERSITY**

*Òeb I Rxe%aPÎ`Ó weGMGW tcÙMâgi GKwU tKvm@B| G  
tKvm@BwU `iwk¶¶Yi QvÎt`i Dc¶hvMx K¶i iPbv Kiv  
n¶q¶Q| tKvm@BwU wefbaBDwbU eb I e¶bi ,i¶;i  
e¶bi aib, ebR e¶¶i tivM I tcvKvgvKo Ges Zvi  
câZKvi, Rxe%aPÎ` I câZtek c¶wZi Ici ZvE¶K I  
e`enwiK weiq,tjv AZ`šl mnRfvte Dc`lcb Kiv  
n¶q¶Q|*

**ISBN 984-34-5009-4**

**© Bangladesh Open University**

Printed by: Al-Kader Offset Printers, 57 Rishikash Das Road, Dhaka-1100.

# mPcĪ

<b>BDıbu 1</b>	<b>eb I eḫbi , iḫji</b>	<b>1-20</b>
cvV 1.1	eḫbi msÁv I avi Yv	1
cvV 1.2	eḫbi A_‰wZK , iḫji	8
cvV 1.3	eḫbi cwi ḫekMZ , iḫji	13
	<b>eˆenwiK</b>	
cvV 1.4	evsj vḫ` ḫki gvıwPḫĪ eḫbi Ae`vb	18
<b>BDıbu 2</b>	<b>eḫbi aib</b>	<b>21-38</b>
cvV 2.1	cvıwıo eb	21
cvV 2.2	g`ıvbḫMḫf eb	25
cvV 2.3	mgZj fııgi eb	31
cvV 2.4	MḫgxY eb	34
<b>BDıbu 3</b>	<b>ebR eḫḫji tiıM I ḫcvKıgvKo Ges Zvi cĀZKvi</b>	<b>39-60</b>
cvV 3.1	ebR eḫḫji cĀıvb cĀıvb tiıM cwi ıPıZ	39
cvV 3.2	ebR eḫḫji cĀıvb cĀıvb ḫcvKıgvKo cwi ıPıZ	45
cvV 3.3	ebR eḫḫji cĀıvb KḫqKıU tiıM I ḫcvKıgvKḫoi cĀZKvi	49
	<b>eˆenwiK</b>	
cvV 3.4	ebR eḫḫji tiıM I ḫcvKıgvKo chḫeḫY	56
<b>BDıbu 4</b>	<b>Rıe‰ıPḫĪ I cĀZḫek</b>	<b>61-79</b>
cvV 4.1	Rıe‰ıPḫĪ`i , iḫji	61
cvV 4.2	ebR, gi R I Rj R cwi ḫek I Rıe‰ıPḫĪ`	65
cvV 4.3	Rıe‰ıPḫĪ` msi ḫḫıYi cĀqıRbıqZıv	69
cvV 4.4	Rıe‰ıPḫĪ` ıebḫó eb DRıo, gḫbıKıj Pıı I KııUvıK cĀqıḫMi cḫıve	72
cvV 4.5	Rıe‰ıPḫĪ` msi ḫḫıY b`ıKbıj cvK,‰ıPıoqıLıvı I ḫevUımbK`ıj MıḫıWḫıbi cḫıve	75
	<b>Z_`mḫ</b>	<b>80</b>









**etbi cāib fūllmgn**

netk'ebtK `fvtM fVM Kiv nqtqQ| thgb- cōKuzK l gvbŷl i `Zwi eb|

netk'ebtK cōngKfite `fvtM fVM Kiv nqtqQ| h\_v- cōKuzK eb l gvbŷl i `Zwi eb| wbtæ Zv Dŷl L Kiv nŷj v-

1. **cōKuzK eb t** th eb cōKuzK wuqvKjvci dtj A\_v cōKuzK wbtqg Mto l tV ZvtK cōKuzK eb etj | evsjv t`tki cōKuzK etbi gta` fvlqj l gaxŷj i kvj ev MRwi eb; my`ieb; epEi wntjU, PÆMōg, ev`ievb, ivzvgwU, LvMoiQwo l K· evRvii eb cōfuz Dŷl LthwM | evsjv t`tki cōKuzK eb tK Avevi Pri fvtM fVM Kiv nqtqQ| thgb-

- K. cvnwmo eb
- L. g`vbŷMōf (mangrove) A\_vŷj eYvæŷKsev tj vbr cmbi eb
- M. fvlqj l gaxŷj i kvj ev MRwi eb
- N. Ab`vb` eb

2. **gvbŷl i `Zwi eb t** th eb gvbŷl cwi Kwí Zfite MvQ j wMŷq mwó Kti tQ ZvtK Avgiv gvbŷl i `Zwi eb etj \_wK| thgb- ivDRvbi ivevi eb; epEi wntjU, ivzvgwU, ev`ievb, LvMoiQwo l PÆMōgti tm\_b eb; DcKj AĀŷj i etai eb cōfuz.

tKvŷv t`tki Avenl qv, Rj evqy l Ae`vbi wfiĒZ tm t`tki ebrĀj Mto l tV| tm Kvi tY bwiZkxtZvò, Pigfvecbæev kxZcāvb t`tki MvQciv GKl Kg nq br| eis wfbawfbæi Kŷgi nq| Avevi GKB Rj evqŷZ `vbŷf` GŷKK RvqMvq GŷKK aiŷbi MvQ t`Lv hvq| Gŷ tki me RvqMvZ GKB aiŷbi MvQ t`Lv hvq br| thgb- my`ieb Gj vKiv tj vbr cmb AĀŷj th MvQ Rŷbŷ (thgb- my`ii) Zv Ab` RvqMvq Rŷbŷ br| Abŷjcfite, Avgvŷ` i emoi Avtkcvtk thme MvQciv AvtQ (thgb- Avg, Kvŷj) Zv Avevi my`ieŷb tbB|

tKvŷv t`tki Avenl qv, Rj evqy Ae`vbi wfiĒZ tm t`tki ebrĀj Mto l tV| tm Kvi tY bwiZkxtZvò, Pigfvecbæev kxZcāvb t`tki MvQciv GKl Kg nq br| eis wfbawfbæi Kŷgi nq| Avevi GKB Rj evqŷZ `vbŷf` GŷKK RvqMvq GŷKK aiŷbi MvQ t`Lv hvq| Gŷ tki me RvqMvZ GKB aiŷbi MvQ t`Lv hvq br| thgb- my`ieb Gj vKiv tj vbr cmb AĀŷj th MvQ Rŷbŷ (thgb- my`ii) Zv Ab` RvqMvq Rŷbŷ br| Abŷjcfite, Avgvŷ` i emoi Avtkcvtk thme MvQciv AvtQ (thgb- Avg, Kvŷj) Zv Avevi my`ieŷb tbB|

**etbi aib**

netk'ewfbæaiŷbi eb itqtQ| ewfbævte Gme etbi tkwiefVM Kiv nq \_vtK| thgb- tŷŷMwv K Ae`vbi wfiĒZ, e`envtii wfiĒZ cōfuz. tŷŷMwv K Ae`vbi wfiĒZ eb tK DògŪj xq eb, bwiZkxtZvò eb, Pigfvecbæeb, kxZcāvb AĀŷj i eb cōfuzZ fVM Kiv hvq| ZvQvor e`envtii wfiĒZ eb tK \_wo ev wJvŷi eb (Timber forest), DW eb (Wood forest) cōfuzZ fVM Kiv hvq|

`vb l we`vZtft` Gŷ tki ebrĀj Pri fvtM wef<sup>3</sup>| h\_v- 1. cvnwmo eb, 2. g`vbŷMōf ev jeYvæŷeb, 3. mgZj figi eb l 4. MōgxY eb|

`vb l we`vZtft` evsjv t`tki ebrĀj tK Pri fvtM fVM Kiv hvq| h\_v-

- 1. cvnwmo eb (Hill forest)
- 2. g`vbŷMōf ev jeYvæŷev tj vbr cmbi eb (Mangrove forest)
- 3. mgZj figi eb (Plainland forest)
- 4. MōgxY eb (Village forest)

**cvnwmo eb**

PÆMōg, K· evRvi, ivzvgwU, LvMoiQwo, ev`ievb l wntjU wefvtMi wfbæŷRjvi cvnwmo AĀŷj i eb tK cvnwmo eb etj |

PÆMōg, K· evRvi, ivzvgwU, LvMoiQwo, ev`ievb l wntjU wefvtMi wfbæŷRjvi cvnwmo AĀŷj th aiŷbi eb t`Lv hvq ZvtK cvnwmo eb etj | tm\_b, Mvgvi, MRŷ, Picwv k cōfuz. G AĀŷj i cāvb MvQ| G AĀŷj i wPzGj vKvq cvl qv hvq Rvi j, wRj, gv`vi, wUwv cōfuz etj |

eb l etbi i ži

cRwzi MvQ| cinnwo eb cūq 0.67 ugij qb tn±i RvqMv Ržo we`Z| G ebnĀtj i cūq 75%  
cūKwZKfite mō|



ipĀ 1 t cinnwo eb

epĒi Ljbr l  
K· evRvīi Ptkwi qvq  
mgf i tRvqi fivUvhŷ  
tjvbr cwb AĀtj th eb  
t`Lv hvq ZvK g`vbMōf  
ev j eYvŷeb etj |

**g`vbMōf ev tjvbr cwb i eb**

epĒi Ljbr A\_ŷ Ljbr, evMinnvU l mvZŷxv tRj v Ges K· evRvi tRj vi Ptkwi qvq mgf i  
tRvqi fivUvhŷ tjvbr cwb AĀtj th eb t`Lv hvq ZvK g`vbMōf ev j eYvŷeb etj |  
wekpeL`vZ mŷ i eb g`vbMōf eb| eisj vt`tki mŷ i eb wekŷi gta` GKK fzĀŪ metPtq eo  
j eYvŷeb| G etbi cāvb MvQ mŷwi | ZvQvov i tqĀQ tMI qv, Mivb, tKl ov, Kūkov, aŷj,  
evBb, tMvj cvZv, tnZvj BZ`w` | G eb cūq 0.59 ugij qb tn±i Gj vKv Ržo we`Z|



eb l etbi , i ži

IPĪ 2 t g`vb`MŌF er j eYv`yeb

MvRxc`ji i fvl qvt`ji Mo, Uv`zvBj l gqgbwms`tni gax`ji Mo, w`bvRcy l iscy tRjvi kij eb`K mgZj figi eb ej v nq|

**mgZj figi eb**

MvRxc`ji i fvl qvt`ji Mo; Uv`zvBj l gqgbwms`tni gax`ji Mo; w`bvRcy l iscy tRjvi kij eb`K mgZj figi eb ej v nq| Gme etbi c`avb e`n| n`jv kij | Ab`vb` Mv`Qi g`ta` KoB, nj `yni`MvRv, ev`uij w`v D`tj L`thvM`| kij eb gj-Z c`KwZK f`ite Mto l t`v| G eb`K MRwi ebl ej v nq|



IPĪ 3 t mgZj figi eb

emZewo l Gi Av`tkcvt`ki Lwvj RvqMvq thme MvQc`ij v t`Lv hvq Zv wbtqB `Zwi nq MŏgxY eb|

**MŏgxY eb**

emZewo l Gi Av`tkcvt`ki Lwvj RvqMvq th mg`l MvQc`ij v t`Lv hvq Zv wbtqB `Zwi nq MŏgxY eb| m`vavi YZ t`tki Pwv`vi c`ŏq 80% KvW, Rvj wv KvW Ges et`ki Pwv`v G ai`bi MŏgxY eb ev emZewo n`Z tgUv`bv nq| t`tki c`ŏq 0.27 wgvj qb tn`i Rvgt`Z G ai`bi ebn`At`j i w`v`Z| Avg, Rvg, KvWj , wj Pz`wki , KoB, tgnMwb, bwv t`Kj , m`g`wi , Zvj , tLRj , et`k l Ab`vb` e`uwa MvQ MŏgxY et`b i t`qt`Q|



**Ablyj b (Activity) t** evsj v`tki newfbaaitbi etbi c`avb c`avb MtQi bvg iij ucex Kily/



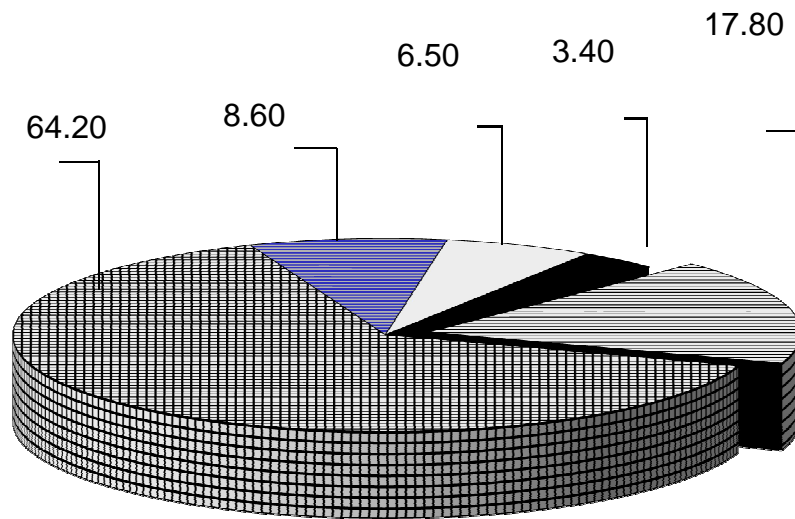
evsj v`tki ebfigi cwi gvY tguU figi 17.8%| G ebfigi 10.3% eb Awa`Bti i Avl Zvaxb, 5.1% A`tkiYfZ eb, 1.9% MlgxY eb Ges 0.05% Gj vKv Rjv Pr l ivevi evMvb/

**evsj v`tk etbi cwi gvY**

evsj v`tk ebfigi cwi gvY tguU figi 17.8% (A\_ŕ 2.56 ugvij qb tn±i)| G ebfigi gta` 1.49 ugvij qb tn±i (A\_ŕ 10.3%) eb Awa`Bti i Avl Zvaxb, 0.73 ugvij qb tn±i (A\_ŕ 5.1%) A`tkiYfZ eb hv trjv c`kvm`tki Avl Zvaxb, 0.27 ugvij qb tn±i (A\_ŕ 1.9%) i`qtQ e`v`gvi Kivvaxb MlgxY eb Ges 0.07 ugvij qb tn±i (A\_ŕ 0.05%) Gj vKv Rjv Pr l ivevi evMvb i`qtQ| uPT 5-G ebfig l Ab`vb` figi cwi gvY t`Lv`bv n`qtQ (dti ÷ gv ÷ vi c`avb-1993)|



▣ ebf,wg   ▣ K...wlrwg   ▣ kniv`Aj   ▣ Rjvf,wg   ▣ Ab`vb`



uPT 5 t evsj v`tk ebfig, Kwl.Rwg, kniv`Aj, Rjvfug l Ab`vb` Rvgi kZKiv cwi gvY (%)

evsj v`tk ebfigi cwi gvY c`q 17.8% ntj l Zv mvi v`tk mgfite me`Z bq| AwaKvsk ebfig t`tki ce` l `wYce`Aj Ges `wYc`v`v`Aj Aew`Z| me`kY` c`v`g l DEi c`v`v`Aj ebfigi cwi gvY Lvg B Kg| cwi t`tki fvi mig` i`vi Rb` G cwi gvY eb Lvg B Ac`Z`| Kv`RB etbi cwi gvY evov`bri c`t`c` tbqv c`qv`Rb|



**mvi gg** Abrew` RıgZ mže`e`rcbvq Drcv`bglyx eŋ I cŋYm`u`i mgvvi`K eb etj | Zte AvBbMZ w`K w`tq etbi msÁv wfbq MvQcvj v tbB Ggb GjvKv`KI ebfiŋ ej v hvte hv` mi Kvi tNvIYv Ktib| wtk| eb`K cŋ\_wgKfite `ŋvM fivM Kiv ntqtQ| thgb– 1. cŋKwZK eb I 2. gvbŋi i`Zwi eb| tKv`bv t`tki Avenl qv, Rj evqy Ae`rtbi wfiE`Z tm t`tki ebvAj Mto I tV| evsjv`tki ebfiŋi cwi gvY tgvU fiŋi 17.8%| G ebfiŋi 10.3% eb Awa`Bti Avl Zvaib, 5.1% A`tkiYfZ eb, 1.9% MŋxY eb Ges 0.05% GjvKv Rŋo Pv I ivevi evMvb| `vb I we`iZtft` Gt`tki ebvAj Pvi fivM wef<sup>3</sup>| h\_v– 1. cvnwio eb, 2. g`vbŋMŋf eb, 3. mgZj fiŋi eb, 4. MŋxY eb| PÆMŋ, i v`vgnU, LvMoiQwo, ev`i evb I epEi wntj U tRjvi cvnwio AĀtj itqtQ cvnwio eb| epEi Ljybv I K- evRvi tRjvi P`Kwi qvq mgj`i tRvqvi fivUvhŋ tjvbr cvnb AĀtj t`Lv hvq g`vbŋMŋf eb| MvRxcj`i fvl qrtj i Mo; Uv`vBj I gqgbwstni gaxj`i Mo; w`bvRcj I iscj tRjvi kij eb`K mgZj fiŋi eb etj | emZewio I Gi Avtkcvtki Lwjj RvqMvi MvQcvj v wbtq mwó nq MŋxY eb|



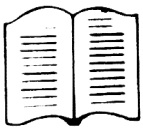


### cW 1.2 etbi A\_šwZK , ižj



#### G cW tkłl Avrb –

- KvŕVi cãvb Drŕmi bvg ej tZ cvi teb|
- AvmevecĪ l bvbv cĶvi hšcwZ ņZi tZ ebmãut` i Ae`vb eYŦv Ki tZ cvi teb|
- Rjy vb wntmte ebmãut` i , iazjeYŦv Ki tZ cvi teb|
- wktŕi KŭPgyj mi ei vtn etbi , iaz Avtj vPbv Ki tZ cvi teb|
- tŕlR Drŕm` i cãvb Drm wntmte etbi Ae`vb wj LtZ cvi teb|
- gvbŕl i Kgŕs`vb, Lv` , cŕp, `et`wĶK gŕŕ ARŦ, chŦb wktŕi, eb`v wqšŕ l Ab`vb` KgŕŕŦŦ etbi A\_šwZK , iaz eYŦv Ki tZ cvi teb|



Avgt` i Rxebi tYi  
DcKi tYi AŕbK wQŦ  
eb t\_ŕK DrcbŦ

eb Ges ebmãut` Avgt` i RxebtK meri Aj tŕŕ` cĪZw` b, cĪZ gytZ`ecjfvte mgx Kŕi Pŕj tQ| gwŕi Mfŕti j ŕwqZ MŕŦi wĶKo t\_ŕK i iYKŕi mtePP Povi cĪw chŦl Avgt` i Rxebt Ae`vb ti tL Pŕj tQ| Avgt` i Rxebavi tYi DcKi tYi AŕbK wQŦ eb t\_ŕK DrcbŦ Avgt` i Niemo, Avcdm-Av`vj Z, `ŕ-Ktj R ev wektje`vj tqi thw tKB `wŦ w Bbv tKb, meŦB tKŕbv bv tKŕbv ebmãut` i Dcw`wZ tPŕL coŕe| cãvbZ KvV, Rjy vb, wktŕi Kv Lvbvi KŭPgyj , Lv`km, kvKmerR, tŕlR Dcv`vb BZ`w` eb t\_ŕK AvniY Kiv nq| GQov eb So, Rŕj v`Qŕm, eb`v, AbveŕŦ BZ`w` `ŕhŕŕ t\_ŕK RbRxeb i ŕŕŕ Kŕi \_ŕK| eb Ges ebmãut` t\_ŕK th ai tbi A\_šwZK DcKvi cvl qv hvq wŦŦP Zv mŕŕŕŦŦfvte Avtj vPbv Kiv ntqtQ|

KlŕKi j vŕj -tRvqj l  
Ab`vb` Kw. hšcwZ,  
AvmevecĪ, Niemo, wŕfbæ  
ai tbi hvbevb, w`qvkvBtqi  
Kw l ev, `e`yZK Lŕj  
cfwZ. ņZi i Rb` Avgiv gj-Z  
KvŕVi l ci wŦŦkŕj |

#### KW

KvV Avgt` i `b`vb` Rxebi cĪZw gytZ`cŦqvRb| KlŕKi j vŕj -tRvqj t\_ŕK i iæ Kŕi bvbv ai tbi Kw. hšcwZ, AvmevecĪ, Niemo ņZi i cãvb DcKiY ntjv KvV| GQovl b`xcŕi hvbevb tŦKv t\_ŕK i iæ Kŕi mgŕMgŕ wkvj RvrvR Ges ņjctŕi hvbevb tVj vMno, wĶKv t\_ŕK `ŕMgŕ tij Mno l ti tji wŕcvi ņZi i Ab`Zg cãvb DcKiY KvV| w`qvkvBtqi KwV l ev. t\_ŕK i iæ Kŕi wŕfbæcĶvi wRŕbmcĪ KvV w`ŕq ņZi i Kiv nq| `e`yZK j vBtbi Lŕjmn wŕfbæcĶvi Lŕj i Rb` Avek`K nq KvŕVi| GQovl cĪZw tbi e`enw`AŕbK wRŕbB KvV w`ŕq ņZi | Av i G KvŕVi cãvb DrmB ntjv eb|



wŦŦ 6 t m`KvŦv KvV e`enŕi i Rb` i Kvŕbv nt`Q

#### Rjy vb



eb RxeRši ubivc` Aveim`j | eṭbi gj`erb Kv, gay c`icvL, tFIR MvOcijv veṭ`tk iBmb Kṭi `eṭ`kk gṽ ARḪ Kiv hvq|



eb I ebm`u` Avgvṭ`i e`w³MZ, cwi emi K I RvZxq Rxeṭbi GK Acwi nvh` Abṽ½|



**vevea KgRvṭŪ eṭbi Ae`vb**

eb RxeRši ubivc` Aveim`j | eṭb eimKvix eb`cŪYx, thgb- eiN, nviY, eibi, nviZ, ebveovj, eb`iKi, vevfbaeiṭbi cvvL, mvc, e`vO, Kvgi, , Bmvc I Ab`vb` mi xmc, tgšgviQ I Ab`vb` KxUcZ½ cFvZ. ebm`u` msi ṽṭY , iāzcy`fvgKv cij b Kṭi \_vṭK| ebm`u` AṭbK tjvṭKi RmeKvi Ab`Zg cāvb Aejaḅ, thgb- Rjvmb Kv, gay trvMjv cvZv, tMjv cvZv cFvZ. msMḥ Kṭi eū tvvK RmeKv ubelḥ Kṭib| eb SoZvrb I eb`v t\_ṭK iṽv Kṭi| eṭbi gj`erb Kv, gay c`icvL, tFIR MvOcijv veṭ`tk iBmb Kṭi `eṭ`kk gṽ ARḪ Kiv hvq| ZvQvov eb chḪb ukṭi i cāvṭi cāvb fvgKv cij b Kṭi |

Dcṭi i Avtj vPbv t\_ṭK Avgiv vboḌqB Abḡveb KiṭZ cwi th, eb Ges ebm`u` Avgvṭ`i e`w³MZ, cwi emi K Ges RvZxq Rxeṭbi GK Acwi nvh` Abṽ½| Avgvṭ`i e`w³MZ Ges RvZxq A\_Ḫvzi vekij GK Ask ebm`uṭ`i I ci vbfṽkxj | AZGe vbuḪvq ejv hvq th, Avgvṭ`i RvZxq Rxeṭb eṭbi A\_ḪvzK , iāz; Acwi mvg|

vPṭ 9 t tgšgviQ mṽ i eṭbi Ab`Zg A\_ḪvzK m`u`

vPṭ 10 t mṽ i eṭbi gṽvMÄ nṭZ cvṭi GKvU PgrKvi chḪb ṭK>`



**Ablyj b (Activity) t** Avcbvi gžZ etbi cāvb A\_ %wZK , i aži Ky? hly<sup>3</sup>mn Zv wj wce<sup>x</sup> Ki ab |



**mvi gg<sup>ot</sup>** eb l ebm<sup>au</sup>` Avgv<sup>t</sup>`i Rxeb<sup>t</sup>K mevi Aj<sup>t</sup>ŋ" cūZ gyt<sup>z</sup>mg<sup>x</sup> Kti Ptj tQ | Avgv<sup>t</sup>`i Rxebavi<sup>t</sup>Yi DcKi<sup>t</sup>Yi A<sup>t</sup>bK wKQ<sup>3</sup> eb t<sup>\_</sup>tK Drcb<sup>3</sup> KI<sup>t</sup>Ki j v<sup>1</sup>/<sub>2</sub> -tRvqvj l Ab<sup>vb</sup>" Kw. hšc<sup>w</sup>Z, Avmevec<sup>Ī</sup>, Niemo, wewfbæai<sup>t</sup>bi hibeirnb, w qvkj vB<sup>t</sup>qi KwW l ev. , `e`y<sup>z</sup>K L<sup>w</sup> c<sup>f</sup>wZ. `Zwi i Rb" Avgiv Kv<sup>t</sup>Vi l ci wbf<sup>p</sup>Kyj | mvi<sup>t</sup>`tk Drcw<sup>z</sup> Z Kv<sup>t</sup>Vi cūq 65% Ryj wnb wnt<sup>m</sup>te e<sup>eu</sup>Z nq | Mv<sup>t</sup>Qi wkKo, evKj, cvZv ev Ab<sup>vb</sup>" Ask t<sup>f</sup>IR DcKi<sup>t</sup>Yi cāvb Drm | t<sup>\_</sup>tki eū wk<sup>i</sup> Kvi Lvbv, thgb- KY<sup>3</sup>žx KvM<sup>t</sup>Ri wj, tiqb Kvi Lvbv, wntj<sup>t</sup>Ui gŪ Kvi Lvbv, Ljybv wDRw<sup>c</sup>Ū Kvi Lvbv c<sup>f</sup>wZ. Pj tQ ebR K<sup>t</sup>vgv<sup>t</sup>j i l ci w<sup>f</sup>Ē K<sup>t</sup>i | eb ōviv cūKwZK cūZi ŋ<sup>v</sup> t<sup>\_</sup>qvj m<sup>w</sup>oi gva<sup>t</sup>g t<sup>\_</sup>ktK SoS<sup>Ā</sup>v, UtY<sup>3</sup>Mv, R<sup>t</sup>j v<sup>o</sup>Qym BZ<sup>w</sup> i ŋ<sup>w</sup>Z t<sup>\_</sup>tK eūj vs<sup>t</sup>k i ŋ<sup>v</sup> Kiv m<sup>ae</sup> | eb t<sup>\_</sup>tK gayRyj wnb KvV, tnvMj v cvZv, t<sup>m</sup>vj cvZv BZ<sup>w</sup> m<sup>s</sup>M<sup>h</sup> K<sup>t</sup>i A<sup>t</sup>bK t<sup>j</sup>vK R<sup>w</sup>ekv wbe<sup>h</sup> K<sup>t</sup>i <sup>\_</sup>t<sup>k</sup> | Kv<sup>t</sup>RB eb l ebm<sup>au</sup>` Avgv<sup>t</sup>`i e<sup>w</sup>3MZ, cw<sup>i</sup> ewi K Ges RvZxq Rxeb<sup>t</sup>bi Acwi n<sup>ih</sup>Ab<sup>1</sup>/<sub>2</sub> |



## civivi gj'iqb 1.2

### mivK DEti i civk iK iPy (✓) i b|

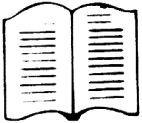
- 1| t`tki ebm'ut` i I ci wfiE Kti Kx Mto I tV?  
K) eo eo Ni emo  
L) wki Kvi Lvbv  
M) hvZiqvZ e'e`vi AeKvWitgv  
N) wkvv cãZôrb
  
- 2| eb t`tki AfbK tj vtiKi Rb` Kx?  
K) Avktj`j  
L) cãZi vvi cãvb Dcivq  
M) RmeKvi Ab`Zg cãvb Aej`b  
N) ti vMej vb t`tk i vvi Dcivq
  
- 3| Kvi wkt` e'eüZ Kuvigtj i cãvb Ask Kx?  
K) evk I teZ  
L) teZ I j Zvibv MvQ  
M) evk, teZ I j Zvibv MvQ  
N) eo eo ev
  
- 4| RxeRši cãvb i b i v c` Avktj`j tKvbu?  
K) emNi  
L) eb  
M) t`ZLvgi  
N) cvvmo Gj vKv
  
- 5| Kvi wR, AvqjeP I tnvgl I I g wkt` i cãvb Kuvigtj tKv`v t`tk cvl qv hvq?  
K) eb t`tk  
L) Kj Kvi Lvbv t`tk  
M) t`ZLvgi t`tk  
N) emZemo t`tk

### cW 1.3 etbi cwi tekMZ , ižj



#### G cW tkłl Avcrb –

- Rj eqy l ci etbi cfi ve wKifc Zv e`vL`v Ki tZ cvi teb |
- cłKwZK `jhvł cłZti vta etbi figKv eYb v Ki tZ cvi teb |
- evqy Ūj tK wei x` i vLv l cwi tek msi qłY etbi figKv Avtj vPbv Ki tZ cvi teb |
- Rxe%włPł` msi qłY etbi Ae`vb wj LtZ l ej tZ cvi teb |
- wPŁw etbv`tb etbi Ae`vb eqStq wj LtZ cvi teb |



eb cłYxi tetP`vKvi Rb`  
mełak , iZcY`Dcr`vb  
Aw tRb wbcqgZ mie i v n  
Kti Ptj tQ |

#### eb Kxfite cwi tekłK cłw eZ Kti

eb Kxfite Avgt`i A\_łwZłK mgx` Kti Ptj tQ Zv Avgtiv cW 1.2 t`łK tRłbvQ | A\_łwZłK , iaz; Qvovl eb bri te Ges A`k`fite gvbymn cłw extZ wePiYkxj mKj cłYxi tetP`vKvi Rb` mełak , iazcY`Dcr`vb Aw tRb wbcqgZ mie i v n Kti Ptj tQ | GQvovl GwU gvbymn mKj cłYxi Rxe bavi tYi Rb` DchY cwi tek młwi t`łł GK AwZ , iazcY`figKv cvj b Kti Ptj tQ | eb kã`łY l cwb`łY ti vta , iazcY`figKv cvj b Kti | eb gmlU DePZv Ges fłMf`cwm bi`li ewx`tZ mnvqZv Kti | GQvovl eb eb`v, SoRtjv`Qm, any So BZ`w` ti vta mnvqZv Kti | GLvfb cwi tek msi qłY etbi Dtj mŁZ , iazmgw mwe`łti eYb v Kiv ntqtQ |

#### K. Rjeqy l ci etbi cfi ve

Avgtiv Rmb th, tKvıbv GjvKvi RjeqyH GjvKvi gmlU, fcłwZ, b`b`x, mgj`ı`bKU` mtełcwi ebrAj łviv wbcqgZ ntq`vłK | eb e`ZxZ Ab`vb , tjvi mvgwłK cwi eZb m vab gvbył i cłqł mae bq | wKŠ` gvby ebrAj e`e`rcbri gva`tg Rjeqy wZkxj i vL tZ ev cwi eZb Nuv tZ cvti | eb Kxfite Rjeqy l ci cfi ve we`li Ki tZ cvti Zv wbtP mst`łtc weeZ ntj v –

ebvAj e`e`rcbri  
gva`tg Rjeqy  
wZkxj i vLv ev  
cwi eZb Nuv tZ hvq |

- eb cłKwZK cwi tek kxZj , mł i , gtbvıg l`v`Ki i v tL |
- etbi MvQ cł`^`tbi gva`tg Rj xq ext`ui cwi gvY ewx` Kti ewłcıZ Nuv q |
- eb gmlU tZ`Rec`v`łmi e i v n Kti figi DePZv evovq |
- eb PıgfveıcbwAvenıv qıłK mgfveıcbwKti tZv tj |
- eb evqy MvZteM wbcqšY Kti |
- eb cwbPμ (Hydrological cycle) wbcqšY Kti |
- eb Młb nıDR Błd± (Green house effect) ti va Kti |



eb gnuŋq I figaŋm tiva Kti Ges So, Rtjv`Qŋmi ZxeZv nmm Kti |

**L. cŋKwZK `jhuŋ**

eb cŋKwZK `jhuŋMi Avk¼v Ges ŋqŋwZi cwiŋvY nmm Kti | MvQcvjv Kveŋ-WvB-A. vBW MŋY Kti Ges evqjZ Aw †Rb tQto w`tq evqj Dcv`v`bi fvimvg` i ŋv Kti | eb gnuŋq I figaŋm tiva Kti Ges So, Rtjv`Qŋmi ZxeZv nmm Kti | eb gnuŋq tiva Kti etj b`b`x bve`\_v`K I eb`v Kg nq |

**M. evqgŪj wei× ivLv I cwiŋek** vP 11 t cŋKwZK `jhuŋ cŋZti vta Dckj xq AĀtj ebrvq msi ŋŋY

**eb Aw †Rb `Zwi i KviLubv**

eb evqgŪtj i Aw †Rb I Kveŋ-WvB-A. vBtWi fvimvg` Z\_v cwiŋek msi ŋŋY AZ`šl , ižcY© figKv cvj b Kti |

evqgŪtj vbi`ŋ cwiŋvY Aw †Rb I Kveŋ-WvB-A. vBW itqŋQ | gublymn mKj cŋYx kŋmckŋtmi mgq Aw †Rb MŋY Kti Ges Kveŋ-WvB-A. vBW Z`vM Kti | hv` tKv`bv KviŋY evqgŪtj i vbi`ŋ Kveŋ-WvB-A. vBtWi cwiŋvY teŋo hvq, Zte Zv cŋextZ gublymn mKj cŋYKŋj i RiebariŋYi Rb` gviŋK SŋKcY©ntq `vovq | MvQ gubŋj i cwiZ`³ Kveŋ-WvB-A. vBW MŋY Kti Ges Avtj vKmskŋŋYi gra`tg cŋqvRbxq Aw †Rb `Zwi Kti Zv evZvŋm tQto t`q | eb evqgŪtj i Aw †Rb I Kveŋ-WvB-A. vBtWi fvimvg` Z\_v cwiŋek msi ŋŋY AZ`šl , ižcY©figKv cvj b Kti |

**eb evqjkaK**

etbi MvQ evZvŋm tŋm teovtbr QvB, avj KYv, ti Yy I vev³ imvqvubK M`vm tkvLY Kti cwiŋek wei× ivtL |

MvQ iayth cŋYxi cwiZ`³ Kveŋ-WvB-A. vBWB iŋl vbt`Q Zv bq | Avqvŋ`i evqgŪtj tŋm teovt`Q AZ`šl ŋŋžvZ ŋŋž² avj Kbv, QvB, ti YyGes vevfbæcŋvŋi i imvqvubK M`vm | vevfbæ vktŋi eR© I hvbevntbi Kvtjv tavqvB gj-Z Gmtei Dm | Gmtei KviŋY gubŋj i mavi Y A`vj vRŋŋ K`vYvi tivM chšl ntZ cvŋi | etbi MvQ Gme QvB, avj KYv, ti YyI vev³ imvqvubK M`vŋmi AŋbKLvb tkvLY Kti vbtq cwiŋekŋK wei× ivtL | vKš` evqgŪtj Gme QvB, avj KYv, ti YyI vev³ imvqvubK M`vŋmi cwiŋvY AvksKvRbK nŋi evx cvŋ`Q vevq Acŋž MvQcvjv Zvi m½ Zvj vgvj tq cwiŋekŋK wei× ivLŋZ cvŋQ bv | dtj etbi MvQ vbtRB GLb Gmtei ŋv v ŋŋZMŋŋnt`Q Ges GKB mŋ\_ gubŋj i Rb`I Zv gviŋK SŋKcY©ntq I VŋQ |

**eb evqkxZj Kvi x**

eb evqgŪtj i DòZv evx i Rb` vqx vevfbæ aitbi M`vm vqšŋYi gra`tg evqgŪj †K kvZj ivLŋZ mrvh` KiŋQ |

Mŋb nvdM cŋZvŋqv i dtj evqgŪtj i DòZv vgvMZ teŋo Pŋj tQ | evqgŪtj i DòZv vgvMZ evx i dtj cežŋkYx KZR. aŋi ivLv eitdi AŋbKLvb Mŋj hvte Ges cvbi AvqZb evx cvŋe | dtj mgŋj`cvbi D`PZv teŋo hvte Ges Kvj vŋtg mgZj I vbaŋŋ cwiŋewZ t`kmgŋ mgŋj` vbtP Zvj tq hvte | GKBmŋ\_ AvZevŋ I Avveŋŋi AvksKvI t`Lv t`te vevfbæAĀtj | dtj AŋbK cŋYx I Dv`c cŋvŋZ vej ŋ ntq hvte |

Mŋb nvdM cŋZvŋqv i Ab`Zg cŋvb KviY nt`Q vekRŋŋ vevfbæfvi vki t`ŋK vbmZ Kveŋ-WvB-A. vBW, vgt\_b, tKvŋv-tvŋv-Kveŋ M`vm | G vZvŋi gŋa` Kveŋ-WvB-A. vBWB evqgŪtj mevPŋq teŋk evx cvŋ`Q | AZGe mnŋRB Avŋgq th, evqgŪtj Kveŋ-WvB-A. vBtWi cwiŋvY vqšŋYi gŋa` ivLvi Rb` mnR Dcvq tei Kiv cŋqvRb | Gŋŋŋŋ etbi figKvB mevŋaK |

GQovovl MvQ t\_žK cōZw b cōž cwi gvtY Rj xq ev®c evqgŪtj űgtk hvt"Q| cō^tbi gvažg GKuI eo MvQ Mižgi w žb cōq 1816 űj Uvi (400 M'vj b) chšlcmb evt®c cwi YZ KižZ cvi | dtj , evqžK kxZj i vLžZ, wtkl Kti Mižgi w žb, MvtQi fvgKv AZžbxq|



Rxe%wPŹ" msi 9ŹtYi gvažg  
eb mKj Dw" c I cōYx  
cRwzi tetP \_vKvi t9ŹŹ  
mnvqK fvgKv cij b KižQ|

**Ablyj b (Activity)** t eb Kxfvte evqgŪj žK kxZj i vL Zv wbtRi fvlvq evštg űj Lly|

**eb Rxe%wPŹ" i msi 9ŹK**

cw\_exi mKj RxB ci\_Źti i lci Kgtmk wbfPkj | dtj cōYx I Dw" c RMžzi w žK ZvKvtj wēšqi mvt\_ t`Lv hvq th, Gt`i GtKi cōqvRžb Ažb`i mwo ntqžQ| D`vniY`žc ejv hvq, nwiY bv \_vKžj mxi etbi itqj telžj UvBMvi tetP \_vKžZ cvižZv bv| Avevi mxi eb bv \_vKžj evN ev nwiY wKQyB Aw`Zj \_vKžZv bv| Abjycfvte wewfbetcvKvgyKo bv \_vKžj AžbK cml tetP \_vKžZ cvižZv bv| mzi vs cw\_extZ Aw`Zkxj cōZ`K Dw" c I cōYx cRwzi tetP Ges űžK \_vKvi RbMZ AnaKvi I cōqvRb itqžQ| Avevi G Dw" c I cōYx cRwz\_žjv cž`9| Ges ctiv9|fvte gvbžl i Kj `vYB wbtqwrZ itqžQ| eb mKj Dw" c I cōYx cRwzi tetP \_vKvi t9ŹŹ AZ`šlmvqK fvgKv cij b Kti \_vK|



K- mxi etbi tKI ovMvQ I eibi



L- my i etbi i P T v nwi Y

i P T 12 (K, L) t my i etbi t KI or MvQ, evbi I nwi Y Rxe% i P T i Awe t Q Ask  
**i P E et b v t b et bi c i v e**

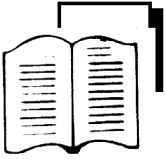
eb i P E et b v t b i R b  
i P T c y  
c i v e k

g v b y K v R K i t Z K i t Z G K m g q g v b i m K f v t e A e m b a n t q c t o | g v b y i G A e m v t K i v i  
R b b v b v c K v i t L j v a j v, c i Z t h v M Z v, a g Y, e b t f v R b B Z i w A v t q v R b K i v i c i q v R b n t q  
c t o | D c t i v i P E et b v t b i R b et bi Q v q v t e n o Z c i v e k, v b g e v a y b b x, e i i v m R,  
e t b v d z, e b c i v x c i v z A v K I v x q D r K o. D c r v b | K v t R B e b i P E et b v t b i R b i P T c y  
c i v e k c i v e k



i P T 13 t e t b v d z i P E et b v t b i A b Z g D r m





**mvi gg** gvbly ebiĀj e`e`rcbri gva`tg Rj evqy`wZkxj i vLŕZ ev cwi eZ<sup>Œ</sup> NUŕZ cvŕi | cŕYxKž tetP\_vKvi cĀvb Dcr`vb Aw ŕRb ũbqwgZ mieivn Kŕi Pŕj ŕQ eb | GQvorl eb kĀ l cwb `ŕY tiŕta Ges gwLi DePZv, fMf<sup>Œ</sup> cmbi `li ep<sup>x</sup>ŕZ mnvqZv Kŕi | eb gwUŕq l fŕgaŕm tiva Kŕi Ges So l Rŕjv`Qŕmi ZieZv nŕm Kŕi | evqgŪŕji Aw ŕRb l Kve<sup>Œ</sup>-WŕB-A· vBŕWi fvi mvg` Z\_v cwi tek msi ŕŕŕY AZ`sl , iazc<sup>Y</sup>ŕŕgKv cij b Kŕi | etbi MvQ evZŕm tŕm teovŕbŕ QvB, ayj KYv, ti Yyl ũel v<sup>3</sup> i ũmvqũbK Mŕŕmi AŕbKLũb tkvY Kŕi cwi tekŕK ũei x i vL | evqgŪŕji DòZv ep<sup>x</sup>i Rb` `vqx ũewfbaeiŕbi Mŕm, thgb- Kve<sup>Œ</sup>-WŕB-A· vBW, ũgŕ\_b, tKŕŕiv-tŕŕŕiv-Kve<sup>Œ</sup> cŕŕZ ũbqšŕYi gva`tg evqgŪŕjK kxZj i vL | eb Rie<sup>Œ</sup>ŕPŕ` msi ŕŕŕYi gva`tg mKj Dŕ<sup>m</sup> l cŕYx cŕRwZi tetP\_vKvi tŕŕŕŕ mnvqK fŕgKv cij b Kŕi | etbi QŕqŕteŕZ cwi tek, ũbg<sup>Œ</sup> evqyb`b`x, eŕŕi ũR, eŕbdž, eb`cŕYx BZ`ŕŕ ŕPĒŕetŕv`ŕbi Rb` `ewŕŕ`c<sup>Y</sup>ŕŕKwZK cwi tek |

**cŕŕVŕĒi gj`vqb 1.3**

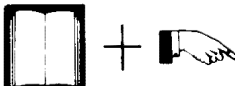
**mŕK DĒŕi i cŕŕk ũK ŕPŕ (✓) ũ b |**

- 1| ebiĀj e`e`rcbri gva`tg gvbly Kx Ki ŕZ cvŕi?
  - K) fŕcKwZi cwi eZ<sup>Œ</sup>
  - L) b`b`xi cwi eZ<sup>Œ</sup>
  - M) Rj evqy`wZkxj Zv ev cwi eZ<sup>Œ</sup>
  - N) Rj evqy` cwi eZ<sup>Œ</sup>
  
- 2| etbi MvQcij v evqŕZ Aw ŕRb tQto Kŕŕmi fvi mvg` i ŕŕv Kŕi?
  - K) cwi tetŕki
  - L) evqy` Dcr`vŕbi
  - M) cwiLi ũbi v c` Avev`ŕj i
  - N) cŕŕKwZK `ŕhŕŕMi
  
- 3| eb Kŕfŕte ep<sup>Œ</sup>cvZ NUŕZ mnŕŕŕ` Kŕi?
  - K) etbi MvQ cŕŕ`^ŕbi gva`tg Rj xq evŕ<sup>Œ</sup>ci cwi gvY ep<sup>x</sup> Kivi dtj
  - L) etbi MvQ Rj xq ev<sup>Œ</sup>c AvKI ŕŕYi gva`tg
  - M) etbi MvQ Rj evqyl evqy` MŕZteM ũbqšŕY Kivi dtj
  - N) etbi MvQ Avŕj vKmsŕkŕY Kivi dtj

eb l etbi , i ži

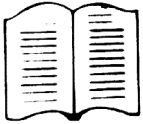
**e'venwiK**

**cW 1.4 evsj v`tki gvbiP`T etbi Ae`vb**



**G Ablaŋj b tk`I Avcib –**

- evsj v`tki gvbiP`T GtK Zv`Z wefbrai`tbi etbi Ae`vb wPw`Z Ki`Z cri`teb|



**c`miv`K Z\_”**

evsj v`tk Pri ai`tbi eb i`tqtQ| thgb– cwnno eb, g`vb`M`f eb, mgZj fvgi eb I M`gxY eb| P`EM`g, K· evRvi, i v`zv`g`w`U, LvMoiQwio, ev`ievb I w`mj U wefiv`Mi wefbrai`Rj vq cwnno eb t`Lv hvq| Ljybv, ev`MiniU, miv`Z`xiv I K· evRvi tRjvi P`Kwivq`q g`vb`M`f eb Aew`Z| MvRxcj, Uv`zvBj, gqgbwmsn, w`bvRcj I iscj tRjvi kij eb w`btqB mgZj fvgi eb| evsj v`tki th tKv`tbr A`A`j B emZewo I Gi Av`tkciv`k M`gxY eb t`Lv hvq|



wP`T 15 t evsj v`tki gvbiP`T wefbrai`tbi etbi (M`gxY eb ev`v) Ae`vb

**DcKiY**

tUims tccvi , tcwYj , i vev (Eraser), t`j , tRgm uKε BZ`w` |

**KuRi avc**

- Avcbri tKım@Btq cŦĒ eisj vt`tki eb Gj vKv ubt`kZ gvbiPŦuU fitj vfvte chēeŷY Kiŷ|
- Gevi tKım@Btqi gvbiPŦi Dci tRgm uKε w`tq tUims tccvi uU fitj vfvte AvUKvb|
- tcwYj w`tq gvbiPŦuU tUims tccvŷi AvKŷ|
- gvbiPŦi wefbaetRjvi mxgvbv ubt`R Kiab Ges wefbaeiŷbi eb Gj vKv uPwYz Kiab| Gŷŷŷi wefbaeiŷbi eb Gj vKvK Avj v`vfvte kYv<sup>3</sup> Kivi jŷŷi tcwYj w`tq Avj v`v ubt`RK (Legend) AvKŷ|
- gvbiPŦuU uPwYz (Leveling) Kiab|
- Gevi e`enwi K LvZvi mŷ½ gvbiPŦuU mshŷ Kiab I cŷiv cŷuquu avivemKfvte LvZvq wj Lŷ I uDUiŷK t`uLŷŷi vŷŷi ubb|





### civno eṯbi eṯ

civno eṯbi cāvb eṯ-  
tm<sub>3</sub>b, Mvgvi, kxj KoB,  
Pvcwjj k, P<sup>u</sup>úv, tgnMib,  
K`g, MRḪ, Rvij  
BZ`w` |

civno eṯbi cāvb cāvb eṯ njv- tm<sub>3</sub>b, Mvgvi, kxj KoB, Pvcwjj k, P<sup>u</sup>úv, tgnMib, K`g, MRḪ, Rvij BZ`w` | Gme MvQ Qvovl civno eṯbi Ab`Zg cāvb m<sup>u</sup>ú` njv etk, teZ Ges bvbv aiṯbi j Zvṯbv Dw<sup>m</sup>c | Dṯj mLZ MvQ Qvovl eū i Kg MvQ MvQiv vewṯṯBfite civno Gji vKvq Qvovtq vQvUṯq iṯqṯQ | Pv evMvb<sub>3</sub>tjvi Ae`vbl civno Gji vKvq | vntjU vefvṯMi vewfbre ṯRj vṯZB vmsnfivM Pv evMvb Aew`Z | eZḡvṯb civno Gji vKvq AṯbK<sub>3</sub>tjv iveri evMvb mṯḡ Kiv nṯqṯQ |

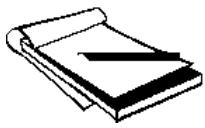


civno eṯb iṯqṯQ vewfbre  
aiṯbi ṯb`cvqx cḡYx,  
mixmṯ, cml Ges  
KxUcZ½ |

### eb`cḡYx

vPṯ 16 t civnoṯi Xvṯj Pv evMvb

civno eṯb eṯ, etk, teZ | j Zv Qvovl iṯqṯQ vewfbre aiṯbi ṯb`cvqx cḡYx, mixmṯ, cml Ges KxUcZ½ | ṯb`cvqx cḡYxi gṯa` nvmZ, vewfbre cḡRmZi evN, evbi, Djḡ, fijḡ, nviY BZ`w`B cāvb | mixmṯci gṯa` cāvb njv vewfbre aiṯbi mvc, vMivMvU BZ`w` | vMvi vMvi gṯa` Avevi cāvb njv tmvbjx | Kvṯjv<sub>3</sub>B | civno eṯbi cml i gṯa` vewL`vZ njv ebṯgviM, gqbn, g<sub>3</sub>gv, figivR, vewfbre aiṯbi UbUvb, bvPṯb, KvṯVvKiv, aṯbk BZ`w` | GQvovl iṯqṯQ AmsL` cḡRmZi cml | KYḡṯx cvbve`y cḡKí ṯvṯbi dtj mḡ nṯ` Drcw`Z gvQ iv½vgvU, ev` i evb | LvMvovQvovl ṯRj vi gvṯQi Ab`Zg cāvb Drṯm cwi YZ nṯqṯQ |



### Abḡyj b (Activity) t civno eṯbi Dw<sup>m</sup>c | cḡYxi GKvU Zvjj Kv`Zvi Kiab |

civno eṯb cāZ eQi cḡq  
12,145.75 tn±i RvṯṯZ  
gj`evb | ṯḡ eaḡkxj  
MvQ j vMṯbv nṯ`Q |

### civno eṯb eZḡvṯb ebvqb

eZḡvṯb civno eṯb gj`evb Ges ṯḡ eaḡkxj MvQ j vMṯbvri cwi Kí bv ev`éqvbraxb iṯqṯQ | G chṯl cḡq 1.04 j ṯḡ tn±i civno eb Gji vKvq gj`evb Ges ṯḡ eaḡkxj MvQ j vMṯbv nṯqṯQ | eZḡvṯb cāZ eQi cḡq 12,145.75 tn±i evbĀṯj gj`evb Ges ṯḡ eaḡkxj MvQ j vMṯbv nṯ`Q | Qq eQi Pṯṯui ṯḡ eaḡkxj MvQ mḡr gj`Z Rvj vlb Kiv mi evṯni Rb` j vMṯbv nṯq<sub>3</sub>vṯK | cḡvṯṯi, h<sub>3</sub>vṯṯg 12, 18 | 40 eQi Pṯṯui MvQ mḡr peeling logs, Lḡ Ges



saw logs Drcv`ṭbi j`ṭṭ" j vMṭbv nṭq \_ṭṭK| GQovl ṭKQymKQycvnmw AĀṭj ivevi Drcv`ṭbi j`ṭṭ" ivevi evMṭbl mṭṭ Kiv nṭ"Q|

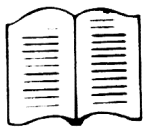


ṭPĪ 17 t cṭvnmw eṭb ebrqb

**cṭvnmw eṭbi ṭiaṭj**

cṭvnmw eṭbi evk, teZ, Kvôm=úṭ`i Ici ṭbfṭ Kṭi Mṭo IṭvṭQ ṭewfba aiṭbi ṭkí Kvi Lvbv| ZvB RvZxq A\_ṭmZṭZ cṭvnmw eṭbi ṭiaṭj Acvī mṭg|

evsjṭ`ṭki A\_ṭmZṭZ cṭvnmw eṭbi ṭiaṭj Acvī mṭg| ṭvbxq cṭvnmw AĀṭj evṭki AdzŚl Drṭmi K\_v ṭetePbv Kṭi ivṭvgvṭU ṭRjvi P`ṭNvbvq KYṭjx KvMṭRi Kṭi ṭmCZ nṭqṭQ| Abjṭcfvṭe, P`ṭNvbv ṭiqb ṭgṭj m& ṭmCZ nṭqṭQ cṭvnmw MvQcivṭṭK Kvṭvgvṭj ṭṭṭmṭe e`enivṭi i j`ṭṭ" GKBfṭe ṭṭṭjU tccvi I cvī ṭgṭj ṭmCZ nṭqṭQ ṭvbxq evk, teZ, Nvm BZ`w Kvṭvgvṭj ṭṭṭmṭe e`enivṭi i j`ṭṭ"| PĀMṭṭg evṭkí Dbṭṭb Kṭcṭṭikṭbi Kvi Lvbv ṭmCZ nṭqṭQ cṭvnmw eb ṭ\_ṭK cṭṭB Kvôm=úṭ`i mṭ`enivṭi i j`ṭṭ"| GQovl mviṭ`ṭki hveZxq KvômṭṭṭgZ AvmeieṭṭĪi GK ṭekij AskB ṭṭṭṭṭgZ nq cṭvnmw eb ṭ\_ṭK cṭṭB Kvôm=ú` ṭ\_ṭK| ṭij j vBṭb e`eüZ ṭúcvṭi cṭṭvb mieivn Avṭm cṭvnmw eb ṭ\_ṭK| GQovl epĒi ṭṭṭjU AĀṭj Mṭo IṭvṭQ ṭQvU ṭQvU evk I teZ ṭkí Kvi Lvbv| chṭṭb Kṭcṭṭṭi kb ṭvcb KṭiṭQ Uṭi ÷ ṭúU hv ṭiṭṭ q`eṭ`ṭkK gṭṭ ARṭ Kiv mṭe nṭ"Q|



**mviṭṭṭ** PĀMṭṭg, K. evRvi, ev`ieib, ivṭvgvṭU, LvMoiQmo Ges epĒi ṭṭṭjU AĀṭj i cveZ` Gj vKvi cṭṭKwZK ebṭKB cṭvnmw eb ṭṭṭmṭe ṭPṭyZ Kiv nq| cṭvnmw eṭb eQṭi Mṭo 250 ṭm. ṭg. epṭcvZ nṭq \_ṭṭK Ges GLvbKvi DòZv cṭṭq 34<sup>0</sup> ṭmj ṭmqvṭ| cṭvnmw eṭb eZṭṭṭṭ cṭZ eQi cṭṭq 12,145.75 ṭnṭi RṭṭṭZ gṭ`evb Ges `ṭ eaṭṭkij MvQ j vMṭbv nṭ"Q| GLvbKvi cṭṭvb cṭṭvb eṭṭj nṭjv– ṭm\_b, Mṭgvi, kṭj KoB, Pvcvṭj k, Pṭúv, ṭgnMṭb, K`g, MRṭ, Rvi ṭj BZ`w| cṭvnmw eṭb iṭṭṭQ ṭewfbaaiṭbi ṭb`cvqx cṭṭx, miṭmṭ, cvṭL Ges KxUcZṭ| eṭbi evk, teZ, Kvôm=úṭ`i Ici ṭbfṭ Kṭi Mṭo IṭvṭQ ṭewfbaaiṭbi ṭkí Kvi Lvbv| ZvB RvZxq A\_ṭmZṭZ cṭvnmw eṭbi ṭiaṭj Acvī mṭg|



**cṭVvĒi gj-ṯqb 2.1**

**mṯK DĒṯi i cṭk ṯK ṯPý (✓) ṯi b|**

- 1| cṯnṯo eṭbi ṯmsnFṯM ṯKṯb&ṯKṯb&ṯRj v Rṯjo i ṯqṯQ?  
 K) PUMṯg I K- eṯRvi  
 L) eṯ`i eṯb, i vṯṯvgṯU I LṯMoiQṯo  
 M) ṯṯṯj U ṯefṯṯMi mKj ṯRj v  
 N) eṯĒi ṯṯṯj U I PĀMṯg
  
- 2| cṯnṯo eṭb ṯPi nṯi r eṯṯ Rbṯṯbvi Ab`Zg Kvi Y Kx?  
 K) eṯbi gṯUṯZ cṯṯ`Re I A%Re mvi i ṯqṯQ  
 L) cṯṯ` eṯṯciZ (eQṯi Mṯo 250 tm. ṯg.) nq Ges DòZv cṯṯ 34<sup>0</sup> tmj ṯmqṯm eṯj  
 M) eṯb eṯṯṯi ṯbi v cĒv teṯk  
 N) eb ṯefṯṯMi mṯPZbZvi Rb`
  
- 3| cṯnṯo eṯbi ṯgvU AvqZb KZ?  
 K) 0.37 ṯgṯj qb ṯn±i  
 L) 0.47 ṯgṯj qb ṯn±i  
 M) 0.57 ṯgṯj qb ṯn±i  
 N) 0.67 ṯgṯj qb ṯn±i
  
- 4| P`ṯNvbṯq ṯṯcZ KṯMR Kṯj i cṯṯvb Kṯṯṯṯj Kx?  
 K) eṯk  
 L) teZ  
 M) Nṯm  
 N) KṯV

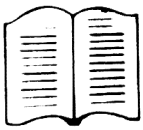
### cW 2.2 g'vbtMÖF eb



#### G cW tk̄i Avcib –

- g'vbtMÖF eb I Gi`enkó`i weeiY w`tZ cviṭeb|
- g'vbtMÖF eṭbi we`k̄Z nek`fite eYḂv KiṭZ cviṭeb|
- my`ieṭbi eṭ| Av`Qv`b Ges eZḂv Ae`v wj LtZ cviṭeb|
- my`ieṭbi t`tk̄ cÖB mæú`i eYḂv w`tZ cviṭeb|
- eisj w`tk̄i Ab`vb` DcKj xq eb mæú` ej tZ cviṭeb|
- g'vbtMÖF eṭbi , iæZje`vL`v KiṭZ cviṭeb|

#### g'vbtMÖF eb I Gi`enkó`



g'vbtMÖF (Mangrove) k̄aiU cZÖR g'vb, (Mangue) Ges tMÖF (Grove) G`w̄ kt̄ai wj t̄b`Zwi nt̄qtQ| Mangue A`GKiu`ZŠ;MvQ; Avi Grove A`vKv ev Sro| A`th eṭb GKiu`ZŠ; cRmZi MvQ GKm½ Svo teta Rṭb| G Mangrove-ṭKB eisj vq Mivb ev tm̄ZR eb etj | mḡDcKj thLvṭb tRvqi fivUv eq, th mKj w̄PzI mgZj RvqMv ev Pti mḡj i jeY I b`xi w̄no Dfq cmbi tm̄Z tXD tLṭj hvq, thLvKvi ḡmU K`Ḃv³ I mgZj, thme Lw̄ ev tgvbvq mḡZi t̄zi ṭZv I evZv̄mi c̄ej` Kg Ges thLvKvi Rj evqyDò I Av`mLvṭbB g'vbtMÖF Svo teta Rṭb|

tRvq̄ti i mgq w̄bq̄gZ e`eavṭb g'vbtMÖF eṭbi AwaKvsk GjvKv t̄jv̄v cmbtZ w̄bgw̄Z v̄K| Mv̄Qi exR Mv̄Q v̄KṭZB AsKv̄Z nq| teiki f̄vM Mv̄Qi w̄kKo miy n̄tq ḡmU Dc̄ti D̄v Av̄tm| G, t̄j v̄K k̄jmgj- etj |

tRvq̄ti i mgq w̄bq̄gZ e`eavṭb w̄KQzmḡqi Rb` g'vbtMÖF ev t̄jv̄vR̄t̄j i eṭbi AwaKvsk GjvKv jeYv³ cmbtZ w̄bgw̄Z v̄K| ZLb eṭbi Mv̄Qciv, t̄jv G jeYv³ cmb w̄tq w̄m³ nq| eb nq wetašZ| g'vbtMÖF eb, wetaK̄i K̄ti my`ieṭbi R̄jo it̄qtQ AmsL` b`x, b̄jv, Lvj, f̄v̄v̄v (b`xi ga`Kvi m̄st̄hM`j), Lw̄ ev tgvbv BZ`w̄ | my`ieṭbi K̄tqK̄u c̄av̄v b`x n̄t̄jv– n̄wi YNvUv, ci i, ḡj Ā I ivq̄ḡj | G eṭbi Mv̄Qciv i`enkó` Ab`vb` eb t`tk̄ w̄KQy w̄fb̄eaiṭbi | Mv̄Q, t̄jv jeYv³ cmbtZ R̄xebaviY KiṭZ cviṭi | Mv̄Qi exR Mv̄Q v̄KṭZB AsKv̄Z nq| G aiṭbi AsKv̄Z`MḡṭK Rivq̄R AsKv̄Z`Mḡ etj | GQvov g'vbtMÖF eb GjvKvi teiki f̄vM Mv̄Qi w̄kKo miænt̄q ḡmU Dc̄ti D̄v Av̄tm| G, t̄j v̄K k̄jmgj-, k̄jv ev w̄D̄t̄ḡt̄Uv̄d̄vi (Pneumatophore) etj | c̄j̄i v̄ my`ieṭbi ḡmU K`Ḃv³ Ges k̄jvq̄ f̄iv| G eṭb Ggb AṭbK`M̄G GjvKv it̄qtQ thLvṭb GLbI t̄Kv̄tv̄v ḡv̄b̄j̄i c`w̄P̄y c̄to w̄b| GLvṭb t̄Kv̄tv̄v`v̄q̄x em̄m̄`v t̄bB| my`ieṭbi GjvKvq̄ eQ̄ti 190-254 tm. w̄g. eṭv̄civ n̄tq v̄K| G eb t`tk̄i KvV Ges R̄j̄j w̄bi GKK ep̄Ēg D̄rm|



w̄P̄ 18 t g'vbtMÖF eṭbi Mv̄Qi c̄av̄v`enkó` n̄t̄jv Gi k̄jmgj-

**g'vbtMÖf eṭbi we-ḥZ**

myieḅ weṭkṭi meḅpr  
g'vbtMÖf eb hv eisjvṭṭki  
`wYcwiḅgiAj Ges fviṭzi  
cwögeṭzi Mzi b`xi  
tgnbvq cöq 10 j qṭ tn±i  
GjvKv Rjō we-ḥZ|

eisjvṭṭki `wYvÄtji DcKj xq GjvKv Ges K· evRvṭi i PṭKwi qvq g'vbtMÖf eb ṭLṭZ  
cvlqv hvq| myieḅ weṭkṭi meḅpr GKK Drcvḅkij g'vbtMÖf eb hv eisjvṭṭki  
`wYcwiḅgiAj Ges fviṭzi cwögeṭzi Mzi b`xi tgnbvq cöq 10 j qṭ tn±i GjvKv Rjō  
we-ḥZ| G eṭbi cöq 62% eisjvṭṭki evṭMinuU, Ljybv I mvZṭxiv trjvq Ges emK Ask  
cwögeṭzi 24 ciMbv trjvq Aew-ḥZ| ṭfṭMwij Kfivṭe myieṭbi Ae-ṭv 21<sup>0</sup>-30<sup>0</sup> ṭṭK  
22<sup>0</sup>-30<sup>0</sup> DĒi `wNgvsk chṢi Ges 89<sup>0</sup> ṭṭK 90<sup>0</sup> ceḅAṭvṭki gṭa`| eisjvṭṭki myieḅ  
cṭeḅmvZṭxiv ṭṭK cwöṭg evṭMinuU chṢi we-ḥZ| Gṭṭki myieṭbi AvqZb cöq 6,221  
eMḅK.ig. Ges we-ḥZ. cöq 5.77 j qṭ tn±i hv gṭa` ṭj fivM 4.16 j qṭ tn±i Ges emK Ask  
Rj fivM hv tQvU tQvU Lwio, bvjv, Lvj ḅviv Rvṭji gṭZv teḅZ| ṭṭnZṭQvU Lwio, bvjv, Lvj  
eo b`x, ṭjvi mṭ½ mshyṭ ZvB G eṭbi cöZ KivU AskB ṭbṢKv w ṭq hvZvqvZ Kiv mḅe|



wṖṭ 19 t myieḅ weṭkṭi meṭPṭq eo g'vbtMÖf eb

**eṭbi weṭfbaw`**

myieṭb cöq 330 cṖwzi  
jeYvṭyDwṭc, 120 cṖwzi  
gvQ, 8 cṖwzi DfPi cöYx,  
50 cṖwzi mixmç, 270  
cṖwzi cwl, 42 cṖwzi  
ḅcivq cöYx Ges 60  
cṖwzi wṖsio I  
KivṢiovRvZiq cöYx iṭqṭQ|

myieḅ weṭfbaw` K w ṭq mgx| hv I GwU cöq cṖk eQi cṭeḅcöKwZK mḅu` wṭṭṭe ṭKZ.  
nṭqṭQj, wṢi weAvbmṭZ fivṭe Gi e`e`vcbv Avri ḅcṭṭqṭQ gvṭ 120 eQi cṭeḅ RxeḅwṖṭi  
w`K w ṭq myieḅ AZ`Ṣi mgx| G eṭbB wekṭeL`vZ evN, iṭqj teḅj UvBMvi eim Kṭi| G  
eṭb cöq 330 cṖwzi jeYvṭyDwṭc iṭqṭQ| ZvQvov iṭqṭQ 120 cṖwzi gvQ, 8 cṖwzi  
DfPi cöYx, 50 cṖwzi mixmç, 270 cṖwzi cwl, 42 cṖwzi ḅcivq cöYx Ges 60  
cṖwzi wṖsio I KivṢiovRvZiq cöYx| myieṭbi AvKlYvq eb`cöYxi gṭa` iṭqj teḅj  
UvBMvi, wṖṭv nwiY, eb`iKi, evbi, Kvgi, KvṭgvU (nvḅi), Wjwdb, ARMi I Ab`vb` mvc,  
bvbv cṖwzi cwl, ṭgṣgmQ I Ab`vb` KivUcZ½ Ges bvbv cṖwzi gvQ DṭjLṭṭwM| myieṭbi  
cḅvb eḅṭ nṭQ myiwi | ZvQvov Ab`vb` KivṢi eṭṭi gṭa` iṭqṭQ ṭMlqv, Mivb, evBb, KivṢiov,  
cii, ayj, Avgy, ṭKl ov BZ`w| AKvöj Dwṭc`i gṭa` kb, üt`v, wṖj jZv, ṭKqv,  
ṭMj cvZv I ṭnZvj cḅvb| ṭMj cvZv Nṭi i QvDwb, teov BZ`w i KvṭR e`eüZ nq| myiwi,  
cii cṭwZ. ṭṭK Dbzgvṭbi Kiv cvlqv hvq hv ṭṭK AZ`Ṣi gReṭ Avmevecṭ `Zwi nq|

GQvovl myieḅ Rjy wḅ KivVi GK weivU Dm| myieṭbi eṭṭ cṭz msLiq tgSPvK t`Lv  
hivq Ges G t\_tK cṭz cui givY gayAvniY Kiv nq| gayl Kiv msMh Kti eū tj vK RmeKv  
wbevñ Kti |



wPĪ 20 t myieṭbi Rxe%wPĪ

**eṭṭmṭú` Ges Av`Qv` ṭbi cwiḡvY**

eZḡvṭb myietb 10  
ṭm.ḡ. Gi Awak e`vṭmi  
1,06,37,213 NbuḡUvi  
KvVmgx MvQ iṭqṭQ|

GK mḡxḡvḡ Rvbn ṭMṭQ ṭh, eZḡvṭb myietb 10 ṭm. ḡ.-Gi Awak e`vṭmi 1,06,37,213 NbuḡUvi KvVmgx MvQ iṭqṭQ| ṭKŠ` KvṭVi G cwiḡvY 1960 mṭṭj hv ṭQj eZḡvṭb Zvi ḡvṭ kZKiv 52 fṭM ṭUṭK AvṭQ| i ayZvB bq, GKB mḡxḡvḡ AvI ṭ`Lv ṭMṭQ ṭh, myietb ṭ`ṭK Avnwi Z KvṭVi ṭ YMZ ḡvbl AvṭMi Zḡbvq AṭbK nwm ṭcṭqṭQ| A\_ṭ myietbi eṭṭmṭú` ṭ`ḡ aṭṭmi ṭ`ṭK amez nṭ`Q| Awej ṭ`hṭ` myietbi eṭṭmṭú` ṭK aṭṭmi nṭZ ṭ`ṭK iḡvi e`e`v Kiv bn nq, Zvntj ḡḡvṭṭq Gi Drcv`b ṭhḡb Kṭḡ hṭe, ṭZḡub cḡḡ mṭúṭ` i ṭ YMZ ḡvbl nwm cṭe|



ṭPṭ 21 ṭ ḡ`vbṭMṭF eṭbi ṭMṭ qv eṭṭ

myietbi 65% ḡjvKv  
70% eṭṭ, 30% ḡjvKv  
30-70% eṭṭ Ges 5%  
ḡjvKv 30% Gi Kg eṭṭ  
ḡvṭ Av`Qv` Z|

mṭúṭZK AvI GK mḡxḡvḡ Rvbn ṭMṭQ ṭh, myietbi 65% ḡjvKv 70% eṭṭ ḡvṭ Av`Qv` Z; 30% ḡjvKv 30-70% eṭṭ ḡvṭ Av`Qv` Z Ges 5% ḡjvKv 30% Gi Kg eṭṭ ḡvṭ Av`Qv` Z| myietbṭK iḡvi Ges eṭṭiṭRi ṭ YMZ ḡvbl AḡḡeivLvi Rb` GLvb ṭ`ṭK mṭúṭ` AvniṭYi ṭḡṭṭ AZ`šṭmvearbZv Aej ṭb KiṭZ nṭe hvṭZ eṭṭ ḡjvKvi cwiḡvY Kṭḡ bn hvq|

**Ab`ib` DcKj xq eb**

K. evRvṭi i ṭUKbvṭ ṭ`ṭK  
emi kvj Ges cUqvLvj xi  
DcKj xq AAj chS|  
ḡ`vbṭMṭF eṭbi MvQ, h\_v-  
ṭKl ov, Kvkvov, evBb  
BZ`w` j vMṭbv nṭ`Q|

K. evRvṭi ṭRjvi ṭṭKvniqv ṭbvq ḡ`vbṭMṭF eb iṭqṭQ| ḡQvovl K. evRvṭi i ṭUKbvṭ ṭ`ṭK i iæ Kṭi emi kvj Ges cUqvLvj xi ṭRjvi DcKj xq AAṭji 1.27 j ḡṭ ṭnṭi ḡjvKv Rṭo DcKj xq eb `Zwi i j ṭḡṭ` eṭṭ ṭivcy KgRvUṭ BṭZvgṭa` i iæ nṭqṭQ| Gme AAṭj l ḡ`vbṭMṭF eṭbi MvQ, h\_v- ṭKl ov, Kvkvov, evBb BZ`w` j vMṭbv nṭ`Q| G DcKj xq eb GKw`ṭK ṭhḡb SoRṭj v`Qvṭmi ZvUe ṭ`ṭK ḡjvKveṭṭK AṭbKvṭk i ḡṭ Kiṭe ṭZḡub Ab`w`ṭK Rjv ṭwb Ges ḡU `Zwi i Kv mieivn Kiṭe| eZḡvṭb cḡZ eQi 2.83 nṭRvi ṭnṭi DcKj xq ḡjvKv ebrqb Kiv nṭ`Q|

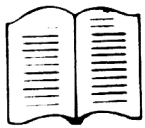
myieṭbi ṡiaṡ; Acwimxg | G eb t\_ṭK cōḅ Kw, tMj cvZv, gay tgv, gvQ cṫwZi I ci eü tj vK RweKv iberṫ Kṫi |

**g'vbtMōf eṭbi ṡiaṡ;**

g'vbtMōf eb wntmte myieḅ GKKfite ersj vṫ ṫki GKw Agj- mṫú | G eb t\_ṭK cōḅ mṫú weiea Ges eüglx | G eb GKvati AvmevecĪ ṫwi Ges Rjvnb Kw mieivn KiṫQ | AcivṫK G eṭbi weL'vZ tMj cvZv Nṫoi QvDwbi DcKiY wntmte e'eüZ nṫQ | G eb t\_ṭK wecy cwi gvY gayGes tgv Avni Y Kiv nṫq vṫK | ZvQvov grm, wPsw Ges kvglmṫú | I myieḅ AZ ṡimṫx | myieḅ Ges Acivci DcKj xq g'vbtMōf eb AwPj fite ṫ kṫK eb'v, So Ges Rṫjv'Qvṫmi cṫÜZv t\_ṭK iṫv Kṫi AvmṫQ | eZṫvṫb myieḅ ṫ'Lvī Rb' ṫ'kwṫ ṫki eü chṫK AvmṫQ | mṫhMmṫeav ewx Ges mṫze'e vcbvq GLvṫb chṫb wKī Mṫo ZṫZ criṫj G t\_ṭK mi Kvi cṫṫ eṫ wKk g'ṫ ARṫ KiṫZ criṫe |



**Abṫj b (Activity) t g'vbtMōf eṭbi ṡewkó'vej x I mṫú mgr wj wce x Ki ab |**



**mvigg** cZṫR Mangue Ges Grove wgtj Mangrove kṫāi DrcwĒ | Gi A\_ṫh eṭb GKw ṫZṡ;cṫwZi MvQ Svo teta Rṫb | G tjvbr Rṫj i eṭbi cāvb ṡewkó nṫQ GLvṫb wKQweṫkI aiṫbi MvQ Rṫb hv Ab'vb' ebvĀṫj ṫ'Lv hvq br | myieḅ weṫkṫi meepr g'vbtMōf eb hv ersj vṫ ṫki wṫYcwiṫg vĀj Ges fritzi cwiṫgeṫzi Mṫv b'xi tgvnbvq cōq 10 j ṫ tnṫi GjvKv Rṫo we'Z | myieṫb cōq 330 cṫwZi g'vbtMōf Dv'ṫ, 120 cṫwZi gvQ, 8 cṫwZi DfPi cōYx, 50 cṫwZi mixmṫ, 270 cṫwZi cwl, 42 cṫwZi ṫ'bcvqx cōYx Ges 60 cṫwZi wPsw I KvṫiovRvZxq cōYx iṫqṫQ | GLvṫbKvi cāvb Dv'ṫ nṫj v- my'wi, tMlqv, Mi vb, evBb, Kvṫiov, ci i, ayj, Avgy, ṫKl ov, tMj cvZv BZ'w | myieṫb weṫteL'vZ iṫqj teṫj UvBmvi eim Kṫi | myieṫbi 65% GjvKv 70% eṫ, 30% GjvKv 30-70% eṫ Ges 5% GjvKv 30% Gi Kg eṫ ṫviv Av'Qw'Z | K. evRṫi i ṫUKbvṫ t\_ṭK ewi kvj Ges cUqvLij xi DcKj xq AĀṫj g'vbtMōf eṭbi MvQ, h\_v- ṫKl ov, Kvṫiov, evBb BZ'w j vMṫbv nṫQ | myieṫbi ṡiaṡ; Acwimxg | G eb t\_ṭK cōḅ Kw, tMj cvZv, gay tgv, gvQ, wPsw, kvgl cṫwZi I ci eü tj vK RweKv iberṫ Kṫi |







№1 22 t mgZj fvgi eþb eZgvtb ebrqb

mdj Zv AvbþZ ntj GLbl AþbK mgm`v i tq tMtQ hv AbwZiej t`mgvavb Kiv c`qRb| G mgm`v, t j vi gta` MhYthvM` t fVM` Lj` Z;` vqwfut`Z ubafY, Avw` R msKU, Rvigi AbyfZv, Kuldmy` Zwi Kivi Rb` c`qRbxq Kwimwi ubt` Rbvi Afve BZ`w` Ab`Zg| G mg`imgm`v mgvavþbi j`f` mi Kvi BþZvgta` c`qRbxq c`f`c Z\_v bmvZgvj v c`qY Kti`Qb| GKwU AvsRwZK ms`vi Rixc t`þK Rvbr hvq th, Gme eþb eZgvtb AvbgvmbK kZKiv 32 fVM e` Ar`Qr` b i`q`Q| c`KwZKfite Mto DVvi gva`tg kij ev MRvwi MvtQi cvkvcvuk mvgvRK ebrqþbi gva`tg eZgvtb Avg, Rvg, KvWj, Rvi`aj, kvj KoB, Avgj`wK, eþniv, BDK`vuj Þvm, AvKvkgvb c`f`wZ c`RvwiZi e`f`I tivcY Kiv nt`Q|



№1 23 t mgZj fvgþZ Kvl ebrqb

**m`uþ` i cwi gvY**

GLvbKvi e`f`m`uþ` i cwi gvY ubYfqi Rb` KLþbv tKvþbv c`Kvi Rixc Pvjvþbv nq` vb, ZvB c`KZ.m`uþ` i cwi gvY Rvbr hvq bv| Zte Abgvb Kiv ntq` vþK th, mgZj fvgi Gme eþb vevj cwi gvY e`f`m`uþ` i`q`Q|

mgZj fvgi Gme eþb vevj cwi gvY e`f`m`uþ` i`q`Q|

**mgZj fvgi eþbi , iaþ;**

mgZj fvgi eb t`þK c`B kij MvQ evsvt`þki M`gvAþj Nievmo vbgfYi Ab`Zg c`vrb DcKiY Lw` vntmte e`eüZ ntq` vþK| GQvovl G kij MvQ t`þK vevj cwi gvY Rvj vrb cvl qv hvq| G eþb vqkvj, mRvi`æ evNwvkv, ebveovj, tevR c`f`wZ c`Yx t`Lv hvq| ZvQvov KvK, t`vtaj, NvyGes Avi l bvbv c`RvwiZi cvwL t`Lv hvq| GQvovl i`q`Q vevfbræiþbi mvc, vMi vMwU, KxUcZ½ BZ`w` |

mgZj fvgi eþbi kvj Kv Lw` vntmte e`eüZ nq|



**mvgg`** MvRxcþi i fvlqvþji Mo; Uv½vBj l gqgbvmsþni gaxþji Mo vbtq mgZj fvgi eþbi tK`xq AAj Ges iscvj l v`bvRcvj AAj vbtq DEivAj MvWZ| 1950 mvtj ce`evsvj mi Kvi GK 0Gt±i (Act)0 eþj Rvvg`vix c`v vevZj Kti G eþbi m`ge`e`vcbvi` vqvZj mi Kvþii ivR`^vefvþMi Aaxþb b``I Kþib| mgZj fvgi eþb eZgvtb AvbgvmbK 32% e` Ar`Qr` b i`q`Q| mgZj fvgi eþbi c`vrb e`f` kij | mgZj fvgi Gme eþb vevj cwi gvY e`f`m`uþ` i`q`Q| mgZj fvgi eþbi kvj Kv Lw` vntmte e`eüZ nq| GLvþb eü c`RvwiZi eb`c`Yx, cvwL l KxUcZ½ t`Lv hvq|

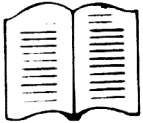


### cW 2.4 MōgxY eb



#### G cW tḵtḵl Avrcḵb –

- MōgxY eb Kx Zv ḵj LtZ cvi ṭeb|
- MōgxY eṭbi mṛúṭ`i cwi gvY ej ṭZ l ḵj LtZ cvi ṭeb|
- MōgxY eṭbi eṭḵl Av`Qv`b l MvQciv v mṛúṭḵAvṭj vPbv Ki ṭZ cvi ṭeb|
- MōgxY eṭbi ,iæZ;e`vL`v Ki ṭZ cvi ṭeb|



MōgxY eb ej ṭZ mvari YZ  
emoi Awḵzḵv, emoi  
Pmi cḵk ev gvṭVi cṭḵki  
MvQciv ṭKB eṣvq|



#### MōgxY eb

ersj ṭḵ Ggb GKḵU Mōgl cvlqv hrṭe bv  
thLṭḵb tḵṭbv MvQ ṭbB| MvQ Qvov MōgxY Rḵeb  
AKí Yxq| GQvovl mvgmRK ebrqb KgḵPri  
AfZce® mvdṭj`i dṭj Zḵbrgj-Kfṭe thme  
GjvKvq MvQciv v Kg ḵQj, GLb tmLṭḵbl cḶḶ  
MvQciv v RbḵṭZ`i iæ KṭiṭQ| MōgxY eb ej ṭZ  
mvari YZ emoi Awḵzḵv, emoi Pmi cḵk ev gvṭVi  
cṭḵki MvQciv ṭKB eṣvq| GQvovl iv`li `ḵṭi,  
tij jvBṭbi cṭḵk®mi Kvix l temi Kvix ms`vi  
Dṭ`ṭM mvdj`RbKfṭe ebrqb Kiv nṭ`Q|

#### mṛúṭ`i cwi gvY

ḵPivPvi Zfṭe MōgxY ebB nṭ`Q AvmevecḶ  
ḵbgḵYi Kw Ges Rḵj ḵbi Ab`Zg cḵvb Drm|  
tḵṭbv tḵṭbv Z` tḵK Rḵbv hvq th,  
Kvómṛúṭ`i ṭgvU cḶqvRṭbi kZKiv 80 fṭMB  
MōgxY eb tḵK cvlqv hvq| MōgxY eb mgxḶṭv  
cḶZṭe`b tḵK Rḵbv hvq th, ersj ṭḵki MōgxY  
eṭb meḶgvU cḶq 54,71,537.8 NbrḵUvi  
eṭḵmṛúṭ`i ṭqṭQ|

MōgxY ebB nṭ`Q  
AvmevecḶ ḵbgḵY l  
Rḵj ḵbi KṭiVi Ab`Zg  
cḵvb Drm|

ḵPḶ 24 t MōgxY eṭb eṭḵṭivcb

#### eṭḵl Av`Qv`b

ḵeiv`QbæGes mvi ṭḵ`kRḶjo Qvovṭq ḵQvUṭq`vKv mṭZḶ| MōgxY eb cḶZ`K AĀṭj B ḵKQvḵKQyeṭḵl  
Av`Qv`b mṛḶ Kṭi ṭḵK| cwi Kíbv Kḵgkṭbi GKḵU Z` tḵK Rḵbv hvq th, mvi ṭḵ`k RḶjo  
MōgxY eb Ḷviv mṛ eṭḵl Av`Qv`ṭbi G cwi gvY cḶq 2.71 j Ḷṭnṭi | eṭḵl ḵbab bv Kṭi ḵekḵj G  
eṭḵmṛúṭ`i Drcv`bB ḵiv` e`envi Kiv nṭZv, Zvṭj cḶZ eQi cḶq 5,46,587.4 NbrḵUvi  
Kv Ges cḶq 22,00,509.7 NbrḵUvi Rḵj ḵb Avni Y Kiv ṭḵZv|

mvi ṭḵ`kRḶjo MōgxY eb Ḷviv  
mṛ eṭḵl Av`Qv`ṭbi cwi gvY  
cḶq 2.71 j Ḷṭnṭi |

#### MōgxY eṭbi MvQciv l cḶḶ

MōgxY eb AṭbK cRḵwZi MvQciv vq mgxḶ| Gṭi gṭa` Avg, Rvg, KḵḶj, ḵj Pz KoB, ḵkgj,  
evejv, ḵRMv, ḵbg, ArgiaR, tMḶvcRvg, Mve, tjeYK`g, mṭd`v, Zvj, tLRj, bviṭKj,  
mzḵwi, euk, ṭeZ, Ab`vb`j Zṭḵbv MvQ BZ`w` t`Lv hvq| Mōṭgi gvby eṭḵl ṭivcṭYi mgq Gi  
eúmea e`enṭii w`ṭK j Ḷṭnṭi | dṭj Gme MvQ tḵK Zviv GKvartḶ cḶq, KvW, Rḵj ḵb

MōgxY eṭb mvari YZ  
Avg, Rvg, KḵḶj, ḵj Pz  
KoB, ḵkgj, evejv,  
ḵbg, euk, ṭeZ, Zvj,  
tLRj, bviṭKj, mzḵwi  
BZ`w` MvQ t`Lv hvq|







### **cṭVvĒi gj`iqb 2.4**

**mĪK DĒṭi i cṭk ĩK ĩPý (✓) ĩ b|**

- 1| MġxY eṭb eṭv`Q`ṭbi cwi gvY KZ?  
K) 2.21 j ṭ| tn±i  
L) 2.51 j ṭ| tn±i  
M) 2.71 j ṭ| tn±i  
N) 2.91 j ṭ| tn±i
  
- 2| ṭ`ṭki Kṭ I eukm`úṭ`i cṭqvRṭbi kZKiv KZ fiM MġxY eb ṭ`ṭK ĩgUṭbv nṭq  
\_vṭK?  
K) cṭq 80 fiM  
L) cṭq 70 fiM  
M) cṭq 60 fiM  
N) cṭq 50 fiM
  
- 3| MġxY eb ṭ`ṭK Kx cwi gvY Kṭ Avni Y Kiv nq?  
K) 50,71,537.8 NbṭgUvi  
L) 45,57,137.8 NbṭgUvi  
M) 44,71,537.8 NbṭgUvi  
N) 56,72,438.3 NbṭgUvi









bv̄m̄i tZ Q̄i v̄Ki Av̄μgY  
tevk nq| Q̄i v̄K t̄K  
W̄v̄ús Ad, DBj̄Us,  
K̄v̄vi, eBU, Av̄M̄ḡiv  
BZ̄w̄ tiM nq|

**Q̄i v̄K̄N̄ŪZ tiM t** bv̄m̄i tZ Q̄i v̄Ki Av̄μgY tevk t̄Lv hvq| Q̄i v̄K M̄t̄Qi vk̄Ko t̄K īīæ  
K̄ti K̄v̄ ch̄s̄l̄th t̄K̄v̄b̄r̄ vb̄ Av̄μgY KītZ cv̄ti | gv̄ŪtZ th Q̄i v̄K v̄K Zv t̄K W̄v̄ús  
Ad, DBj̄Us (b̄t̄q̄cov), v̄j d t̄b̄K̄tīv̄mm (cv̄Zv cPb), K̄v̄vi, eBU, UcW̄v̄B (Av̄M̄ḡiv)  
BZ̄w̄ ti v̄Mi m̄p̄ nq| Q̄i v̄K Av̄μḡt̄Yi dt̄j M̄t̄Qi cv̄Zvq b̄v̄v̄ Av̄K̄v̄Zi v̄M̄ ev̄ cPb m̄p̄  
nq| P̄v̄iv̄ M̄v̄Q b̄t̄q̄ c̄to ev̄ ḠtZ c̄mbi Af̄v̄eR̄ib̄Z j̄ q̄Y t̄Lv hvq|

**ēv̄K̄t̄Ūnīq̄v̄N̄ŪZ tiM t** ēv̄K̄t̄Ūnīq̄v̄v̄iv̄ Av̄μv̄š̄l̄ nt̄j M̄t̄Q t̄K̄tīv̄mm, ēp̄x̄ n̄m, DBj̄Us,  
t̄b̄K̄tīv̄mm, iU, K̄v̄vi, Mj BZ̄w̄ ti v̄Mi j̄ q̄Y t̄Lv hvq| KLb̄l̄ KLb̄l̄ M̄t̄Qi cv̄Zvq v̄M̄  
c̄ot̄Z t̄Lv hvq|



**v̄P̄T̄ 28 t̄m̄ȳv̄i i K̄v̄vi tiM**

f̄v̄B̄iv̄m̄ Av̄μv̄š̄ tiM  
v̄P̄K̄r̄m̄v̄q̄ ev̄ ḡt̄b̄  
GLb̄l̄ t̄K̄v̄b̄r̄ K̄v̄h̄R̄i  
I l̄ḡ Ām̄ē®Z̄.nq̄ v̄b̄|

**f̄v̄B̄iv̄m̄N̄ŪZ tiM t** f̄v̄B̄iv̄m̄ v̄v̄iv̄ Av̄μv̄š̄l̄ M̄t̄Qi cv̄Zvq n̄j̄ K̄v̄ I Nb̄ m̄ēš̄R̄i t̄gv̄R̄iv̄BK, cv̄Zv  
n̄j̄ t̄ n̄l̄qv, cv̄Zv t̄K̄v̄b̄r̄v̄, cv̄Zvq t̄M̄j̄v̄K̄vi v̄M̄, t̄b̄K̄tīv̄mm BZ̄w̄ D̄cm̄t̄M̄P̄ m̄p̄ nq|  
f̄v̄B̄iv̄m̄ Av̄μv̄š̄l̄ M̄t̄Qi tiM v̄P̄K̄r̄m̄v̄q̄ ev̄ ḡt̄b̄ GLb̄l̄ t̄K̄v̄b̄r̄ K̄v̄h̄R̄i I l̄ḡ Ām̄ē®Z̄.nq̄ v̄b̄|  
D̄b̄z̄ḡv̄t̄bi ēx̄R̄ ēv̄v̄i I t̄iv̄M̄v̄v̄š̄l̄ M̄v̄Q t̄L̄v̄ḡv̄l̄ D̄c̄to I c̄v̄p̄t̄q̄ t̄dt̄j Ḡ tiM ḡt̄bi t̄P̄ov̄  
K̄iv̄ nq|

**ciR̄ex̄c̄v̄N̄ŪZ tiM**

īm̄t̄k̄v̄l̄K, cv̄Zv̄f̄v̄R̄x̄,  
īq̄v̄t̄cv̄K̄v̄, v̄j d t̄iv̄j̄v̄i,  
cv̄Zv̄ v̄Q̄ K̄v̄ix̄, K̄v̄Ū  
v̄Q̄ K̄v̄ix̄ BZ̄w̄ K̄x̄Uc̄Z̄½  
M̄v̄Q̄t̄K̄ Av̄μgY K̄ti |

ebR ešq̄i ciR̄ex̄ c̄v̄N̄ŪZ ti v̄Mi ḡt̄ā c̄v̄b̄Z̄ K̄v̄ḡ. I K̄x̄Uc̄Z̄½N̄ŪZ ti v̄M̄B̄ D̄t̄j̄ L̄t̄h̄v̄M̄ |  
b̄v̄v̄v̄ c̄R̄iv̄Zī K̄v̄ḡ. I K̄x̄Uc̄Z̄½ M̄t̄Qi K̄v̄Ū I cv̄Zv̄i im̄ ev̄ Ab̄v̄b̄ D̄c̄v̄v̄b̄ t̄L̄t̄q̄ t̄ēt̄P̄ v̄t̄K̄ |  
Āt̄b̄K̄ m̄ḡq̄ K̄v̄ḡ. I K̄x̄Uc̄Z̄½ ev̄ t̄c̄v̄K̄v̄ḡK̄t̄oī Av̄μḡt̄Y M̄t̄Q ti v̄Mi j̄ q̄Y t̄Lv hvq|  
m̄v̄v̄i YZ̄ īm̄t̄k̄v̄l̄ K̄ t̄c̄v̄K̄v̄, cv̄Zv̄f̄v̄R̄x̄ t̄c̄v̄K̄v̄, īq̄v̄t̄cv̄K̄v̄, cv̄Zv̄ t̄gv̄P̄ov̄t̄b̄r̄v̄ t̄c̄v̄K̄v̄ (v̄j d t̄iv̄j̄v̄i),  
cv̄Zv̄ v̄Q̄ K̄v̄ix̄ t̄c̄v̄K̄v̄, K̄v̄Ū v̄Q̄ K̄v̄ix̄ t̄c̄v̄K̄v̄ BZ̄w̄ M̄v̄Q̄t̄K̄ Av̄μgY K̄ti |

**v̄K̄Q̄ym̄v̄īY ti v̄Mi j̄ q̄Y I c̄āZ̄K̄vi**

**Q̄i v̄K̄R̄v̄Z̄x̄q̄ tiM**

exRZjvi gmu `xNf b  
tFRv I müZm`qZ  
\_vKtj PrivMQ W`w`ús  
Ad tivM AvµsInq|

**W`w`ús Ad t** W`w`ús Ad müKvix QÍvK Øviv exR I Priv DftqB AvµsInqZ cvti | exR AvµsInqj A¼zi v` Mg nq bv| Priv AvµsInqj gmuqZ Xtj cto| wkKo AvµsInqj Privi ep` eÜ nq hvq| mvariYZ exRZjvi gmu `xNf b tFRv I müZm`qZ \_vKtj PrivMQ G tivM AvµsInq| exR I gmu tkvatb Kti exR ecb Kij G tivMi AvµgY Kg nq| exR tkvatbi Rb` wFvtf. , WvB`\_b, K`rcUvb I gmu tkvatbi Rb` digj WvniBW bvgK imvqubK `è` e`envi Kiv thqZ cvti | KzõrfU ev t`P`ugkY ev Wvqwb Gg-45 w`q A¼zi v` Mg tU`w`fRtq ubtqI G tivM cōZtiva Kiv hvq|

**gj- cPr tivM t** gj- cPr tivM ntj MvQ tbwZtq cto| Gtṭṭ AvµsInq Priv A`ev MvQ Ztj c`p`q t`dj t`Z nte| Ab`vb` Privi tMvoq t`P`ug- vi, digj WvniBW ev digj b, KzõrfU ev Wvqwb Gg-45 QÍvKbvK cōqM Kitz nte| mvariYZ wk`i MvQ G tivM t`Lv hvq|

AvMgiv tivM cōtq  
MvQi Dcwi fivMi KvÜ  
I cvZv Ges cti c`jiv  
MvQUB gti hvq|

**AvMgiv tivM t** G tivM cōtq MvQi Dcwi fivMi KvÜ I cvZv gti hvq Ges cti c`jiv MvQUB gti hvq| AvMgiv tivM AwaKisk tṭṭ Kug, gmuUvwnZ QÍvK, fivBivm BZ`w`i Øviv nqZ cvti | AvMgiv tivM QÍvK Øviv Ab`vb` Kv`YI nqZ cvti | Kv`RB tivMi cōKZ.KviY wYq`i ci cōqvRbxq c`tṭc ubtZ nte| MvQi tMvoq t`P`ugkY, KzõrfU, Wvqwb Gg-45 cwb tZ uguk`q cōqM Kij G tivM nq bv| Gtṭṭ w`tkl fivte D`j`L` th, my`ietbi eÜ msL`K my`wi MvQ fqv`n AvMgiv tivM AvµsInq| Gi Kv`Y GLbl w`w`YZ nq ub etj tivM `g`bi c`tṭc tbqv hv`Q bv| Kv`RB cōZKvi w`tmte axi axi AvMgiv me MvQ tKtU etbi evBti ubtq Avm n`Q| Ab`w`tK, exki AvMgiv tivM QÍvK Øviv nq etj QÍvKbvK w`q G tivM cōZtival I e`e`v Kiv nq`q|

**cvZvi `vM tivM t** Priv MvQi cvZvq QÍvKi AvµgY w`w`fba`Kv`i i`vM cotZ t`Lv hvq| ZvB AvµsInq cvZv `v`fweK Avtj vKms`k`Y Kitz cvti bv| dtj MvQi `v`fweK ep` e`nZ nq Ges A`bKtṭṭ gvi v hvq| G tivM `g`tb KzõrfU, Wvqwb Gg-45, w`tWugj BZ`w` cōqM Kitz nq|



w`P` 29 t`K`gi cvZvi `vM tivM (w`j d evBU)

DBè tivM mvariYZ  
wk`i MvQ t`Lv hvq|

**DBè tivM t** cvZv tbwZtq covB G tivMi c`vb j`Y| wk`i MvQ mvariYZ G tivM t`Lv hvq| cōZKvi w`tmte MvQi tMvoq hv`Z cwb bv R`q tm e`e`v Kitz nte Ges KzõrfU, t`P`ugkY ev Wvqwb Gg-45 cwb m`v` uguk`q MvQi tMvoq w`tZ nte|



- K) `B
- L) wZb
- M) Pri
- N) cvB

2/ MřQi ci RřxNūZ ti vM Křfiře me`ti j vř Kři?

- K) gūU ōvi v
- L) ti vMRřeyōvi v
- M) wæev D`P Zvcgvŭvi gva`tg
- N) Av`Zvi gva`tg

3/ Aci RřxNūZ ti vM Křfiře nq?

- K) tgšij K Dcv`vřbi `ř Zv/AwkaK", wæev D`P Zvc ev`wZ evqyōvi v
- L) QŭvK ōvi v
- M) řvBi v m ōvi v
- N) e`vKřUwi qv ōvi v

4/ cvZvq nřj Kv I Nb meřRi tgvRvBK tKv&aitbi ti vM?

- K) QŭvKNūZ
- L) e`vKřUwi qvNūZ
- M) řvBi v mNūZ
- N) Aci RřxNūZ

5/ Mřvřti i tj vi vřřm ti vřMi Kvi Y Kř?

- K) QŭvK
- L) řvBi v m
- M) e`vKřUwi qv
- N) ci MřQv



cvZv , Ušbv tciKv cvZvK  
šbŕi t`ŕni Pvi cvŕk gšo  
tbq ev KvŕŪi mš½ cvZv  
Rvotq eim Kŕi |



**cvZv , Ušbv tciKv t** GRvZvq tciKv cvZvK šbŕi t`ŕni Pvi cvŕk gšo tbq ev KvŕŪi mš½  
cvZv Rvotq eim Kŕi | thgb- i qŕtciKv | thŕnZzG tciKv , tŕv cvZvi AveiŕY eim Kŕi ZvB  
mivmwi KxUbrkK cšqvm Kŕi Gŕi `gb Kiv KwWb | KvŕRB G tciKv `gŕbi Rb" agv  
mšKvix KxUbrkK, th , tŕvi KxUcZ½ webó Kivi ŕgZv `xN°vqx tm , tŕv e`envi KiŕZ nq |  
vj bŕWb, tmŕfb I tgj w\_qb G aiŕbi KxUbrkK |

šPŦ 31 t i qŕtciKv

gvRiv tciKv KvŕŪi ŕFZŕiB  
RxebPµ mšubŕKŕi |



**gvRiv tciKv t** G tciKv t`LŕZ i qŕtciKvi gŕZvB | Giv KvŕŪi ŕFZŕiB RxebPµ mšubŕKŕi  
Ges MŕŕQi ŕmZmŕab Kŕi | thŕnZzGiv KvŕŪi ŕFZŕi \_vŕK ZvB KxUbrkK ŕŕq Gŕi `gb  
Kvhŕi nq bv | tKvŕv KvŕŪi gvRiv tciKv AvµgŕYi mŕ\_ mŕ\_B tciKv aŕi tgŕi tdj vB G  
tciKv `gŕbi DĚg cšv |

šPŦ 32 t gvRiv tciKv









**iveŋi i ĩkKo cPv tiM t** tKvŋbv PrivMvQ G tivŋM Avμvšl nŋj PrivMvŋQi cvZv axŋi axŋi nj y eY<sup>3</sup>avi Y Kŋi i ĩkŋq hvq| PrivMvŋQi ĩkKo I KvŋŪi msthvM<sup>-</sup>ŋj nuj Kv ev`wg iŋŌi cPb i i ynq| wdŋRiv qvG (*Fusarium* sp.) bvgK GK aiŋbi QŋvŋKi Ōviv G tiM nq| Wvqvŋ\_b Gg-45 cĀqvŋM G tiM `gb Kiv hvq|

ivevi I tKl ov MvŋQi  
Privq AvMgiv tiM t`Lv  
hvq|

**iveŋi i AvMgiv tiM t** G tivŋMi AvμgY nŋj PrivMvŋQi (Kjŋgi) cvZv cĀŋg nuj Kv meŋ I cŋi nj y eŋY<sup>3</sup> nŋq i ĩkŋq gviv hvq| G tiM tKvŋbv QŋvŋK Ōviv nq bv| bvmŋi teW t\_ŋK cwi e`vŋM v`bvšŋi i mgq ĩkKŋto chŋŋ cwi gvY cwb bv tctj Privq G tiM nq|



ŋPŋ 33 t iveŋi i AvMgiv tiM

**tKl ov Privi AvMgiv tiM t** PrivMvŋQi AvMv A\_ev gvSvgnS v`ŋb big KvŋŪi tMvovq cPb i i ynŋlqvB G tivŋMi j ŋY| PrivMvŋQi AvMv t\_ŋK axŋi axŋi cPb i i ynŋq gviv hvq| ĩkŋŋvŋg j v i wdŋRiv (*Chaetomella raphigera*) bvgK QŋvŋK Ōviv G tiM nq| Wvqvŋ\_b Gg-45 cĀqvŋM Kŋi G tiM `gb Kiv hvq|

**ivevi cvZvi `vM tiM t** ivevi MvŋQi Privq GK aiŋbi nj ŋ` ev`wg `vM nq hv cieZxŋZ ami eŋY<sup>3</sup> nŋq KvMŋRi gŋZv t`Lv hvq| G `vM Avŋ`l Avŋ`l eo nŋq cvZv Sŋi hvq| KivBŋbŋvŋv tKvMŋKvjv (*Corynespora cassicola*) Ges tŋj vgbŋ\_vŋvŋvŋv qvG I ivBvR (*Helminthosporium oryzae*) bvgK QŋvŋK Ōviv G tiM nq|

**L. cĀKvZK I mŋRZ eŋbi tiM**

vgVv cwb i cĀvŋ nvm,  
gvŋLi jeYv<sup>3</sup>Zv evx,  
kŋmgj gvŋLi vbŋP cŋo  
hvl qv, LwYRC`vŋ\_P  
NvUvZ Ges QŋvŋKi  
AvμgŋYi mŋvŋj Z KvŋŋY  
G tiM nŋZ cvŋi |

**mŋvi MvŋQi AvMgiv tiM t** mŋvi MvŋQi AvMvi KvP WvM t\_ŋK gviv i i ænlqv G tivŋMi j ŋY| mŋv i eŋbi vevj cwi gvY mŋvi MvQ G tivŋM Avμvšl | G tivŋMi cĀZ.Kvi Y GLbl D`NvUvZ nq vb| Zte vgv cwb i cĀvŋ nvm, gvŋLi jeYv<sup>3</sup>Zv evx, cvj gvŋLi Rŋg kŋmgj-gvŋLi vbŋP cŋo hvl qv, LwYRC`vŋ\_P NvUvZ Ges QŋvŋKi AvμgŋYi mŋvŋj Z KvŋŋY G tiM nŋZ cvŋi eŋj vektIÁŋ i aviYv| tŋŋZzG tivŋMi cĀZ.Kvi Y GLbl vbnvZ nq vb ZvB Avμvšl MvQ tKŋU tdtj G tivŋMi v`li `gb Kiv mæe eŋj aviYv Kiv nq|

ivRkix, PÆMg, Kugj v I mtj U tRj vq cāvbZ fiv jv I emiqj v evtk eBU tiM t`Lv hvq|



**tKI ovMtQi AvMgivi tiM t** G tivMi j ḡY mywi MtQi AvMgivi gtZvB| mvBtUvṭuviv (Cytospora sp.) bvgK QĪvK θviv tKI ov MtQ G tiM nq|

**evtki cPb ev eBU tiM t**

ivRkix, PÆMg, Kugj v Ges mtj U tRj vq cāvbZ fiv jv I emiqj v evtk G tiM t`Lv hvq| G tivMi dtj evkSivoi evtki Koj- (bZb MRvṭbv evk) giv hvq| A`vKvi tḡmbqv ṡvḡ (Acremonium strictum) bvgK QĪvK θviv G tiM nq| tivM AvmšI Koj- tKtU tdtj G tivMi cō vḡe `gb Kiv hvq| evtki cPb ev eBU tiM evsjṭ`tki meṖ t`Lv hvq| GiU LḡB , iæZcṖ

ṡṖ 34 t evtki eBU tiM

ebR eṭṭi cāvb KtqKv ḡvZKviK tciKv I Zṭ` i cāZKvi

**K. bmvṭi PviMtQi tiM**

GṭMūM Bcmj b bvgK tciKvK KvU qvgṭj |

**KvU qvgṭ** GṭMūM Bcmj b (*Agrotis ipsilon*) bvgK tciKvK KvU qvgṭ (Cutworm) ejv nq| G tciKv bmvṭiZ PviMtQi cḡZ ḡvZmvab Kṭi | KvU qvgṭmavi YZ ṡṭbi tejvq 3-8 tmṡUgUvi gmvU ṡṭP MṭZḡ vKtq ṡṭK Ges ivṭZi tejvq gmvU Dcṭi tei nṭq Avṭm| Gme tciKv tQvU PviMtQi KvU tKtU tdtj | AṭbK mgq bZb MRvṭbv cvZv tLṭq tdtj | G aiṭbi tciKv ṡṭK IZ Kvbdivi RvZiq (bMevR) MtQi ḡvZ Kṭi | thṭnZzKvUv PviMtQi ṡṭP G aiṭbi tciKv ṡṭK ZvB G tciKv `gṭbi DĒg cšv nṭj v MtQi ṡṭP t`ṭK aṭi Gṭb tgṭi tdj v| Gme tciKv gmvU ṡṭP t`ṭK tei Kivi Rb` cmb tmP ṡṭZ nq| cmb tmP ṡṭj tciKv tei nṭq Avṭm| 10 ṡj Uvi cmbi mṭ\_ 35 ṡḡv ṡḡUvi WvBA`vj ṡṡb-20 Bm ṡḡvṭq ṭṭRv gmvṭZ cḡqM Kṭi G tciKv `gb Kiv hvq|

KK&P`vdivi bvgK miv LbbKvix Kxov i`evi, tm\_b, evejv, cvBbRvZiq MtQi Pvi webó Kṭi |

**KK&P`vdivi t** KK&P`vdivi (Cock chafers) bvgK miv LbbKvix Kxov (White grubs) i`evi, tm\_b, evejv, cvBbRvZiq MtQi Pvi webó Kṭi | ṡj DṭKvṭdṡj m (*Leucopholis* sp.), ṭṡṭj ṡṡKv (*Holotrichia* sp.) I A`ṭṭvḡv (*Anomala* sp.) bvgK Kxov miv LbbKvix Kxov ṡṭṡṭe cṡi ṡPZ| G Kxov 5 tm. ṡḡ. chšleo nṭZ cvṭi Ges "c" AvKvZi nq| Giv i`qṭcivKv ṡvKv Ae`vq gmvṭZ MtQi Pvi g- tLṭq tdtj | Giv 3-5 gṡṡi Pvi gmvU Dcṡi fiv t`ṭK 5-10 tm. ṡḡ. ṡṭṭi g- ṡṡK tKtU tdtj | dtj AvmšI Pvi i`ṡṡṭq hvq| eq` Kxov eo MtQi cvZv Pṭi tLṭq tdtj | G LbbKvix Kxov AvmšI Pvi AvṭkcvṭB ṡṭK| gmvU Lḡo A`ev Rj tmP ṡṭq gmvU ṡṭP t`ṭK Gṭ`i tei Kṭi nṭZ ṡṭq tgṭi tdtj G Kxovi nṭZ t`ṭK ṭi nṭB cvl qv hvṭe| ZvQxov WvBA`vj ṡṡb Bm 10 ṡj Uvi cmbṭZ 40 ṡḡv ṡj Uvi ṡḡvṭq ṭṭRv gmvṭZ cḡqM Kṭi I G Kxov `gb Kiv hvq|



ᵛPṪ 35 t tm, tbi K'vivi ti vM

μ'vmtcṫWbUv bvgK GK  
aitbi tciKv cṫtg cvZv  
Ges cti bZb kvLvcjē  
tLṫ Mvgvi MṫQi  
ḡḡZmvab Kṫi |

**Mḡṫi i cvZṫfṫRṫ tciKv t** μ'vmtcṫWbUv (*Craspedonta* sp.) bvgK GK aitbi tciKv  
cṫtg cvZv Ges cti bZb kvLvcjē tLṫ Mvgvi MṫQi ḡḡZmvab Kṫi | elṫ i iṫZB Gṫi  
AvμgY i iṫnq Ges 3-4 gṫmi gṫa "B MvQ cvZvkḅ" nṫq cṫo | tenk Avμvšl MvQ cvZvkḅ  
nṫq gvi v hṫq | teKvBṫgwi qv bvgK GK cKvi ci Rṫex cōYx evMṫb e'envi Kṫi G tciKvi  
AvμgY nṫZ cōZKvi cvl qv hṫq |

**tgnMbi cvZṫfṫRṫ tciKv t** ᵛncṫmṫvBUv tiven=v (*Hypsiphyta robusta*) tgnMḅ MṫQi  
cvZv tLṫ aṫi aṫi KvṫŪi gṫa "XṫK cṫo | G tciKvi Kṫov AṫbK mgq MṫQi dṫ I dj  
AvμgY Kṫi | Avμvšl kvLvcḅkvLv ḡḡ nṫq cṫo Ges cti gvi v hṫq |

**kvṫj i nUḅW (mviKw) ᵛQ`K tciKv t** ṫnvcṫj ᵛmi vṫm ṫṫvBibKṫim (*Hoplocerambyx*  
*spincornis*) kvj MṫQi mviKw AvμgY Kṫi ᵛebó Kṫi | mvariYZ G tciKv KvUv kvj MvQ  
A\_er kvj MṫQi giv Ges ḡḡ Astk ᵛMg cṫo | Avμvšl ṫb t\_ṫK AvVvRṫZṫq im ᵛbMṫ  
nq | Avμvšl MvQ aṫi aṫi ḡḡ nṫq gvi v hṫq |

UḅKv ᵛbṫfṫdivvi j vṫi  
ᵛkgj MṫQi kvLv ᵛQ`a  
Kṫi kvLvcjēṫi kvṫl  
bvj v Zvi Kṫi |

**ᵛkgj i kvLv ᵛQ`K tciKv t** UḅKv ᵛbṫfṫdivvi (*Tonica niviferana*) Kṫov ᵛkgj MṫQi  
kvLv ᵛQ`a Kṫi kvLvcjēṫi kvṫl bvj v Zvi Kṫi | G ᵛQ`a ᵛṫq im ev AvVṫj v c`v ᵛbMṫ nq |  
Avμvšl ṫb t\_ṫK MṫQi Dcṫi i Ask aṫi aṫi gṫi hṫq | Gi cōZKṫi i Rb`- 1. avṫj v  
KivZ ᵛṫq Avμvšl kvLvcḅkvLv ṫKṫU ṫdj ṫZ nṫe, 2. KvUv ṫb tenṫ ᵛḡḡ vi j v MṫZ nṫe, 3.  
elṫKṫj MvQ KvUv eṫ i vLṫZ nṫe Ges 4. Avμvšl MvQ ṫKṫU ṫdj ṫZ nṫe |

ᵛRI ṫRiv KbdviiUv I  
K'vj ᵛdqv ᵛj bṫUj vi Kṫov  
ṫKl ov MṫQi KvU ᵛQ`a  
Kṫi cṫZ ḡḡZmvab  
Kṫi |

**ṫKl ov KvU ᵛQ`K tciKv t** DcKjṫq ebvĀṫj i cōq kZKiv 50 fṫM MvQ G tciKv ḅvii  
Avμvšl nq | ᵛRI ṫRiv KbdviiUv (*Zewjera conferta*) I K'vj ᵛdqv ᵛj bṫUj v (*Calfia lintola*)  
Kṫov ṫKl ov MṫQi AvμgY Kṫi KvU ᵛQ`a Kṫi MṫQi cṫZ ḡḡZmvab Kṫi | G tciKv MṫQi  
KvU I kvLvcḅkvLv ṫf` Kṫi KvṫŪi Mṫṫi cḅek Kṫi | dṫj KvṫŪ GKᵛU bvj v Zvi nq |

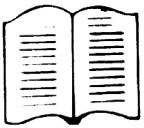
Avμvšl MvQ ḡḡ nḡ cḡo Ges cōj evZvḡm tḡḡ½ cḡo | 6-10 eQi eqḡmi MvQ G tciKv  
ḡvivi tenk Avμvšl nḡ |



ḡPḡ 36 t tKl ori KvŪ ḡQ`K tciKvi

tciKvctŪvivi wi ḡdḡ v tciKvi  
AvμḡḡY ḡki, KoB I  
Mvḡvivi MḡQi ḡḡfimeK eḡḡ  
ḡḡZMŌ`nḡ |

**ḡki, KoB I Mvḡvivi MḡQi cvZḡḡfivRv tciKv t** tciKvctŪvivi wi ḡdḡ v (*Plecoptera reflexa*)  
bvḡK tciKvi meḡ Kxov ḡki MḡQi big KvP cvZvi im I cvZv tLḡḡ tḡḡ | dḡḡ MḡQi  
ḡḡfimeK eḡḡ ḡḡZMŌ`nḡ | eo MḡQi Zḡbvḡ tQvU MvQB tenk Avμvšl nḡ | MvBA`vj ḡḡB-20  
Bvḡ 10 vj Uvi cvbḡZ 25 ḡḡḡḡ vj Uvi ḡḡḡḡḡ Avμvšl MḡQ t`ḡḡKḡi tciKvi AvμḡY tiva  
Kiv hvḡ |



**mviḡḡ** W`ḡḡḡs Ad, iaU iU, AvMvḡvivi ti vM, cvZvi ḡḡM ti vM cḡḡZi KvivY bvmḡḡ i vevfbae  
aiḡbi Pvi vMvQ, thḡb- Mvḡvivi, tm, b, K`g, ivevi, tKl ov cḡḡZi e`vcK ḡḡZ nḡ | bvmḡḡ i  
Pvivi Gme ti vM ḡḡḡbi Rb` ceḡḡ`ḡKB vevfbae`ḡb e`e`v MḡY Kiv DvPZ | cōKvZK I  
mḡRZ evMḡḡbi tivḡMi ḡḡḡ mḡwi I tKl ori AvMvḡvivi ti vM Ges evḡki cPb ti vMB cḡḡb |  
mḡyieḡbi eḡ msL`K mḡwi MvQ eZḡḡḡb AvMvḡvivi ti vM Avμvšl | Gme ti vMe`ḡḡ Qvovl  
bvmḡḡ, cōKvZK I mḡRZ evMḡḡb vevfbae Kḡḡi KvUcZ½ AvμḡY Kḡi cḡZ ḡḡZmḡḡb Kḡi |  
Dchḡ ḡḡb e`e`v I KvUvḡkḡKḡi e`enḡḡi gvaḡḡ Gme KvUcZḡḡi AvμḡḡYi nḡZ t`ḡK  
ḡḡ`evb ebR eḡḡ i ḡḡḡ Kiv hvḡ |





### cŕVvĒi gj-ŕqb 3.3

#### mĀK DĒŕi i cŕk ũK ũPý (✓) ũ b|

- 1| gj- ev ũkKo cPv ti vŕMi cĀZKvi Kx?  
 K) MŕŕQi tMvovq cŕnb RgŕZ br t` l qv  
 L) MŕŕQi tMvovq mvi l cŕnb t` l qv  
 M) QŕvKbŕkK l lŕ cŕŕqM Kiv  
 N) MŕŕQi tMvovi gmU Avj Mv Kŕi t` l qv
  
- 2| Mŕgvi bŕmŕi ŕZ gj- cPv ti vM Kx Kvi ŕY msMŕVZ nq ?  
 K) QŕvKRŕbZ Kvi ŕY  
 L) e`iKŕUŕi qŕRŕbZ Kvi ŕY  
 M) fŕBi vŕmRŕbZ Kvi ŕY  
 N) Ab`v` Kvi ŕY
  
- 3| DBj ũ (wilt) ti vŕMi j ŕŕY Kx?  
 K) cvZv i ũKŕq hŕl qv  
 L) cvZv tŕvZŕq cov  
 M) cvZv gŕi hŕl qv  
 N) cvZv Sŕo hŕl qv
  
- 4| tKvŕŕQ`K tciKv ũbqŕŕYi Rb` e l ŕKŕŕj MŕQ KŕUv eŬ i vLŕZ nq?  
 K) tm, ŕbi KŕŕŬi ũQ`K tciKv  
 L) kvj MŕŕQi nŕUŕU tciKv  
 M) ũkgŕj i kvLv ũQ`K tciKv  
 N) evej vi t`j tciKv

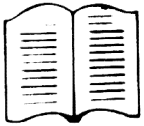
**e'enwiK**

**cW 3.4 ebR eḏḏi tiṡṡ I tciKvgvKo chḏeḏḏY**



**G Ablyj b tkḏI Avciḏ –**

- ebR eḏḏi ḏḏZKi tciKvgvKo ḡPbḏZ cviḏeb|
- ebR eḏḏi ḏḏZcYḏiṡṡMgnḏ kYv<sup>3</sup> KiḏZ cviḏeb|



**cḏḏḏK Z\_**

Avcbvi tKvmḏBḏqi BDḏbU 3 Gi cW 3.1, 3.2 I 3.3 fḏḏj vḏḏḏe cḏo ebR eḏḏi tiṡṡ I tciKvgvKo mḏḏḏKḏAvbj vḏf Kiḏḏ Ges tm Avḏḏj vḏḏK ebR eḏḏi tiṡṡ I tciKvgvKo chḏeḏḏY Kiḏḏ|

**DcKiY**

Avcbvi tKvmḏB I Ab'vb' mḏḏḏK cyḏKv, K'ḏḏḏiv, ḏḏj ḏ, e'vUḏḏi BZ'ḏ' |



ḡPḏ 37 t mḏḏḏj W tciKv



ḡPḏ 38 t i'qḏḏcivKv



ṅPṯ 39 t KvŪ ṅQ`K tciKv



ṅPṯ 40 t gvRiv tciKv



¶PÎ 41 t mɔwi i K`vivi ti vM



¶PÎ 42 t K`tgi cvZvi `vM ti vM



¶PÎ 43 t ivetʃi i AvMgivi ti vM



ṿPĪ 44 t tm, ṯbi K'vṗvi tiṿM



ṿPĪ 45 t evṯki evBU tiṿM

**KṯRi aviv**

- ṿUDUi ev tKvṯbv eb ṿeṯKIÁ A\_ev tKvṯbv ebKgrṯhṿb ebR eṯṯi maviY tiṿM I tciKvṗKo tPṯbb, ZṯK ṿbṯq Avcbvi ṿbKU'eb GjvKv cwi`kṯb hṿb| hṿ` KṿvṯKI bv cib Zṯe Avcbvi tKṿmṯBṿU mṯ½ ṿbṯq eb cwi`kṯb hṿb|
- tKṿmṯB cṯo Avcbṿ th ZṿṿĒK avi bv jvf KṯiṯQb eb cwi`kṯb Zv ev`ṯe cĀqṿM Kṯi ebR eṯṯi tiṿM I tciKvṗKongy kYv³ Kiab| G e'vcvṯi cĀqṿRṯb Avcbvi ṿUDUi/eb KgRZPA\_ev Ab` Kvi I mṿvṯṿ ṿbb|
- tiṿM I tciKvi bḡṗv mṯMṯ Kiab | thme tṯṯiṯ bḡṗv mṯMṯ Kiv mṯe bq tmṯṯiṯ K'vṯgiv\_ṿKṯj iṿOb Qwe Zṯṯy|
- tiṿM I tciKvi bḡṗv A\_ev Qwe ṿbṯq Avcbvi ṿUDUṯi mṯ\_ Avjvc Kṯi bḡṗv kYv³KiY ṿbṿṾZ tṿvb|
- cĀZṿU bḡṗvi ṿPĪ AsKb Kiab Ges kYv³Kvix `evkó'mgrṯ Avcbvi e'evṿi K LvZvq ṿj Lṯy|



**BDibU 4  
Rxe%eipTī I cāZtek**

**BDibU 4 Rxe%eipTī I cāZtek**

Avgvṭ`i Pricvṭk Avgiv AmsL` Rxe t`LṭZ cūB| Gi gṭa` itqtQ AvZ ḡZ`at\_ṭK iiaKṭi  
mekv eo Dvṃc I cōYx| Gme Dvṃc I cōYxKṭji I ci cwiṭeṭki weivU cṭv'e itqtQ| ZvB  
mKj Dvṃc ev cōYx me`vṭb t`Lv hvq bv| thgb- myietṭbi jeYv<sup>3</sup> gmvṭZ th  
g`vbṭMōfRvZxq MvQ t`Lv hvq Zv cūvwo ebvĀṭj t`Lv hvq bv| tZgubfvṭe myietṭbi weL`vZ  
itqj teṭj UvBMvil cveZ` ebvĀṭj t`Lv hvq bv| MvRxcj I gaxji i kijMvQI cveZ`  
PĀEMōg t`Lv hvq bv| iuRkvntZ th iKg dRij Avg Drcbenq, ṭṭki Ab`vb` AĀṭj Ggb  
myv` yAvg Drcbenq bv| G t`ṭK tevSv hvq wevfbecōKūZK cwiṭeṭk wevfbēaiṭbi thme  
Dvṃc ev cōYx Zvṭ`i Avevm teṭQ tbq Zvi cāZvUli GKūU `Zšj`eukó`\_vṭK| Gifcvṭe  
wevfbēRṭei mgšṭq Mṭo I Vv Rxe m=úUvq Ges ṭm Rxe%eipTī`i vḡvqK ntj v cwiṭek|

G BDibṭui wevfbēcvṭV Rxe%eipTī`i ,iazj; ebR, giar I RjR cwiṭek I Rxe%eipTī`;  
Rxe%eipTī` msi ḡṭYi cōqvRbxqZv; Rxe%eipTī` aṭstṃ eb DRvo, gṭbvKvj Pvi I KūUvikk  
cōqvṭMi cṭv'e Ges Rxe%eipTī` msi ḡṭY b`vkbvj cvK, PpūoqvLvrv I tevUmbK`ij MvṭWṭbi  
cṭv'e m=úṭKṃstḡṭc Avṭj vPbv Kiv ntqtQ|

**cw 4.1 Rxe%eipTī`i ,iazj**

**G cw ṭkṭI Avcūb –**

- cāZtek i ḡvq Rṭei fūgKv Avṭj vPbv KiṭZ cwiṭeb|
- Rxe%eipTī`i RvZxq I AvšRvūZK ,iazj`e`vL`v Kṭi vj LṭZ cwiṭeb|
- vPĒvetḡv ṭbi ṭḡṭṭ Rxe%eipTī`i ,iazj`eYṭv KiṭZ cwiṭeb|



**cāZtek i ḡvq Rṭei fūgKv**

vḡv`ō Gj vKvq wevfbēRxe I Roe`i gṭa` th vḡv'eo m=úK`ZvṭKB cāZtek ev BṭKvmt÷g  
(Ecosystem) etj| thgb- g`vbṭMōf eb GKūU BṭKvmt÷g| hṃ G aiṭbi GKūU  
BṭKvmt÷g vṭkI ṭKvṭbv KviṭY ṭKvṭbv GKūU cōYx ev Dvṃc`i mSL`vi gvivZK AebvZ NṭU  
Zte ṭmṭḡṭṭ cṭjv BṭKvmt÷g ūgūKi m=ṭvḡb ntq cōṭe| thgb- eZḡvṭb myietṭb vevj  
mSL`K my`wi MvQ AvMvgiv ṭivṭM Avvūšnl qvq ṭm Gj vKvi BṭKvmt÷g AvR gvivZK ūgūKi  
m=ṭvḡb| G ṭivṭMi mūVK KviY vḡvYṭṭ bv ntj I aviYv Kiv nt`Q th, gmvU i jeYv<sup>3</sup>Zv evx Ges  
Kvṭj i veeZṭb gmvU Dcvi fivṭM cūj Rgvi KviṭY my`wi MvṭQ G mgm`v t`Lv vṭqtQ| vḡK  
ṭZgubfvṭe myietṭb th nviY Ges evN itqtQ Zvṭ`i mSL`vi gṭa`I GKūU mgšṭq itqtQ| hṃ  
ṭKvṭbv KviṭY evṭNi mSL`v nvm cūq Zvntj nviṭYi mSL`v teṭo hṃṭe Ges Zviv myietṭbi  
cōqvRbxq MvQcūjvi cvZv ev evKj tLṭq MvṭQi ḡvZmṃab Kiṭe| Avevi nviṭYi mSL`v Kṭg  
ṭMṭj AṭbK ṭQvU ṭQvU AcōqvRbxq MvṭQi mSL`v teṭo vṭṭq cōqvRbxq MvṭQi cRbb I evxṭZ  
e`vNvZ NUvṭe| KvṭRB cāZvU Dvṃc I cōYxi GKūU vḡv`ō mSL`v I Zvṭ`i gṭa` mgšṭq  
cōqvRb|



vḡv`ō Gj vKvq wevfbēRxe I  
Roe`i gṭa` th vḡv'eo m=úK`  
ZvṭK cāZtek ev BṭKvmt÷g  
etj| thgb- g`vbṭMōf eb  
GKūU BṭKvmt÷g|

Rxe%eipTī` Avgvṭ`i KūṭZl  
GK weivU fūgKv cūj b  
Kṭi|

Avgiv Avṭiv GKūzm<sup>2</sup>fvṭe j ḡṭ` Kiṭj t`LṭZ cve Rxe%eipTī` Avgvṭ`i KūṭZl GK weivU  
fūgKv cūj b Kṭi| Avgvṭ`i cāvḡ dmj avb| avb Pṭli mgq RvḡZ bṃv aiṭbi  
ṭcvKvḡKṭoi AvvūgY nq Ges Būjv| AṭbK km` tLṭq ṭṭṭj| RvḡZ AṭbK mvc I e`v0  
\_vṭK| Zviv Gme ṭcvKvḡKo I Būjv aṭi Lvq| KvṭRB cōKūZi cāZvU cōYvB ṭKvṭbv bv

tKvrbvrite Avgvî i DcKvi Kti hvî"Q| Avi ZvB G cRmZ ,tjvi thb vej yß bv NtU tmw tK tLqj ivLtz nte| eb DRvo nlqvi KvîY AvRKvj etbi KxUcZ½ kmî"tjtz tek Ptj GîmtQ| ZvB Gî i nvZ ntZ kmî i"jvi Rb" KxUvkk e"envi KiîZ nt"Q| dtj AtbK mgq DcKvix cÛxi aÿsm ntq hvî"Q |

**Rie%aiPÎ i Rivxq I AvšRmZK ,iæj**

ersjvî k Rie%aiPÎ i fvÛvi | Gîtk Kgtenk cãq 5000 cRmZi Dv"e , 500 cRmZi gvQ, 19 cRmZi DfPi cÛxi, 124 cRmZi mixmç, 579 cRmZi cml I 125 cRmZi ÷Zb"cvqx cÛxi itqtQ| GîKK cRmZi Dv"e ev cÛxi ntZ Avgiv GîKK aîþbi DcKiy cvB| Gme DcKiy iayth Avgvî i "bwb Pmn"v tgUvî"Q Zv bq, AtbKtjîî G ,tjvi AvšRmZK ,iæj| itqtQ| weîk|Ggb AtbK I lÿ itqtQ hv Dv"e ubhîm ntZB "Zwi nq| cml\_xi AtbK Dbz t"tk Gme I lÿjai KvËgvj tbB etj Zvî itK Avgvî i lci wbfP KiîZ nq| ersjvî tk avþbi l Kgtenk cãq 3000 FivivBiu (variety) itqtQ| MteIKt i KvîQ Gme FivivBiu AZ"šl tjvfbrq, KvîY cÛZ"K FivivBiu gta" wKQybv wKQyfvîjv ,Y AvîQ| tKšij cÛKškj (Genetic engineering) ev cRbb (breeding) cãuqvî gva"tg "eÁmbKMY tPón Ktib teiki fivM fivîjv ,tYi mgštq "vb DcþhMx RivZ ev FivivBiu D"veb KiîZ| KvîRB Rie%aiPÎ i th tKej Rivxq ,iæj AvîQ Zv bq, AvšRmZK tjîî l Gi ,iæjAcwi mix|

ersjvî k Rie%aiPÎ i fvÛvi wntmte cwiwPZ| Gîtk Kgtenk cãq 5000 cRmZi Dv"e , 500 cRmZi gvQ, 19 cRmZi DfPi cÛxi, 124 cRmZi mixmç, 579 cRmZi cml I 125 cRmZi ÷Zb"cvqx cÛxi itqtQ| GîKK cRmZi Dv"e ev cÛxi ntZ Avgiv GîKK aîþbi DcKiy cvB| Gme DcKiy iayth Avgvî i "bwb Pmn"v tgUvî"Q Zv bq, AtbKtjîî G ,tjvi AvšRmZK ,iæj| itqtQ| weîk|Ggb AtbK I lÿ itqtQ hv Dv"e ubhîm ntZB "Zwi nq| cml\_xi AtbK Dbz t"tk Gme I lÿjai KvËgvj tbB etj Zvî itK Avgvî i lci wbfP KiîZ nq| ersjvî tk avþbi l Kgtenk cãq 3000 FivivBiu (variety) itqtQ| MteIKt i KvîQ Gme FivivBiu AZ"šl tjvfbrq, KvîY cÛZ"K FivivBiu gta" wKQybv wKQyfvîjv ,Y AvîQ| tKšij cÛKškj (Genetic engineering) ev cRbb (breeding) cãuqvî gva"tg "eÁmbKMY tPón Ktib teiki fivM fivîjv ,tYi mgštq "vb DcþhMx RivZ ev FivivBiu D"veb KiîZ| KvîRB Rie%aiPÎ i th tKej Rivxq ,iæj AvîQ Zv bq, AvšRmZK tjîî l Gi ,iæjAcwi mix|

wPËweþv"b, Kgfs"ib Ges A\_©DcvRb l Rie%aiPÎ i ,iæj itqtQ| Rie%aiPÎ i mvariY gubþj i AvMîni KvîYB b"vkbyj cvK, teiUmbK"ij MîW" l wPioqvLivr mîp Kiv ntqtQ|

**wPËweþv"b I Rie%aiPÎ**

Avgiv hLb Kg"Zvq Kvšlntq Dv ZLb QþU hvB tKvj vnj gÿ tKvrbv wR" Gj vKvq, weîk l Kti ebnÁtj | Gme wR" Gj vKvq Avb" i Ab"Zg w K bZb bZb wKQyMvQciv v ev ci cml | A\_© Avgiv Rie%aiPÎ Aetj vKþbi Rb"b tmLvtb QþU hvB | Rie%aiPÎ i mvariY gubþj i AvMîni K\_v weþePbv Ktib miKvi b"vkbyj cvK, teiUmbK"ij MîW" l wPioqvLivr mîp KtiîQb | GîZ GKw tK thgb miKvîi A\_©DcvRb nt"Q Ab" tK Kg" l gubþj i wPËweþv"b Ges wkiî i wK"jvi tjî l "Zwi ntqtQ| wki iv wevfbaDv"e l cÛxi mî½ cwiwPZ nl qvi mþhM cvî"Q|





wPĪ 46 t eb āgY wPĒwētr`b Ab`Zg gva`g

wefbreai`bi wPĒwētr`b tK>`Mto Zzj t`kxq I AvšRwZK chθK AvKó.Kti cPž A\_©  
DcvRθ Kiv mæ nq| Gaitbi wPĒwētr`b tK>`i gta` DjL`thwM` ntjv- w`bvRctji  
ivgmMi, emiktji gvaecvkv, PÆMōtgi dtqR tjK, ivšvgwUi KvBvB tjK, K·erRvġi  
mgy`mKZ, wmtj`Ui `Ršćy, myietbi wnb ctqU BZ`w | GQvor cvK, wPwoqivLvbv,  
teivUmbK`ij MŕWθ `vcb Ges wej cRwZi RxeRš` msi`ŕġġYi e`e`v Kti  
wPĒwētr`bKvix`i AvKó.Kiv hvq| GtZ cPž A\_©DcvRθ Kiv hvq Ges eū tjvKi  
Kgms`vbl nq|



wPĪ 47 t dtqR tj`Ki tmš`thwPĒ wetgwnZ nq

**`eġ`wkK gġĀ ARθ**

eb` RxeRšġ gva`tg `eġ`wkK  
gġĀ ARθ Ges tmmvġ\_ eū  
tjvKi Kgms`vbl nġ`Q |

ebmāú` w`tq `Zwi wkí RvZ `è", thgb- eb` RxeRšġ Pvgov nġZ e`vM, Ržv, j Zvġbv MŕQj  
Avka w`tq Mv`, KvV w`tq AvmevecĪ, euk I KvV nġZ KvMR, tġIR MvQMvQov nġZ I Iğ, KvV  
I Dv`Qó AveRθv nġZ cvitU· Ges bvbv iKtgi `è`w` iBvnb Kti cPž `eġ`wkK gġĀ ARθ  
Kiv mæ nġ`Q| tmmvġ\_ eū tjvKi Kgms`vbi e`e`vI nġ`Q | tm KvġġY Rxe%wPĪ`i  
msi`ŕġġY Ges Dbqvb NUvġbv GKvšġ cĀqivRb|



**mvigg** w`v`θ Gj vKvq wefbreaRie I Roe`i w`v`eo māúKB BtKwmt`÷g| thgb- g`vbMōf  
eb GKvU BtKwmt`÷g| cĀZwU BtKwmt`÷gi wefbreaDw`c I cĀYxi msL`vi gta` mgšq`\_vKv  
cĀqivRb| evsjv`k Rxe%wPĪ`i fivŪvi wntmte cviwPZ| Gt`tk Kgtenk cĀq 5000 cRwZi  
Dw`c, 500 cRwZi gvQ, 19 cRwZi DfPi cĀYx, 124 cRwZi miimc, 579 cRwZi cvwL  
I 125 cRwZi `b`cvqx cĀYx itqġQ| RvZxq I AvšRwZK tġġĪ G Rxe%wPĪ`i , iāZj  
Acwimxg| `ewPĪ`gq RxeRš` Gt`tki cvitek i`ŕġvi cvkvcwK eū tjvKi Kgms`vbl,  
`eġ`wkK gġĀ ARθ, wPĒwētr`b cġwZtZ wētkI Ae`vb ivLġQ|



### c#V#Ei gj"iqb 4.1

#### m#K DEti i c#k #K #P# (✓) # b|

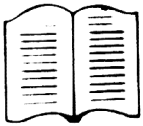
- 1| AvRKij e#bi K#UcZ½ km"t#Z P#j Avmvi Avmj Kvi Y tKv#U?
  - K) e#b #bi vcf`\_vK#Z cvi#Q bv
  - L) e#b K#UcZ½i Lr`K mSL`v te#o hv#Q
  - M) eb DR#o nI q#q Rb"
  - N) e#b tek tek K#UbrkK I I#y e"envi n#Q
  
- 2| e#bi tKv#`e"u K#MR#k#i K#B#vj #nt#te e"e#Z nq?
  - K) e#k I K#W
  - L) K#V, j Z#t#v I Avk#h# D#m#
  - M) K#V I D#Q# AveR#v
  - N) j Z#t#v D#m#
  
- 3| Kge"lgub# #PE#e#v`#bi Rb" tKv#ai#bi RvqM# cQ#` K#i b?
  - K) tKvj #nj g# #bR# Qv#te#Z ebv#Aj thL#t# M#Q#vj v I ci c#mL cvl q# hvq
  - L) b`xi #Kbvi v
  - M) tLvj v AvK#t#ki #bP
  - N) tK#t#v emoi Av#z#v
  
- 4| evsj v#`#k Kg#ek c#q KZ c#R#Zi D#m# i #q#Q?
  - K) 3000
  - L) 4000
  - M) 5000
  - N) 6000
  
- 5| evsj v#`#k Kg#ek c#q KZ c#R#Zi gvQ i #q#Q?
  - K) 300
  - L) 400
  - M) 500
  - N) 600

**cW 4.2 ebR, giAR I RjR cwi tek Ges Rie%aiPÎ"**



**G cW tkãI Avcrib –**

- evsj vt`tki weifbævbiÂtj i cwi tek eYðv Ki tZ cwi teb |
- giAR I RjR cwi tek Kx Ges tmLvrb tkvb&aitbi Rie%aiPÎ" we`gvb Zv ej tZ I wj LtZ cwi teb |



evsj vt`tk Pri aitbi eb itqtQ | thgb- cwnno eb, g`vb tMôf eb, mgZj figi eb | Ges MïgxY eb | cwnno etb KLbl Rjve×Zv nq bv | KviY, G eb mgZj fig t`tk AtbK Dcti Aew`Z | wZbuU cveZ` tRjv, h\_v- ivzvgwU, LvmovQwo I ev`i evb Ges PÆMïg, K- evRvi, wntj U, nweMÄ, mbygmÄ I tgsj fxevRvi tRjvi cwnno GjvKvq cwnno eb t`Lv hvq | Gme GjvKvi gwU tKv\_vl jvj tP GtWj, tKv\_vl wPKb emj, Avevi tKv\_vl Dftqi wγκY | t`vtb t`vtb K¼iqg I gvtS gvtS emj qwo cv\_i hÿ | Gme GjvKvi cãvb MvQ MRØ, Mvgvi, tZj mj, KoB, tgnMub, tm\_b BZ`w | wPzvevN, tgQvevN, ebweovj, fvj k, nwi Y, Dj k, weifbæaitbi evbi I nbsgvb, B, weifbæaitbi mvc, weifbæcRwvzi cvml, KxUcZ½ BZ`w | Gme GjvKvi gwU A`wq | mgÿcô nZ Gme fig tek Dcti Aew`Z nl qvq GLvrb cØwv Z Pvlver` nq bv | GK mgq Gme GjvKvq mwngZ msL`K cwnno tjvK Qrov tKvrbv tjvKRbl wQj bv ej tj B Pj | cwnno tjvtKiv Gme GjvKvq wekI GK c×wZtZ Pvlver` Kti hvtk SgPvl etj | SgPvl ntjv cwnno GjvKvq MvQcvjv tktU mvgwqK Pvlver` thLvrb GKm½ avb I Ab`vb` ktm`i exR cãZ t`qv nq | chqµtg tmLvrb cÛtg avb I cti Ab`vb` km` Drcw`Z nq | wKš` Rwg AmgZj nl qui Kvi tY Ges tmLvrb tm tPi cwb bv\_vKvtZ epoi I ciB G aitbi Pvlver` wbfPkxj | gwU tZ hZw`b DePZv\_wtK ZZw`b GKwU wbow` Rwg tZ Pvlver` Kti | cti cwnno iv H GjvKv cwi Z`wM Kti bZb tKvrbv GjvKvq hvq Ges GKB c×wZtZ Pvlver` Kti | AZxtZ cãQ 20 eQi ci ci GKB GjvKvtZ tjvKRb Pvlver` i Rb` wdti AvmZ Ges GtZ cwnno bZb Kti MvQcvjv Rtbk gwU DePZv wdti AvmZ | wKš` cwnno GjvKvtZ I RbmsL`v` z epxi dtj eZgvtb 3-5 eQti i gta`B GKB GjvKvtZ tjvKRb tK wdti AvmZ nt`Q etj B weifbæcwnno MvQ Rb kbi mshvM cvt`Q bv Ges GK Bmw` msukØ cØYkz I Zvt` i Avev`j nwi tq tdj tQ | dtj Rie%aiPÎ" i G AmigAm`Zvi Kvi tY cØKwZK fvi mvg` webó nt`Q | mw`uZK GK mgn`vq t`Lv tm tQ, cwnno GjvKvi weifbæMvtQi gta` ASZ 25wU AvR cãQ wej k |



cwnno etbi gwU tKv\_vl jvj tP GtWj, tKv\_vl wPKb emj, Avevi tKv\_vl Dftqi wγκY | G etbi cãvb MvQ MRØ, Mvgvi, tZj mj, KoB, tgnMub, tm\_b BZ`w | nwiZ, wPzvevN, fvj k, Dj k, evbi, Bmvc, weifbæaitbi cvml, KxUcZ½ cãwZ cãvb cØYx |

**ebR cwi tek I Rie%aiPÎ"**

AvtMB evj ntqtQ Avgt`i t`tk Pri aitbi eb itqtQ | h\_v- cwnno eb, g`vb tMôf eb, mgZj figi eb Ges MïgxY eb | cwnno etb KLbl Rjve×Zv nq bv | KviY, G eb mgZj fig t`tk AtbK Dcti Aew`Z | wZbuU cveZ` tRjv, h\_v- ivzvgwU, LvmovQwo I ev`i evb Ges PÆMïg, K- evRvi, wntj U, nweMÄ, mbygmÄ I tgsj fxevRvi tRjvi cwnno GjvKvq cwnno eb t`Lv hvq | Gme GjvKvi gwU tKv\_vl jvj tP GtWj, tKv\_vl wPKb emj, Avevi tKv\_vl Dftqi wγκY | t`vtb t`vtb K¼iqg I gvtS gvtS emj qwo cv\_i hÿ | Gme GjvKvi cãvb MvQ MRØ, Mvgvi, tZj mj, KoB,

wPÎ 48 t cwnno etbi Dj k

tgntub, tm\_b BZ`w | wPzmiuZmifZ GjvKvq Rvi aj, wUwuj, eiab I wRj cvl qv hvq | cØYk`i gta` itqtQ nwiZ, wPzvevN, tgQvevN, ebweovj, fvj k, nwi Y, Dj k, weifbæaitbi evbi I nbsgvb, B, weifbæaitbi mvc, weifbæcRwvzi cvml, KxUcZ½ BZ`w | Gme GjvKvi gwU A`wq | mgÿcô nZ Gme fig tek Dcti Aew`Z nl qvq GLvrb cØwv Z Pvlver` nq bv | GK mgq Gme GjvKvq mwngZ msL`K cwnno tjvK Qrov tKvrbv tjvKRbl wQj bv ej tj B Pj | cwnno tjvtKiv Gme GjvKvq wekI GK c×wZtZ Pvlver` Kti hvtk SgPvl etj | SgPvl ntjv cwnno GjvKvq MvQcvjv tktU mvgwqK Pvlver` thLvrb GKm½ avb I Ab`vb` ktm`i exR cãZ t`qv nq | chqµtg tmLvrb cÛtg avb I cti Ab`vb` km` Drcw`Z nq | wKš` Rwg AmgZj nl qui Kvi tY Ges tmLvrb tm tPi cwb bv\_vKvtZ epoi I ciB G aitbi Pvlver` wbfPkxj | gwU tZ hZw`b DePZv\_wtK ZZw`b GKwU wbow` Rwg tZ Pvlver` Kti | cti cwnno iv H GjvKv cwi Z`wM Kti bZb tKvrbv GjvKvq hvq Ges GKB c×wZtZ Pvlver` Kti | AZxtZ cãQ 20 eQi ci ci GKB GjvKvtZ tjvKRb Pvlver` i Rb` wdti AvmZ Ges GtZ cwnno bZb Kti MvQcvjv Rtbk gwU DePZv wdti AvmZ | wKš` cwnno GjvKvtZ I RbmsL`v` z epxi dtj eZgvtb 3-5 eQti i gta`B GKB GjvKvtZ tjvKRb tK wdti AvmZ nt`Q etj B weifbæcwnno MvQ Rb kbi mshvM cvt`Q bv Ges GK Bmw` msukØ cØYkz I Zvt` i Avev`j nwi tq tdj tQ | dtj Rie%aiPÎ" i G AmigAm`Zvi Kvi tY cØKwZK fvi mvg` webó nt`Q | mw`uZK GK mgn`vq t`Lv tm tQ, cwnno GjvKvi weifbæMvtQi gta` ASZ 25wU AvR cãQ wej k |

g`vb#M0F e#bi cãvb Dw`c  
m#wi, tKI ov, KvKiov, ci i,  
evBb, Mivb, ayj, tMI qv,  
tnZvj, tMj cvZv BZ`w` |  
evN, nmi Y, ervi, mvc,  
tgSgmQ cãvb c0Yx |

mgZj figi e#bi gmu  
cãvbZ tj \$ncãvb, GtWj,  
jvj tP I A`h# | G e#bi  
cãvb e#j Kvj, KdVj  
BZ`w` |

evsj vt`tk giaR cwi tek  
tbB | Zte D`Eiv`Atj  
fvi Zi div`v evtai  
d#j b`b`xi cwbcbv  
AwZgvIvq Ktg hvl qvZ  
wKQyv giaR cwi tek t`Lv  
hvt`Q | GZ`Atj evejv,  
Ltqi, Avg, wj Pz ti BbuP  
cfwZ. fvtjv Rtb# |

m#ie#bi c#jv Ask R#ob  
tjvbrtj i cwi tek | G  
Qovl wntj tui wPz  
GjvKvq bj LvMovRvZxq  
Nvm Rtb# |

c0KwZKfite Ljvbr, ev#MinvU I mvZ`Ixi vq m#ie b A\_v`# tjvbr cwb i eb t`Lv hvq | Gme  
e#bi cãvb Dw`c ntjv m#wi, tKI ov, KvKiov, ci i, evBb, Mivb, ayj, tMI qv, tnZvj,  
tMj cvZv BZ`w` | c0Yx` i gta` i tq#Q wexleL`vZ i tqj te#j UvBMvi ev tWvivKvUv evN,  
tg#Qv evN, ebweovj, wPTv nmi Y, eb` i Ki, ARMi, wewfbaei#bi mvc, eb tgviM, wewfbae  
ai#bi cml, tgSgmQ, wewfbaei#bi KxUcZ½ cfwZ. | GQovr gmu i jeYv³Zvi I ci wfiE Kti  
cUqvLvjx, ei\_bv I ewi kv#j i mgy`ZxieZ#GjvKv, tbvqvLvjx I j`Ixc#j i mmi ZxieZ#  
GjvKv Ges Piv`Aj, P`EM0g I K· evRvti i mgy`ZxieZ#GjvKv Ges Piv`Aj mgt#i DcKtj  
e`vcK g`vb#M0F ebrqb Kiv ntq#Q | Gme GjvKvi cãvb MwQ ntjv tKI ov I evBb | Gme  
GjvKvi gmu GtWj ev t`vAvka, K`0v³, tjvbr I`Ivi h# |

mgZj figi e#bi gta` i tq#Q MvRxcj, Uv#vBj, gqgbmsn, w`bvRcj I isct#j i kvj eb |  
Gme e#bi gmu cãvbZ tj \$ncãvb, GtWj, jvj tP I A`h# | Gme gmu A`wq | Gme A`Atj i  
cãvb e#j ntjv kvj, KdVj Ges mvt\_ t`Lv hvq nj`yKoB BZ`w` | Gme A`Atj evNWvk,  
tg#QvevN, ebweovj, wkvj, evbi, nbgvb, mRvi# wewfbaei#bi mvc, \_B, wewfbae cRvzi  
cml, KxUcZ½ cfwZ. c0Yx t`Lv hvq |

M0gxY eb evsj vt`tki me#B Qwotq AvtQ | M0gxY e#b mvari YZ Avg, Rvg, KvWj, wj PzKoB,  
wkvj, Zvj, tLRj, bvi #Kj, mzwvi, tMj vcRvg, mtd`v, evejv, wRMv, wbg, evka, teZ BZ`w`  
MvQ t`Lv hvq | Gme e#b evNWvk, wkvj, mRvi# M0#MvK#j, ebweovj, tg#QvevN, \_B, wewfbae  
ai#bi mvc, e# cRvzi cml I KxUcZ½ t`Lv hvq |

**giaR cwi tek I Rie%uPT`**

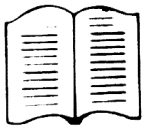
evsj vt`tk giaR cwi tek tbB | Zte evsj vt`tki D`Eiv`Atj fvi Z KZR. t`I qv div`v evtai  
d#j b`b`xi cwbcbv AwZgvIvq Ktg hvl qvZ GLv#b Kw.KvR e`vnZ nt`Q | ZvQovr gvby  
Rjv wv wntmte e`enit i Rb` MwQvjv tKtU tdj vtZ Gme GjvKvi ZvcgvIv ewx tctq#Q Ges  
Avenl qvl μgvMZ gta#figi gtZv ntZ P#j tQ | Zey cKZ. At\_°Gme GjvKvq giaR  
cwi tek weivR Ki#Q br | Kvi Y, GLv#b ewocvtZi cwi giv GLbl eQ#i clq 1500 ug. ug. |  
ivRkivx, bvtUvi, bl Mw beveMÄ, e\_ov tRjvi Ki#Zivq b`xi cwi dg fivM Ges w`bvRcj  
tRjvi `wIYvsk Gme GjvKvi A`sf# | GLv#b gmu A`wq | G gmu tZ evejv, Ltqi, Avg,  
wj Pz ti BbuP fvtjv Rtb# | giaR cwi te#ki Dw`c` i cvZv I KvU mvari Y i mvtjv nq | giac#q  
fvg#Z thme Dw`c Rtb# tm\_#tjv ntjv— K`vKUm, evejv, AvK` , d#bgbm, kZg#j, tLRj,  
wkvj KvUv, SvD, Kiwe cfwZ | GLv#b wewfbaei#bi mvc, \_Bmvc, wkvj, e#bv B#j, tevR,  
ebweovj, wewfbae cRvzi cml BZ`w` c0Yx t`Lv hvq |

**RjR cwi tek I Rie%uPT`**

b`xgvZK. evsj vt`tki kZKiv clq 6.5 fivM Rj | m#ie#bi c#jv Ask R#ob i tq#Q  
b`xbvj | m#ie b ntjv g`vb#M0F eb | GLv#bKvi cãvb MwQ m#wi, tMI qv, tKI ov, Mivb,  
ayj, ci i, evBb, KvKiov, tnZvj, tMj cvZv BZ`w` | G tjvbr Rtj i cãvb c0Yx nt`Q Kgx i,  
KvtgvU, Wj wcb, wewfbae cRvzi gvQ, wPsw, wewfbae cRvzi RjR mvc, KxUcZ½ BZ`w` |  
tbvbr cwb Qovl wntj tui wPzGjvKvq wKQyeb i tq#Q | tmLvtb cãvbZ bj LvMovRvZxq NvmB  
Rtb# | Zte wKQyMvQI t`L#Z cvl qv hvq | Gi gta` i tq#Q Rvi aj, wRj, Mvgvi, wUwvj  
BZ`w` |



aiPÎ 49 t tMj cîZv tj vbiRtj i Ab"Zg Diw"e



**mvi gg** evsj v`tk Pvi ai#bi eb i#q#Q| thgb- cvrmo eb, g`vb#M#f eb, mgZj figi eb  
 I M#gxY eb| evsj v`tki ebR cwi#tek w#f#b#ai#bi Diw"e I c#Yxi mgvtek t`Lv hvq|  
 Gme Diw"e I c#Yx ebR cwi#teki Rie%aiPÎ"tk mg# K#i#Q| evsj v`tk gi#R cwi#tek  
 tbB| Zte D#i#v#A#tj fvi#Zi divi°v ev#ai dtj b`b`xi c#b#c#v#n AwZgv#vq Ktg hvl qv#Z  
 wKQ#v gi#R cwi#tek t`Lv hv#Q| b`xgvZK.evsj v`tki c#q 6.5% Rj f#M| c#j#v m#j#ie  
 R#o#B i#q#Q Rj R cwi#tek| G Rj R cwi#tek Rie%aiPÎ" AZ"š#mg#|



## cŁVvEi gj"iqb 4.2

### mŁK DEti i cŁk ŁK WpY (✓) w b|

- 1| Mqvi tKvb&aitbi eŁbi Dw"Łc ?
  - K) cvnmo Gj vKvi
  - L) mgZj fŁgi
  - M) DcKj xq AAŁj i
  - N) g"vbŁMŁf eŁbi
  
- 2| tKvb&cwi ŁeŁk Dw"Łc i cŁZv I KvU i mŁfj v nq?
  - K) Rj R
  - L) ebR
  - M) gi aR
  - N) Rj R I gi aR
  
- 3| tKl ov tKvb&aitbi eŁbi eŁŁ?
  - K) mgZj fŁgi
  - L) cvnmo Gj vKvi
  - M) g"vbŁMŁf I DcKj xq eŁbi
  - N) MŁgxY eŁbi
  
- 4| kvj tKvb&aitbi eŁbi Dw"Łc ?
  - K) mgZj fŁgi
  - L) cvnmo Gj vKvi
  - M) mŁy i eŁbi
  - N) DcKj xq AAŁj i
  
- 5| tKvbŁU gi aR Dw"Łc ?
  - K) dŁwbgbmv
  - L) tnŁZvj
  - M) wCŁvŁj
  - N) KvŁŁj

### cW 4.3 Rxe%eipT" msi qitYi cOqRbixZv

#### G cW tkfI Avrb –

- Rxe%eipT" msi qitYi cOqRbixZv Avtj vPbv KiZ cvi teb|



cOZ`K Avem`Tj GKiu  
 ubw`e msl`K Rxe Ae`vb  
 Kite| Gi ewZug ntj  
 cOkuZK fvimig` bo nte|  
 GKvitYB Rxe%eipT" i mgSq  
 I msi qitYi AwZ ,iazcy<sup>e</sup>  
 melq|

Rxe%eipT" Ges Rxei Avem`Tj i gta` GKiu ubweo m`uK`itqtQ| cOZ`K Avem`Tj  
 cOkuZK ubqtg GKiu ubw`e cwi gvY Rxe Ae`vb Kti | mKs` gvbe mgvRi cOqRtb Avgiv  
 hLb tKvtrv GKiu Dv<sup>m</sup> ev cOYxK Zvi cOkuZK cwi tek t`K tenk cwi gvY tFvM Kti tcluj  
 ZLb tmLvtb cOkuZK fvimig` web` nI qvi m`vbr v`K| cvW 4.1-G myietbi nwi Y I  
 evfNi msl`vi mvgAm`Zvi K\_v Dtaj L Kiv ntaqQj | A\_v hwi myietb evfNi msl`v Ktg hvq  
 Zte nwi tYi msl`v teTo hvte Ges Gi dtj nwi tYi Lv` Pmn`v wguvtZ thtq MvtQi msl`v  
 Ktg hvte| dtj cOqRbix msl`K bZb cRtbvi Amefie nte br| Avevi evfNi msl`v teTo  
 tMj nwi tYi msl`v Ktg thZ cvfI | Gi dtj ubw`e GjuKvq GKB RvZi AmsL` MvQ  
 MRvtrvi m`vbr v`Kte Ges Giv gwUj LwYR`te`i Rb` tenk gvIvq cOZ`thvMZi Kite| dtj  
 tKvtrv Pvi MvQ myfite tetP IvZ m`qg nte br| Kvtrb Rxe%eipT" i mgSq Ges Gi  
 msi qitYi AZxe ,iazcy<sup>e</sup>melq|

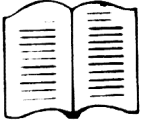
#### ubaj mLZ KvitY Rxe%eipT" i msi qitYi GKvS`cOqRb –

- cwi tetki fvimig` i qitYi Rxe%eipT" i msi qitYi Ab`Kv<sup>h</sup>
- Dv<sup>m</sup> Avgv`i Lv`, Ilg, evm`vb` Zwi i mi Avg, Ryj vobmn ubZ`cOqRbix Dcv`vb  
 mieivn Kti Ges Rxei evri cwi tek Mto tZvtj | GfKK MvQ t`K Avgiv GfKK  
 aitbi LwYRC`v`I wFUmgb cvB hv Avgv`i tivMcOZ`tiva qigZv ewxZ mrvqZv  
 Kti | evm`vb` Zwi i Rb`I GKB aitbi KvW e`envi Kiv nq br| tKvtrv KvW e`envi  
 Kiv nq`i Rv` Zwi tZ, Avevi tKvtrv KvW AvmevecT` Zwi tZ| Kvtrb cOZ`W KvRi  
 Rb` ubw`e Kvtrvi e`envi ubw`eZ Kitz cOkuZ`Z cOZ`K Dv<sup>m</sup> i msi qitYi  
 cOqRbixZv itqtQ| GKBfite cOZ`W cOYxI Avgv`i wvfbvte Dckvi Kti v`K|  
 Kvtrb Gf` i msi qitYi GKvS`cOqRbix|
- cOZ`K cOYx ev Dv<sup>m</sup> i tivMcOZ`tiva qigZv ev Ab`vb` ,Yv`Y GKIKg bq| GKB  
 cRvzi wvbwvbr Rxei gta`I `eipT`Zv itqtQ| cRbb cOmuq Gme ,Yvej xi  
 msi qitYi Ges e`envi AZ`S`cOqRbix|
- wtkl wtkl wKOyDv<sup>m</sup> itqtQ hviv wtkl wtkl tKvtrv cOYxi Avem`Tj wntmte KvR  
 Kti | eb fvg t`K MvQcvi v tKtU eb DRvo nI qvi `iab eb`RŠ, cvL I KvUcZ`tzi  
 Avem`Tj web` ntaq hvq| GK mgq evsj v`tki AtbK etbB evN I AtbK aitbi  
 eb`cOYx w`gvb wqj | eZgvtb tenkifvM etbB Giv wejB| Kvtrb Dv<sup>m</sup> I  
 cOYxRMtzi fvimig` i qitYi Rxe%eipT" msi qitYi wtkl cOqRbixZv itqtQ|
- wvP` me Dv<sup>m</sup> I cOYx th tKej cOkuZK fvimig` i qitYi, Lv`, wktfi i KvBrgvj,  
 Ryj vob, AvmevecT`i KvW Ges Ab`vb` Kvtr e`euZ nq Zv bq, Rxe%eipT" cOkuZK  
 tmS`h`I A`wvZK Dbqtb I ,iazcy<sup>e</sup> fvgKv cvj b Kti | ZvB cvK` Pwqvlvob,  
 tevUmbK`vj MvtWb I Ab`vb` wP`vtrv b KgRvU I Rxe%eipT" i AZ`S` ,iazcy<sup>e</sup>  
 fvgKv itqtQ|

Dv<sup>m</sup> Avgv`i Lv`, Ilg,  
 evm`vb, Rxei evri cwi tek  
 I Ryj vobmn ubZ`cOqRbix  
 Dcv`vb mieivn Kti |  
 Kvtrb cOkuZ`Z cOZ`K  
 Dv<sup>m</sup> i msi qitYi cOqRb|

Dv<sup>m</sup> I cOYxRMtzi  
 fvimig` i qitYi Rxe%eipT"  
 msi qitYi wtkl  
 cOqRbixZv itqtQ|

Rxe%eipT" cOkuZK fvimig`  
 i qitYi, Lv`, wktfi i KvBrgvj,  
 Ryj vob, KvW cFvZ OrovI  
 cOkuZK tmS`h`I A`wvZK  
 Dbqtb ,iazcy<sup>e</sup> Ae`vb ivL|



**mvi gg** Rix%ePÎ" I Rixei Aveim`tj i gta" ubweo m=úK©i`tqfQ| cûKuzK ubqtg cûZ`K  
 Aveim`tj GKUJ ubw` 0 msL`K Rix Ae`vb Kti | Gi e`wZµg ntj cûKuzK fvi mvg" bó nte/  
 Dm" Avgrt` i Lv", I lgr, eim`vb, Rixei eivri cwi`tek I Ryj vobmn ubZ`cûqvRbxq Dcv`vb  
 mieim Kti | KvRB cûKuzZ cûB mKj Dm" i msi`Y cûqvRb| Dm" I cûYRMtzi  
 fvi mvg" i`Yi`Rix%ePÎ" msi`Yi we`kl cûqvRbxqZv i`tqfQ| Dm" i gZvB eb`cûYl  
 Avgrt` i eû DcKvi Kti | Rix%ePÎ" cûKuzK fvi mvg" i`Yv, Lv", uk`i i KvRgyj, Ryj vob,  
 AvmevecfTi KiV cûFuz. Qvovl cûKuzK tms` h` A\_`KuzK Dbq`bl , iazc`Ae`vb i`tL|





**cufVvEi gj`iqb 4.3**

**mWk DEti i cufk Wk WPy (✓) w b|**

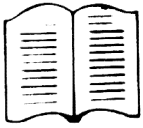
- 1| Rxe%eipT̄ I Zv` i Avev`j i gta` tKgb m`uK©AvtQ?
  - K) wweo m`uK©
  - L) Awweo m`uK©
  - M) %wi Zvi m`uK©
  - N) tKv`bv m`uK ©bB
  
- 2| Rxe%eipT̄ msi ¶Y Kivi cãvb Df`k Kx?
  - K) cWkuzK cwitefki fvimvg` i ¶v Kiv
  - L) gmiLi LwYR`è` ep` Kiv
  - M) Kv`Vi Pm`v` vugUv`bv
  - N) wkt`i i KvEgvj mSMh Kiv
  
- 3| eb DRvo ntj cWYx` i Kx ¶wZ nq?
  - K) Lv` i Afve nq
  - L) wePi`Yi mgm`v nq
  - M) Avevm`j webó nq
  - N) cRb`bi e`wNvZ NtU

### cW 4.4 Rxe%aPĪ ĩebġo eb DRĭoi, gġbvKĭj Pĭi I KĭUbkK cġqtMĭi cġve



#### G cW ġkġĭ Avĭrb –

- Rxe%aPĪ aġstm eb DRĭoi cġve ĩj LtZ cviġeb|
- Rxe%aPĪ aġstm gġbvKĭj Pĭi i cġve Avġj vPbv KĭġZ cviġeb|
- Rxe%aPĪ ĩebġo KĭUbkġKĭ ġĭZKĭi K ĩ Kmgġ ejġZ I ĩj LtZ cviġeb|



#### eb DRĭo I Rxe%aPĪ ĩi cġve

- eb AġbK cġYĭ Aveĭmġj | NbemĭZcYġevsj vġġk cġZĭbqZ ebġug ġkġU Aveĭmfug I KĭU.RĭgġZ ĭcġvġhĭZ Kĭv nġQ| eb DRĭoi dġj eġbi eġġ Avġġ MġhYKĭix cĭcĭML, KĭUcZġ Abġġ Pġj thġZ evaġ nġQ A\_ev Aveĭmfugi weeZġbi dġj nqġZv ġvĭvĭ hġvġQ| AġbK cġYĭ eb ġj vKĭ tQġo ġj vKĭj ġqi Avġkcvġk Pġj ġġmġQ| ġvbġĭ ĭ ĭkKĭġi ĭ ĭvMġj ġġm covq ġvbĭy Zġġ ĭ aġsm KĭġQ| ġKĭġbv ġKĭġbv cġYĭ Pĭgov ev nĭo ġġk ġġevb ġġev ĭvġġbv hġq weavq Zġġ ĭ ġġi Pĭgov ġbqv nġQ | eb DRĭoi dġj Rxe%aPĪ ġġZ G aġġbi weeZġ NUġQ|
- cĭvĭmo Aġġj ġLbĭ ġemĭi fĭvM ġj vKRġġK ġivMevj vB ġġk ġvġ cĭvĭ qvĭ Rbġ ġġIR Dĭvġġ ĭ ĭcĭ ĭbġP KĭġZ nq| eb DRĭoi dġj ĭkĭ KĭvLvĭvi Kĭvġvġj ĭB th ġKej Afve nġQ Zv bq, cĭvĭmo Aġġj emevmKĭix ġj vKRġġbi Rbġ ġġIR Dĭvġġ ĭ ġġ jġ nġq cġġQ|
- eb DRĭoi dġj cĭvġġkĭ fĭvĭmġġ bġ nġQ | evZġm ġġYĭ cĭvġvY ĭb ĭb evġ cvġQ| ġi dġj cġKĭZK ĭbqġg thme Dĭvġġ ev cġYĭ thLvġb th msLvġ vKĭi K\_v Zv vKġZ cviġQ bv| dġj BġKĭmġġġġ Amvġġm Zv ġLv ĭġQ Ges Dĭvġġ ĭ cġYĭ Dġġqi AvġZB msKġUi ġġLvġvġ nġq covQ|

eb eb cġYĭ Aveĭmġj ĭKġġ Aveĭmfug I KĭU.Rĭgġ Rbġ ġkġU DRĭo Kĭv eZġvġb Rxe%aPĪ ġġKĭi mġġab nġq cġġQ|

eb DRĭoi dġj cĭvġġkĭ fĭvĭmġġ bġ nġQ |

gġbvKĭj Pĭi nġj v ġvġġġ mġ ġKB cġRĭvġZi Dĭvġġ, thġb– ġm\_b ġvĭv %Zĭi eb| ġ aġġbi eb eġevġbvĭ ĭ K ġġk mnR ĭKġġ Rxe%aPĪ ĩi Rbġ AbġcġġhĭMġ| gġbvKĭj Pĭi i dġj ġvĭ Zvĭ DeġZv kĭvġ nĭvġġ tġġ I Rxe%aPĪ ġi cġve cġo|

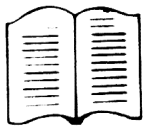
#### gġbvKĭj Pĭi I Rxe%aPĪ

gġbvKĭj Pĭi nġj v ġvbġĭ ġvĭv KĭUġġfĭġe mġ ġKB cġRĭvġZi Dĭvġġ ġvĭv %Zĭi eb| evsj vġġk 1871 mġj ġġk ġm\_b evMvb mġoĭ ġvaġġg gġbvKĭj Pĭi i Aġveġġe NġUġQ| ġ aġġbi eb eġevġbvĭ ĭ K ġġk mnR Ges A\_ġvġZK ĭ K ġġk ġvġRbK| thġb– ġKB aġġbi MvQ nġqġZ cġZĭU MġQĭ eaġbi nĭv cġq ġKB, ġKB mġġ ġme MvQ KZġ Kĭv hġq Ges eġevġbvĖ ġKĭġbv RĭUġ Zv vġK bv| mġvĭvYZ eġb MvQ ġvMġġbvĭ mġġ Nb Kġi (2 ġġvĭ ġġ ġġ) ġvMġġbv nq| MġQĭ evġi mġġ ġvġ hLb Avġjv Ges ġvĭUĭ LĭYRCġvġġ Rbġ cġZġhĭMġZv ġġo hġq ZLb ġaġeZġġK mġvĭ MvQ ġkġU ġġjv nq| cġZĭU MġQĭ Mo evġ ġvĖUġvġġ ġKBĭKġ vġK| ĭKġġ Rxe%aPĪ ĩi Rbġ ġ aġġbi eb ġvġUB DcġhĭMġ bq| KĭvY, hĭv ġ aġġbi eb cġġġvġ nq Zvġġj eQġi ġKĭġbv ġK mġġ me cvZv Sġo ĭMġġ msġkġ cġYġġ ĭ Aveĭmġj mġvġġevbġ nġq hġq| ZvQvov thme Dĭvġġ Qĭqġhġġ ĭv cġoġ Kġi ZĭvĖ ġġi hġq| ġQvov gġbvKĭj Pĭi i ġvaġġg mġ evMġġb thġnZzġKB aġġbi MvQ vġK Ges cġZĭU MġQĭ PĭvĖvĖ ġKB ĭKġġi nq ZvB ġvĖUĭ ĭbġPĭ Aġġkĭ LĭYRCġvġġ Rbġ cġZġhĭMġZv cġKĭZK eb ġġk ġemĭ vġK| KĭġRB ġvĖUġZ evMġġbi Dĭvġġ ĭ PĭvĖvĖ LĭYRCġvġġ NĖUĖZĭ ġLv ĭġZ cvġi| dġj ġm ġvĖUġZ cġvĖq ġKB aġġbi evMvb KĭġZ ġġġ MġQĭ evġ ĭKġġZv nq bv| ġvĖUĖ ZvĖ DeġZv kĭvġ nĭvġġ tġġ ġes Rxe%aPĪ ġi cġve cĭvĖ ġġj ġġZ nq|

**KxUbikK I Rie%aPÎ"**

evsj vt`tki µgea@vb  
Rbkwi³i Lv`" thvMtz  
Awak djbkxj km`  
Drcv`b Kiv nt`Q | dtj  
Kwlg mri I KxUbiktKi  
e`enri evotQ| GtZ  
cwi tek `IY evotQ hv  
Rie%aPÎ" a`stm , iazcY<sup>®</sup>  
fugKv ivLtQ|

evsj vt`tki RbmsL`v `EZMuztZ evotQ| evovZ RbmsL`vi Lv`" thvMtzvri Rb` evovZ Rwg  
cvl qvi mthvM tbB| ZvB dmtj i Drcv`b evovtbvi gva`tg gubtj i Lv`"i e`e`v Kiv nt`Q |  
dtj Gt`tk dmtj i Drcv`tbi nri eZ@vrb AtbK`Y tetotQ| djbkxj km` Drcv`tb mri  
I KxUbiktKi e`enri Acivnivh<sup>®</sup> Dbz RvtZi ktm`i RvZ D`mtebvi mrt\_ mrt\_ bZy bZy  
KxUcZ½ t`Lv hv`Q hv km`tK AvµgY Kti bó Kti t`q| ZvQvov Dbz RvtZi ktm`i  
ti vMej vB cîZtiva ¶lgZv Kg weavq mntrB wevfbreaitbi KxUcZ½ KZR. Avµvšl nt`Q |  
Gme KxUcZ½ `gtbi Rb` KxUbiktKi e`enri Acivnivh<sup>®</sup> RwtZ KxUbikK w`tj dmtj i  
¶wZKvi K KxUcZ½i mrt\_ mrt\_ DcKvix AtbK tcvKivKo Ges e`vO| gvi v hvq| dtj  
Rie%aPÎ" weZ<sup>®</sup> Avtm| thme tcvKivKo KxUbikK mn` Kivi ¶lgZv AR<sup>®</sup> Kti tdtj ,  
Zviv Avi I kw³kujx ntq Avei km`t¶tZ AvµgY Kti | dtj Ab`vb` tcvKivKo gvi v hvq|  
dmtj i RwtZ c@qvMKZ. KxUbikK cwebmnZ ntq b`xbvjv, Lvj wej I c`kzi hvq|  
KxUbiktKi cfvte tmLvtb gvQ I Ab`vb` RjR c@vX I AbRxe gvi v hvq| KtrB G aitbi  
KxUbikK e`enrti i dtj Rie%aPÎ" weZ<sup>®</sup> Avtm|



**mvi gg<sup>®</sup>** eb eb`c@vxi Aveim`j | wKŠ Aveimfug I Kul. Rigi Rb` Zv tktU DRvo Kivi  
dtj Rie%aPÎ" ugKxi m=µab ntq cotQ| eb DRvtoi dtj cwi tetki fvimig` bó nt`Q |  
GtZ Dw`c I c@vX Dftqi Aw`ZB msKtUi g`Lvgw` ntq cotQ| gtbvKij Pri ntjv Kwlgfite  
m<sup>®</sup> GKB cRmZi Dw`c, thgb- tm, b Øviv %Zwi eb| Gaitbi eb e`e`vcbri w`K t`tK  
mnR wKŠ Rie%aPÎ"i Rb` Ab`cvtvMx| GQvovl gtbvKij Prti i dtj gmU DePZv kw³  
nmi tq tdjvq Rie%aPÎ" Zvi cfvte cwi j w¶Z nt`Q | evsj vt`tki µgea@vb Rbkwi³i Lv`"  
thvMtz D`P djbkxj km` Drcv`b Kiv nt`Q | dtj Kwlg mri I KxUbiktKi e`enri  
evotQ| GtZ cwi tek `IY evotQ hv Rie%aPÎ" webtó , iazcY<sup>®</sup>fugKv ivLtQ|



### cŰVvĚi gj"iqb 4.4

#### mŰK DĚŦi i cŰk ŰK ŰPý (✓) Ű b|

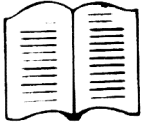
- 1| DŰ" I cŰxi AŰŦZji msKU t`Lv t`qvi cŰvb Kvi Y Kx?  
K) eb DRvo  
L) ŰbeŰŦ` DŰ" tKŦU tdjv I cŰxnZ"v  
M) SoSĀv  
N) KŰUbŰkŦKi e"envi
  
- 2| gŦbvKvj Pvi Kivi cŰvb ŦŰZKi Ű`K Kx?  
K) cŰxiRMŦZi AveŰm`j Űebó nq  
L) Rie%aPŦ"i Rb" DcŦhŰMx bq  
M) gŰUŦZ LvŦ`"i cŰxi gvY KŦg hvq  
N) gŰUi DeŦZv nŰi Ŧq hvq
  
- 3| D"P dj bkxj km" Drcv`Ŧb KŦŦmi e"envi AcŰi nvh?  
K) mvi  
L) KŰUbŰkK  
M) mvi I KŰUbŰkK  
N) cŰD Dcv`vb

### cW 4.5 Rxe%eipT~ msi qitY b'vkbyj cvK, Prioqvlubv I tevUmbK'ij MtWfbi cFve



#### G cW tkI Avicb –

- Rxe%eipT~ msi qitY b'vkbyj cvK P Ae`vb ij LtZ cvi teb|
- Rxe%eipT~ msi qitY Prioqvlubvi figKv eYb Ki tZ cvi teb|
- Rxe%eipT~ msi qitY tevUmbK'ij MtWfbi cFve Avtj vPbv Ki tZ cvi teb|



RbmsL`v ewxmn weifbæAv\_ fivgWRK Kvi tY wekpe`vcx Rxe%eipT~ b'vrvite tj vc cuf`Q| ZvB Kwlg Dcvtq cwi tek mpo Kti weij cRmZi vej fclq RxeRS' msi qitYi DfIk~ b'vrv ai tbi cxiz I cLuvq Avlxj b Kiv nt`Q | Gi gta~ b'vkbyj cvK, Prioqvlubv, tevUmbK'ij MtWfbi cFvZ Ab`Zg| ubtP G\_ tji vi cOZ`KuU m`utK`Avtj vPbv Kiv ntj v-

#### b'vkbyj cvK P Ae`vb

b'vrv Kvi tY thme Rxe%eipT~ ugwKi m`yab Ges clq vej fbi ct\_ tm\_ tjtK ati i vLv hvq tKvtrv GKw GjvKvK b'vkbyj cvK P i cmsZ Kivi gva`tg| A\_ f cKwZK cwi tek Mto DVv Rxe%eipT~ iK fvel`r cRtbf KvtQ Ztj ati i vLvi jt`q~ weifbæ`k ^`^`cKwZi tclvctU msi qitYi Rb~ cvK``vcb Kti | evsjv`tk MvRxcjy tRj vi fvl qvtj ofvl qvj b'vkbyj cvK P `vcb Kiv ntqtQ| GLvtb itqtQ kvj , KoB, Klvij , nj `yer`ij vMmn b'vrv ai tbi Dv`c | cOxi gta~ itqtQ ebweovj , mRviæ evNWik, tevR, eb`gvi M, Kvweovj x, b'vrv ai tbi cvL Ges mvc| eb wefvMmi fvel`r cwi Kiv bq vej fclq Dv`c I cOxi cRmZ I cKwZi m`gzcwi tek wlvitq Avbvi jt`q~ evsjv`tki clq 1% Rvq b'vkbyj cvK`ev m`uY` msi qitYi Avl Zvq Avbvi Kgm`P itqtQ|

Rxe%eipT~ msi qitYi DfIk~ Prioqvlubv, b'vkbyj cvK, tevUmbK'ij MtWfbi BZ w mpo Kiv ntqtQ| b'vrv Kvi tY wecbæRxe%eipT~ iK ati i vLv hvq tKvtrv GKw GjvKvK b'vkbyj cvK P i cmsZ Kivi gva`tg|

#### Prioqvlubv I Rxe%eipT~

Rxe%eipT~ msi qitY Prioqvlubvi figKv\_ iaZcy Prioqvlubvi gj-DfIk~ P Ewev`b ntj I tmLvtb weifbæcOxi Rb~ qz`qz` cwi tek mpo gva`tg vej fclq cOxmg` msi qitY Kiv nq Ges wekl wekl t`qit` cRbb cxiz gva`tg Zv` i esk we`vi Kwitq cKwZtZ tQto `qv nq| KvtRB Prioqvlubv thme RxeRS' `vtK etb Zv` i Aw`Zj vej fclq ntj I tm\_ tji vi cwi tek mpo gva`tg cLviq cKwZK etb m`u`vi Y m`e nq| evsjv`tki RvZiq Prioqvlubv ev RjvRK'ij MtWfbi igi cji Aew`Z| G Prioqvlubvq itaj telzj UvBmvi,

Prioqvlubvi gj DfIk~ P Ewev`b ntj I weifbæ cOxi Rb~ qz`qz` cwi tek mpo gva`tg vej fclq cOxmg` msi qitY Kiv nq|



P 50 t XvKv Prioqvlubvq evbi

wPZv evN, nvwZ, evbi, nwi Y, wmsn, fij k, j vj cvÜv, Uwici, wewfbæaiþbi evNmn eü cRwvZi  
`b"cvqx cÜYx, cvwL, mvc I Ab`vb" miwmc iþqþQ| GLvþb th tKej evsjv`tki cKwZtZ  
cvl qv hvq Ggbme cÜYx AvþQ Zv bq wv`kx cÜYxI iþqþQ| Rxe%wPÎ" QvovI Avqv`i wK¶vi  
Rb" wPwqvLvbv GK , iæZçYçFvgKv cvj b Kþi |



wPÎ 51 t PÆMðgi dtqR tj K wPwqvLvbv

wij cRwvZi Dw"ç msi ¶þY  
tevUwbK`vj Mvfwþbi wvkl  
Ae`vb iþqþQ| KvþRB  
wvþççdq Dw"ç mgr- GLvþb  
\_vKþj Zv t`þK exR msMð Kþi  
Dw"ç %wPÎ" msi ¶þY Kiv hvq|

**Rxe%wPÎ" msi ¶þY tevUwbK`vj Mvfwþbi figKv**

Rxe%wPÎ" msi ¶þY, wvkl Kþi wij cRwvZi Dw"ç msi ¶þY, tevUwbK`vj Mvfwþbi wvkl  
Ae`vb iþqþQ| t`þk cÜß hveZxq Dw"ç mvaviYZ tevUwbK`vj Mvfwþb \_vþK| Dw"ç  
cRwvZmgr- msi ¶þYi Rb" cÜqvRbxq cwiþekl tevUwbK`vj Mvfwþb mwð Kiv nq| ZvQvov



wPÎ 52 t wgiçy tevUwbK`vj Mvfwþb

teUmbK"ij MrtW#b wekji Ab`vb" eú t`tki MvQcuj vl msi qY Kiv nq| ZvB teUmbK"ij MrtW#b wltq Avgiv t`kiet`tki AtbK MvQcuj vl dztjtj i mft\_ cwiiPZ ntZ cwii | KvtrB wejBclq ev m=úY#ejB Dwtm mgf cãKuzK ebrAtj cvlqv br tMtj I teUmbK"ij MrtW#b \_vKtj Zv t`tk exR msMh Kti Avgiv Dwtm %eipT" msi qY KitZ cwii | AZGe, Dwtm msi qY teUmbK"ij MrtW#b AZ`sl, iazcy#fugKv cij b Kti \_vtK|



**mvi gg** Rxe%eipT" msi qYi Dti`tk" b`vkbvj cvK, #PmoqvLubv, teUmbK"ij MrtW#b BZ`w` mpo Kiv ntqtQ| bvbv Kvity thme Rxe%eipT" uguKi m=lyzb Ges clq wejybi ct\_ tm\_tjvtK ati ivLv hvq tKvtrb GKwU GjvKvK b`vkbvj cvK#ifcwsZ Kivi gva`tg| #PmoqvLubvi gj- Dti`k" #Ewetbv`b ntj I GLvrb weifbæcYxi Rb" qz`qz` cwitek mpo gva`tg wejBclq cYxmgf msi qY Kiv nq| wej cRwzi Dwtm msi qY teUmbK"ij MrtW#bi wekI Ae`vb itqtQ| KvtrB wejBclq ev wejB Dwtm mgf teUmbK"ij MrtW#b \_vKtj Zv t`tk exR msMh Kti Avgiv Dwtm %eipT" msi qY KitZ cwii |







