Module 7

Introduction

This module contains three main topics. First, the concept of cost of capital, and, in particular, how to calculate the component elements of a firm's cost of capital given their capital structure.

Secondly, using the cost of capital concept, how do firms assess capital investment opportunities? Various techniques are introduced to assist managers to assess whether projects will enhance shareholder wealth.

Finally the management of short and long-term funds are discussed with reference to the efficient management of both sources.

Upon completion of this module students will be able to:

Outcomes

- *Demonstrate* knowledge and understanding of the cost of capital and how it is calculated.
- *Demonstrate* knowledge and understanding of capital investment procedures and the various evaluation techniques that can be used to assess whether or not a capital project should be undertaken.
- *Demonstrate* knowledge and understanding of the source and cost of short-term funding together with an appreciation of the issues relating to raising equity.
- *Demonstrate* knowledge and understanding of the role of intermediate financial institutions.

Unit 16

Cost of Capital

Learning outcomes

Outcomes

Upon completion of this unit students will be able to:

- *Discuss* the general features, quotations, ratings, popular types, and international issues of corporate bonds.
- *Understand* the key inputs and basic model used in the valuation process.
- *Apply* the basic valuation model to bonds and describe the impact of required return and time to maturity on bond values.
- *Explain* yield to maturity (YTM), its calculation, and the procedure used to value bonds that pay interest semi-annually.
- *Differentiate* between debt and equity capital.
- *Discuss* the rights, characteristics, and features of both common and preferred shares.
- *Understand* the basic common share valuation using zero growth, constant growth, and variable growth models.
- *Understand* the composition of hybrid securities.

Activity 7.1

Activity

1. What is the cost of capital? What role does it play in making long-term investment decisions?
2. Why is the cost of capital measured on an after-tax basis? Why is the use of a weighted average cost rather than the cost of specific funds recommended?
3. How is the before-tax cost of debt converted into the after-tax cost?
4. Calculate the after-tax cost of debt if the before-tax cost of debt for a firm is 11 per cent and it has a 35 per cent marginal tax rate.
5. A firm has issued 10 per cent preferred share, which sold for $100 per share par value. The cost of issuing and selling the stock was $2 per share. The firm's marginal tax rate is 40 per cent. Calculate the cost of the preferred share.
6. A firm has a beta of 1.2. The market return equals 14 per cent and the risk-free rate of return equals 6 per cent. Calculate the cost of common equity.
7. A firm has common share with a market price of $25 per share and an expected dividend of $2 per share at the end of the coming year. The growth rate in dividends has been 5 per cent. Calculate the cost of the firm's common equity.
8. A firm has common shares with a market price of $55 per share and an expected dividend of $2.81 per share at the end of the coming year. The dividends paid on the shares over the past five years are as follows:

Year	Dividend
1	$2.00
2	2.14
3	2.29
4	2.45
5	2.62

   a. Calculate the cost of the firm's common equity.

9. A firm has determined its cost of each source of capital and optimal capital structure, which is composed of the following sources and target market value proportions:

Source of Capital	Target Market Proportions	After-Tax Cost
Long-term debt	40%	6%
Preferred stock	10	11
Common stock equity	50	15

   a. Calculate the weighted average cost of capital.

10. Promo Limited has compiled the following financial data:

Source of Capital	Book Value	Market Value	Cost
Long-term debt	$10,000,000	$8,500,000	5.0%
Preferred shares	$1,000,000	$1,500,000	14.0
Common equity	$9,000,000	$15,000,000	20.0
Total	$20,000,000	$25,000,000	

a. Calculate the weighted average cost of capital using book value weights.

b. Calculate the weighted average cost of capital using market value weights.

Activity 7.1 Feedback

1. What is the cost of capital? What role does it play in making long-term investment decisions?

   The cost of capital is the rate of return a firm must earn on its investment in order to maintain the market value of its stock. The cost of capital provides a benchmark against which the potential rate of return on an investment is compared.

2. Why is the cost of capital measured on an after-tax basis? Why is the use of a weighted average cost rather than the cost of specific funds recommended?

   The cost of capital is measured on an after-tax basis in order to be consistent with the capital budgeting framework. The only component of the cost of capital that actually requires a tax adjustment is the cost of debt, since interest on debt is treated as a tax-deductible expenditure. Measuring the cost of debt on an after-tax basis reduces the cost.

   The use of the weighted average cost of capital is recommended over the cost of the source of funds to be used for the project. The interrelatedness of financing decisions assuming the presence of a target capital structure is reflected in the weighted average cost of capital.

3. How is the before-tax cost of debt converted into the after-tax cost?

   The before-tax cost is converted to an after-tax debt cost (k_i) by using the following equation: $k_i = k_d \times (1 - t)$ where t is the firm's tax rate.

4. Calculate the after-tax cost of debt if the before-tax cost of debt for a firm is 11 per cent and it has a 35 per cent marginal tax rate.

   11% (1-0.35) = 7.15%

5. A firm has issued 10 per cent preferred share, which sold for $100 per share par value. The cost of issuing and selling the stock was $2

per share. The firm's marginal tax rate is 40 per cent. Calculate the cost of the preferred share.

$10 / ($100 - $2) = 10.2%

6. A firm has a beta of 1.2. The market return equals 14 per cent and the risk-free rate of return equals 6 per cent. Calculate the cost of common equity.

   6% + 1.2(14% - 6%) = 6% + 9.6% = 15.6%

7. A firm has common share with a market price of $25 per share and an expected dividend of $2 per share at the end of the coming year. The growth rate in dividends has been 5%. Calculate the cost of the firm's common equity.

   ($2 / $25) + 5% = 8% + 5% = 13%

8. Calculate the cost of the firm's common equity.

   a. Dividend growth = ($2.14 – $2.00) / $2.00 = 7%

      So, the cost of equity = ($2.81 / $55) + 7% = 5.1% + 7% = 12.1%

9. Calculate the weighted average cost of capital.

   a. WACC = (6% x 0.4) + (11% x 0.1) + (15% x 0.5)

      = 2.4 + 1.1 + 7.5 = 11%

10.

   a. Calculate the weighted average cost of capital using book value weights.

Long-term debt	50%
Preferred stock	5
Common stock equity	45
	100%

ka = (0.5)(5) + (0.05)(14) + (0.45)(20) = 2.5 + 0.7 + 9 = 12.2%

   b. Calculate the weighted average cost of capital using market value weights.

Long-term debt	34%
Preferred stock	6
Common stock equity	60
	100%

ka = (0.34)(5) + (0.06)(14) + (0.60)(20) = 1.7 + 0.84 + 12 = 14.5%

Unit 17

Capital Investment

Learning outcomes

Upon completion of this unit students will be able to:

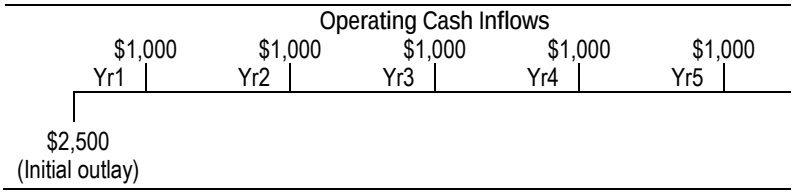
Outcomes

- *Understand* the importance of capital budgeting in decision-making.
- *Understand* the motives for key capital expenditure and the steps in the capital budgeting process.
- *Explain* the different types of investment projects.
- *Explain* the evaluation techniques of investment proposals.
- *Understand* the importance of the concept and calculation of net present value and internal rate of return in decision making.
- *Explain* the advantages and disadvantages of the payback method and accounting rate of return as techniques for initial screening of two or more competing projects.

Activity 7.2

Activity

1. What is capital investment (budgeting)? Do all capital expenditures involve non-current assets? Explain.
2. What weaknesses are commonly associated with the use of the payback period to evaluate a proposed investment?
3. What are the acceptance criteria for NPV? How do they relate to the firm's market value?
4. Do the NPV and IRR always agree with respect to accept-reject decisions? With respect to ranking decisions? Explain.
5. State the decision criteria applied when using the accounting rate of return, profitability index and discounted payback period methods to evaluate capital expenditure projects. What are the major limitations in using these methods to evaluate capital expenditure projects?
6. New Limited has a five-year maximum acceptable payback period. The firm is considering the purchase of a new machine and must choose between two alternatives. The first machine requires an initial investment of $14,000 and generates after-tax net cash inflows of $3,000 for each of the next seven years. The second machine requires an initial investment of $21,000 and provides an annual cash inflow after taxes of $4,000 for 20 years.
    a. Determine the payback period for each machine.
    b. Comment on the acceptability of the machines, assuming they are independent projects.
    c. Which machine should the firm accept? Why?
    d. Do the machines in this problem illustrate any of the weaknesses of using payback? Discuss.
7. Given the information in the following table and 15 per cent cost of capital:
    a. Calculate the net present value.
    b. Explain whether or not the project should be accepted.



8. A project requires an initial outlay of $100,000 and it will generate cash inflows of $25,000 in Year 1, $10,000 in Year 2, $50,000 in Year 3, $10,000 in Year 4, $10,000 in Year 5 and $60,000 in Year 6. The firm's cost of capital is 15%.
    a. Calculate the net present value.
    b. Explain whether or not the project should be accepted.

9. Tungsten Oil Company is considering investing in a new exploration project. The firm's cost of capital is 12% and the project is expected to have an initial after tax cost of $5,000,000. Furthermore, the project is expected to provide after-tax operating cash flows of $2,500,000 in year 1, $2,300,000 in year 2, $2,200,000 in year 3 and ($1,300,000) in year 4.
    a. Calculate the project's NPV.
    b. Calculate the project's IRR.
    c. Should the firm make the investment?

Activity 7.2 Feedback

1. What is capital investment (budgeting)? Do all capital expenditures involve non-current assets? Explain.

   Capital budgeting is the process used to evaluate and select long-term investments consistent with the goal of owner wealth maximisation. Capital expenditures are outlays made by the firm that are expected to produce benefits over the long term (a period greater than one year). Not all capital expenditures are made for fixed assets. An expenditure made for an advertising campaign may have long-term benefits.

2. What weaknesses are commonly associated with the use of the payback period to evaluate a proposed investment?

   The weaknesses of using the payback period are:

   - no explicit consideration of shareholders' wealth
   - failure to take fully into account the time factor of money
   - failure to consider returns beyond the payback period and, hence, overall profitability of projects.

3. What are the acceptance criteria for NPV? How do they relate to the firm's market value?

   Acceptance criterion for the net present value method is if NPV > 0, accept; if NPV < 0, reject. If the firm undertakes projects with a positive NPV, the market value of the firm should increase by the amount of the NPV.

4. Do the NPV and IRR always agree with respect to accept-reject decisions? With respect to ranking decisions? Explain.

   The NPV and IRR always provide consistent accept/reject decisions. These measures, however, may not agree with respect to ranking the projects. The NPV may conflict with the IRR due to different cash flow characteristics of the projects. The greater the difference between timing and magnitude of cash inflows, the more likely it is that rankings will conflict.

5. State the decision criteria applied when using the accounting rate of return, profitability index and discounted payback period methods to

evaluate capital expenditure projects. What are the major limitations in using these methods to evaluate capital expenditure projects?

The decision criterion applied, when using the accounting rate of return, is that a project is accepted if the accounting rate of return exceeds a predetermined reference rate of return. The decision criteria, when applying the profitability index, are that acceptable projects with a positive NPV will have a PI greater than 1.0, and projects with a negative NPV will have a PI of less than 1.0. The decision criterion, when applying the discounted payback period (DPP), is to compare it against an acceptable maximum period. Where the projects are mutually exclusive, the project with the shortest DPP is preferred. A major limitation of the accounting rate of return is that it fails to consider cash flows and the time value of money. By averaging the annual profits, future profits count as much as current profits. With mutually exclusive projects, the profitability index can provide an incorrect ranking. The DPP lacks the simplicity of the payback period, and for mutually exclusive projects it may provide inconsistent rankings.

6.

a. Machine 1: \$14,000 / \$3,000 = 4 years, 8 months

   Machine 2: \$21,000 / \$4,000 = 5 years, 3 months

b. Only Machine 1 has a payback faster than five years and is acceptable.

c. The firm will accept the first machine because the payback period of four years, eight months is less than the five-year maximum payback required by the firm.

d. Machine 2 has returns which last 20 years while Machine 1 has only seven years of returns. Payback cannot consider this difference; it ignores all cash inflows beyond the payback period.

7.

a. NPV = 1,000 (PVIFA15%,5) – 2,500

   = 1,000 (3.352) – 2,500 = \$852

b. Since NPV > 0, the project should be accepted

8.

a.

Year	CF	PVIF 15%,t	PV
1	\$25,000	0.870	\$21,750
2	10,000	0.756	7,560
3	50,000	0.658	32,900
4	10,000	0.572	5,720
5	10,000	0.497	4,970
6	60,000	0.432	25,920
			\$98,820

NPV = 98,820 – 100,000 = –$1,180 < 0

b. Since NPV < 0, the project should be rejected.

9.

Time	Cash Flow	PVIF (12%)	PV of CF
0	$(5,000,000)	1.0000	$(5,000,000)
1	$2,500,000	0.8929	$2,232,143
2	$2,300,000	0.7972	$1,833,546
3	$2,000,000	0.7118	$1,423,560
4	$(1,300,000)	0.6355	$(826,174)
		NPV	$(336,924)
		IRR	6.80%

No the firm should not accept the project.

Unit 18

Short and Long-Term Finance

Learning outcomes

Outcomes

Upon completion of this unit students will be able to:

- *Understand* short-term financial management, net working capital, and the related trade-off between profitability and risk.
- *Describe* the cash conversion cycle, its funding requirements, and the key strategies for managing it.
- *Discuss* inventory management.
- *Describe* the procedures for quantitatively considering cash discount changes.
- *Understand* the management of receipts and disbursements.
- *Understand* the role of intermediate financial institutions.

Activity 7.3

Activity

For your particular country produce a list of financial intermediaries, e.g. names of prominent banks, investment companies, insurance companies and pension funds.

Obtain the Annual Report of a bank or other financial institution. Review the Statement of Financial Position and the accompanying Notes and identify the similarities and differences to a chosen manufacturing or service related company's Statement of Financial Position.

For the manufacturing or service related company chosen in 2 above, establish the following:

a. the type of accounts that are included in Working Capital.

b. calculate the operating cycle (OC) and cash conversion cycle (CCC) and give your opinion on whether you consider these to be good or bad.

c. the relative mix of debt and equity and has this changed substantially from the previous year.

Activity 7.4

Activity

1. Why is short-term financial management one of the most important and time-consuming activities for a manager?
2. What is the difference between the firms operating cycle and its cash conversion cycle?
3. Why is it important for a firm to minimise the length of its cash conversion cycle?
4. What are the likely viewpoints of the finance manager, marketing manager, manufacturing manager and purchasing manager about the levels of the various types of inventory?
5. What risks do ordinary shareholders take that other suppliers of long-term capital do not?
6. Fishing Products Limited is analysing the performance of its cash management. On average, the firm holds inventory 65 days, pays its suppliers in 35 days, and collects its receivables in 15 days. The firm has a current annual outlay of $1,960,000 on operating cycle investments. The company currently pays 10% for its negotiated financing. (Assume a 360-day year.)
   a. Calculate the firm's cash conversion cycle.
   b. Calculate the firm's operating cycle.
   c. Calculate the daily expenditure and the firm's annual savings if the operating cycle is reduced by 15 days.

7. Cooper Limited uses 800 units of a product per year on a continuous basis. The product has carrying costs of $50 per unit per year and order costs of $300 per order. It takes 30 days to receive a shipment after an order is placed and the firm requires a safety stock of five days usage in inventory.

    a. Calculate the economic order quantity (EOQ).

8. Shapes Farm uses 12,600 baskets a year for apple shipment. Determine the optimum order quantity of baskets assuming the order costs per order is $600 and it costs $2 to carry a unit of basket in inventory per period.

Activity 7.3 Feedback

Your responses will depend on the organisation you choose.

Activity 7.4 Feedback

1. Why is short-term financial management one of the most important and time-consuming activities for a manager?

   Short-term financial management, the management of the firm's current assets and liabilities, is one of the manager's most important functions. Managing these accounts wisely results in a balance between profitability and risk that has a positive impact on the firm's value. Therefore, managing these current balance sheet accounts to achieve an appropriate balance between profitability and risk takes a large amount of a manager's time.

2. What is the difference between the firms operating cycle and its cash conversion cycle?

   A firm's operating cycle is the period when a firm has its money tied up in inventory and accounts receivable until cash is collected from the sale of the finished product. It is calculated by adding the average age of inventory (AAI) to the average collection period (ACP). The cash conversion cycle (CCC) is the number of days in the firm's operating cycle (OC) minus the average payment period (APP) for inputs to production. The CCC takes into account the time at which payment is made for material; this spontaneous form of financing partially or fully offsets the need for negotiated financing while resources are tied up in the operating cycle.

3. Why is it important for a firm to minimise the length of its cash conversion cycle?

   The longer the cash conversion cycle the greater the amount of investment tied up in low-return assets. Any extension of the cycle can result in higher costs and lower profits.

4. What are the likely viewpoints of the finance manager, marketing manager, manufacturing manager and purchasing manager about the levels of the various types of inventory?

   Financial managers will tend to want to keep inventory levels low to reduce financing costs. Marketing managers will tend to want large finished goods inventories. Manufacturing managers will tend to want high raw materials and finished goods inventories. The purchasing manager may favour high raw materials inventories if quantity discounts are available for large purchases.

   Inventory is an investment because managers must purchase the raw materials and make expenditures for the production of the product such as paying labour costs. Until cash is received through the sale of the finished goods the cash expended for creation of the inventory, in any of its forms, is an investment by the firm.

5. What risks do ordinary shareholders take that other suppliers of long-term capital do not?

   Common shareholders are the true owners of the firm, since they invest in the firm only upon the expectation of future returns. They are not guaranteed any return, but merely get what is left over after all the other claims have been satisfied. Since the common shareholders receive only what is left over after all other claims are satisfied, they are placed in an uncertain or risky position with respect to returns on invested capital. As a result of this risky position, they expect to be compensated in terms of both dividends and capital gains of sufficient quantity to justify the risk they take.

6.

   a. CCC = 65 + 15 – 35 = 45
   b. OC = 65 + 15 = 80
   c. Daily expenditure = \$1,960,000/360 = \$5,444.44
      Annual savings = \$5,444.44 × 15 × 0.10 = \$8,167

7. EOQ = $\sqrt{(2 \times 800 \times \$300)/50}$ = 98 units

   a. EOQ = $\sqrt{(2 \times 12,600 \times \$600)/2}$ = 2,750 units

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Accounting and Finance

Assignment 1

Semester x 20xx

Assignment

Date issued:	xxxxxx 20xx		
Due date and time:	xxxxxxxx 20xx at xxxpm		
Delivery:	Post to xxxxxxxx, or bring to class on xxxxx 20xx.		
Total marks:	100 marks		
Weighting:	25% of final course grade		
Instructions:	• Complete this cover sheet and attach it to your assignment. • Where applicable, show details of your workings. • This is an individual assignment and must be your own work. • Collusion, copying or plagiarism may result in disciplinary action • We advise that you keep a copy of this assignment.		
Student Name:			
Student ID No:			
Lecturer:	*xxxxx*	Course ID: xxxx	Sem x, 20xx
Student declaration:	I confirm that: • This is an original assessment and is entirely my own work. • This assignment has not previously been submitted as assessed work for any academic course.		
Student signature:			
ID No:			
Date of signature:			

Instructions

The purpose of this assignment is to provide you with experience in answering a number of questions based on the Management Accounting Modules in this course.

Instructions: Answer **ALL** questions.

Read each question carefully.

Answer only what is asked for.

Please type your responses or write clearly.

Summary of assignment:

Question	Type/Topic	Marks
1	Discussion Questions	10
2	Relevant Costs	10
3	Activity Based Costing	18
4	Cost-Volume-Profit Analysis	7
5	Standard Costing — Variances	16
6	Flexible Budgets — Variances	15
7	Performance Measurement	10
8	Balanced Scorecard	14
TOTAL		100

Question 1

Discussion questions

(10 marks)

a. Explain why the balanced scorecard differs from company to company. Identify the appropriate personnel responsible for the implementation of the balanced scorecard.

5 marks

b. Dunn and Evans started the DE Restaurant in 2007. They rented a building, bought equipment, and hired two employees to work full time at a fixed monthly salary. Utilities and other operating charges remain fairly constant during each month.

During the past two years, the business has grown with average sales increasing 1% a month. This situation pleases both Dunn and Evans, but they do not understand how sales can grow by 1% a month while profits are increasing at an even faster pace. They are afraid that one day they will wake up to increasing sales but decreasing profits.

Explain why the profits have increased at a faster rate than sales.

5 marks

Question 2

Relevant costs: Make or buy

(10 marks)

Custom Bicycles has been manufacturing its own wheels for its bikes. The company is currently operating at 100% capacity, and variable manufacturing overhead is charged to production at the rate of 30% of direct labour cost. The direct materials and direct labour cost per unit to make the wheels are $1.50 and $1.80, respectively. Normal production is 200,000 wheels per year.

A supplier offers to make the wheels at a price of $4 each. If the bicycle company accepts this offer, all variable manufacturing costs will be eliminated, but the $42,000 of fixed manufacturing overhead currently being charged to the wheels will have to be absorbed by other products.

a. Prepare an analysis for the decision to make or buy the wheels and recommend whether Custom Bicycles should buy the wheels from the outside supplier.

8 marks

b. What other factors should Custom Bicycles consider in making the decision to manufacture or buy the wheels?

2 marks

Question 3

Activity-based costing

(18 marks)

Able Fancy Cake Company manufactures and sells three flavours of small cakes: chocolate, apple, and cream. The batch size for the cakes is limited to 1,000 cakes per batch based on the size of the ovens and cake moulds owned by the company. Based on budgetary projections, the information listed below is available:

	Chocolate	Apple	Cream
Projected sales in units	500,000	800,000	600,000
PER CAKE data:			
Selling price	$0.80	$0.75	$0.60
Direct materials	$0.20	$0.15	$0.14
Direct labour	$0.04	$0.02	$0.02
Hours per 1000-cake batch:			
Direct labour hours	2	1	1
Oven hours	1	1	1
Packaging hours	0.5	0.5	0.5

Total overhead costs and activity levels for the year are estimated as follows:

Activity	Overhead costs	Activity levels
Direct labour		2,400 hours
Oven	$210,000	1,900 oven hours
Packaging	$150,000	950 packaging hours

a. Use activity based costing (ABC) for the chocolate cake, to calculate the estimated overhead costs per thousand cakes and the estimated operating profit per thousand cakes.

8 marks

b. Using a traditional costing system (with direct labour hours as the overhead allocation base), for the chocolate cake, calculate the estimated overhead costs per thousand cakes and the estimated operating profit per thousand cakes.

6 marks

c. Explain the difference between the profits obtained from the traditional costing system and the ABC system. In doing so, briefly explain which system provides a better estimate of profitability and why.

4 marks

Question 4

Cost-volume-profit analysis

(7 marks)

Miller Limited sells car batteries to service stations for an average price of $30 each. The variable cost of each battery is $20 and monthly fixed manufacturing costs total $10,000. Other monthly fixed costs of the company total $8,000.

a. Determine the breakeven point and the margin of safety, both in number of batteries and in dollars. Assume sales total $60,000.

4 marks

b. Determine the breakeven level in number of batteries, assuming variable costs increase by 20%.

2 marks

c. Determine the breakeven level in number of batteries, assuming the selling price goes up by 10%, fixed manufacturing costs decline by 10%, and other fixed costs decline by $100.

1 mark

Question 5

Standard costing — variances

(16 marks)

Wilson's Woollens manufactures jackets and other wool clothing. A certain designed ski jacket requires the following:

Direct materials standard:	2 square metres at $13.50 per metre
Direct manufacturing labour standard:	1.5 hours at $20.00 per hour

During the third quarter, the company made 1,500 jackets and used 3,150 metres of fabric costing $39,375. Direct labour totalled 2,100 hours for $45,150.

The company's chief financial officer is interested to know how actual production costs compared against standard costs during the third quarter and asks you to provide a variance analysis report.

Prepare a variance analysis report for the chief financial officer for the standard cost variances for direct materials and direct labour, indicating whether the variances are favourable or unfavourable with possible reasons for each of the variances.

16 marks

Question 6

Flexible budgets — variances

(15 marks)

Different managers in Gates Limited require varying degrees of managerial accounting information. Because of the need to comply with the managers' requests, four different variances for manufacturing overhead are calculated each month. The information for the September overhead expenditure is as follows:

Budgeted output units	3,200 units
Budgeted fixed manufacturing overhead	$20,000
Budgeted variable manufacturing overhead	$5 per direct labour hour
Budgeted direct manufacturing labour hours	2 hours per unit
Actual fixed manufacturing costs incurred	$26,000
Actual direct manufacturing labour hours used	7,200 direct labour hours
Actual variable manufacturing costs incurred	$35,600
Actual units manufactured	3,400 units

Prepare a variance report for variable and fixed overhead costs explaining the possible reasons for the variances.

15 marks

Question 7

Performance measurement

(10 marks)

Kaiser Tool Company allows its divisions to operate as autonomous units. The operating data for 2010 follow:

	Drills ($)	Hammers ($)	Saws ($)
Revenues	2,250,000	500,000	4,800,000
Accounts receivable	800,000	152,500	1,435,000
Operating assets	1,000,000	400,000	1,750,000
Net operating income	220,000	60,000	480,000
Taxable income	165,000	90,000	385,000

a. Calculate the return on investment for each division and identify the division manager that is doing best with a brief explanation.

6 marks

b. Identify and briefly explain other factors that should be included when evaluating the managers.

4 marks

Question 8

Balanced scorecard

(14 marks)

Para Water (PW) is a manufacturer of bottled water. PW has been experiencing increased competition from other manufacturers. In an effort to improve performance, management intends to create a balanced scorecard. In a meeting, several measures were suggested by various managers to deal with the issue of declining profitability.

In the meeting, management has identified a key problem. Customers are taking too long to pay their invoices, and the company has an abnormal amount of bad debts. If this problem were solved, the company would have far more cash to invest in plant improvements. Investigation has revealed that much of the problem with late payments and unpaid invoices is apparently due to disputes about incorrect charges on the customer invoices. Incorrect charges usually occur because sales clerks enter data incorrectly on the sales orders.

In order to develop the balanced scorecard to deal with the identified problem, managers have suggested the following performance measures:

- Total sales revenue
- Sales to total assets
- Customer satisfaction with accuracy of customer invoices from monthly customer survey
- Customer wait time for service
- Average age of accounts receivable
- Written-off accounts receivable as a percentage of sales
- Percentage of customer invoices containing errors
- Percentage of employees who have attended the company's cultural diversity workshop
- Total profit
- Profit per employee
- Percentage of sales clerks trained to correctly enter data on sales orders

a. Create an integrated balanced scorecard using only the performance measures suggested by the managers. You do not have to use all the measures, but build a balanced scorecard that reveals the action plan for dealing with the problems with accounts receivable.

5 marks

b. Briefly describe the company's action plan to resolve the problem.

1 mark

c. Link each of the perspectives to achieve the desired outcome and briefly explain how the company is able to determine if the action plan is being effective.

8 marks

Assignment 1 — Solutions

Semester x 20xx

Assignment

Date issued: **Due date and time:** **Delivery:** **Total marks:** **Weighting:** **Instructions:**	xxxxxx 20xx xxxxxxxx 20xx at xxxpm Post to xxxxxxxx, or bring to class on xxxxx 20xx. 100 marks 25% of final course grade • Complete this cover sheet and attach it to your assignment. • Where applicable, show details of your workings. • This is an individual assignment and must be your own work. • Collusion, copying or plagiarism may result in disciplinary action • We advise that you keep a copy of this assignment.		
Student Name:			
Student ID No:			
Lecturer:	*xxxxx*	Course ID: xxxx	Sem x, 20xx
Student declaration:	I confirm that: • This is an original assessment and is entirely my own work. • This assignment has not previously been submitted as assessed work for any academic course.		
Student signature:			
ID No:			
Date of signature:			

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Please type your responses or write clearly.

Summary of assignment:

Question	Type/Topic	Marks
1	Discussion Questions	10
2	Relevant Costs	10
3	Activity Based Costing	18
4	Cost-Volume-Profit Analysis	7
5	Standard Costing — Variances	16
6	Flexible Budgets — Variances	15
7	Performance Measurement	10
8	Balanced Scorecard	14
TOTAL		100

Question 1

Discussion questions

(10 marks)

a. A company's Balanced Scorecard should be derived from√ and support its strategy√. Since different companies have different strategies, their Balanced Scorecards should be different√. Successful implementation requires the commitment of the entire organisation√√.

b. The fixed cost per meal served is decreasing with increased volumes, while the contribution margin per meal served remains constant. Apparently, most of the restaurant's expenses are fixed√. Therefore, as sales pass the breakeven point the profit will increase even faster√ because the fixed expenses have already been covered√. This allows sales to cover only variable expenses before contributing to the profit margin√, thereby causing it to increase at a faster rate√.

√ = 1 mark, total 10 marks

Question 2

Relevant costs: Make or buy

(10 marks)

Custom Bicycles

a.

	MAKE	BUY
Direct materials (200,000 × $1.50)	√$300,000	-0-
Direct labour (200,000 × $1.80)	√360,000	-0-
Variable manufacturing costs	√108,000	-0-
	($360,000 × 30%)	
Purchase price (200,000 × $4)	-0-	√800,000
Total annual cost	**√$768,000**	**√$800,000**

The wheels should continue to be manufactured by Custom Bicycles√. The company's net income would decrease $32,000 by purchasing the wheels√.

√ = 1 mark: total 8 marks

b. Other factors that could be considered include:

- Quality
- Availability
- Continuity of supply
- Delivery time
- Availability of resources

(Identify and discuss)

½ mark for each factor identified plus ½ for a comment: total 2 marks

Question 3

Activity-based costing

(18 marks)

Able Fancy Cake

Estimated overhead costs and activity levels:

= packaging overhead	packaging hours
= $150,000	950 hours
= $157.89	per packaging hour√

a. To calculate the estimated overhead costs for a batch of Chocolate cakes (using the ABC system), first calculate the activity-cost-driver rate for the oven activity.

Activity-cost-driver rate	= oven overhead	oven hours
	= $210,000	1,900 hours
	= $110.53	per oven hour√

Then calculate the overhead for a 1,000 cake batch by multiplying the number of activity hours per batch by the appropriate activity-cost-driver rate for each of the relevant overhead activities and sum to get the total overhead for the batch.

(1 x $110.53) + (0.5 x $157.89) = $189.48√

To calculate the estimated operating profit for a batch of chocolate cakes (using the ABC system), subtract the costs from the revenues:

Revenue	= 1,000 * $0.80	= $ 800.00√
Direct Material	= 1,000 * $0.20	= ($200.00)√
Direct Labour	= 1,000 * $.04 x 2 hrs	= ($ 80.00)√
Overhead		= ($189.48)√
Operating Profit		= $ 330.52√

√ = 1 mark, total 8 marks

b. To calculate the estimated overhead costs for a batch of chocolate cakes (using the traditional system), first calculate the overhead rate per direct labour hour.

Overhead per direct labour hour:

= Total Overhead	Total Direct Labour Hours
= $ 360,000	2,400 hours

= $ 150.00 per direct labour hour

Since it takes two direct labour hours per 1,000 chocolate cakes, the overhead is $300.00√

To calculate the estimated operating profit for a batch of chocolate cakes (using the traditional system), subtract the costs from the revenues:

Revenue	= 1,000 * $0.80	= $ 800.00√
Direct Material	= 1,000 * $.020	= ($200.00)√
Direct Labour	= 1,000 * $.04 x 2hrs	= ($ 80.00)√
Overhead		= ($300.00)√
Operating Profit		= $ 220.00√

√ = 1 mark, total 6 marks

c. Traditional system: Operating profit per batch of chocolate cakes is $220.00.√

ABC system: Operating profit per batch of chocolate cakes is $330.52.√

Because the products do not all require the same proportionate shares of the direct labour resources√, the allocation of the total overhead on that basis is not as accurate as using the ABC system. The ABC system allocates the overhead based on activity levels for the specific categories as well as activity usage by the product lines.√

√ = 1 mark, total 4 marks

Question 4

Cost-volume-profit analysis

(7 marks)

a. N = Breakeven units

$30N - $20N - $10,000 - $8,000 = 0

$10N - $18,000 = 0

N = $18,000/$10 = 1,800 batteries (BEP in units)√

BEP (dollars) = 1800 * 30 = $54,000√

Margin of safety (in dollars) = $60,000 - ($30 × 1,800) = $6,000√

Margin of safety (in units) = 2000 – 1800 = 200 batteries√

√ = 1 mark, total 4 marks

b. N = Breakeven units

$30N - $24N - $10,000 - $8,000 = 0

$6N - $18,000 = 0

N = $18,000/$6 = 3,000 batteries√√

√ = 1 mark, total 3 marks

c. N = Breakeven units

$33N - $20N - $9,000 - $7,900 = 0

$13N - $16,900 = 0 N = $16,900/$13 = 1,300 batteries√

√ = 1 mark, total 1 mark

Question 5

Standard costing — variances

(16 marks)

Wilson's Woollens

Direct materials variances:

Actual unit cost = $39,375/3,150 square metres = $12.50 per square metre√

Price variance = 3,150 × ($13.50 - $12.50) = $3,150 favourable√

Usage variance = $13.50 × [3,150 - (1,500 × 2)√]

= $2,025 unfavourable√

Reasons:

Price variance favourable because of:

- general decrease in price level (deflation)
- lesser quality material acquired at a cheaper price
- purchasing manager proactive in negotiating prices and securing good deals
- standard price has been incorrectly stated.

(1 mark for each possible reason: maximum 2 marks)

Efficiency Variance unfavourable because of:

- lesser quality materials therefore used more than the standard
- incorrect standard quantity

(1 mark for each possible reason: maximum 2 marks)

Direct manufacturing labour variances:

Actual labour rate = $45,150/2,100 = $21.50 per hour√

Price variance = 2,100 × ($21.50 - $20.00) = $3,150 unfavourable√

Efficiency variance = $20.00 × (2,100 - (1,500 × 1.5)√

= $3,000 favourable√

Reasons:

Price Variance unfavourable:

- increase in wages
- shortage of labour so new labour purchased at a higher price
- incorrect standard rate

(1 mark for each possible reason: maximum 2 marks)

Efficiency Variance favourable:

- Skilled workers
- Incorrect standards
- Well maintained machines

(1 mark for each possible reason: maximum 2 marks)

√ = **1 mark, total 16 marks**

Question 6

Flexible budgets — variances

(15 marks)

Gates Limited

Variable overhead spending variance = $35,600 - (7,200 × $5√) = $400 favourable√

- Cost of items in variable overhead declined√
- Quantity of items in variable overhead used has been lesser√

Variable overhead efficiency variance = $5 × (7,200 - 6,800*) = $2,000unfavourable√

*3,400 units × 2 hours = 6,800 hours√

- Used more direct labour hours than should have as per standard√
- Unskilled labour,√
- poor supervision of labour,√
- poorly maintained plant√

Fixed overhead spending variance = $26,000 - $20,000 = $6,000 unfavourable√

- Cost of fixed overhead items increased√

Fixed overhead production-volume variance = $20,000 - (3,400 × 2 × $3.125*) = $1,250 favourable√

*$20,000/(3,200 units × 2 hours) = $3.125√

- produced more than the denominator volume√

√ = 1 mark, total **15 marks**

Question 7

Performance measurement

(10 marks)

Kaiser Tool Company

a. Use of ROI as a performance measure√:

- Drills = 220,000/1,000,000 = 0.22 = 22%√
- Hammers = 60,000/400,000 = 0.15 = 15%√
- Saws = 480,000/1,750,000 = 0.274 = 27.4%√

Saws' manager had the best performance√ because he / she had the highest return on investment√, which offset his second-best return on sales.

√ = 1 mark, total 6 marks

b. Residual income√ should be considered and non-controllable factors such as the age of the assets√, also do the divisions have to comply with company policy in owning or leasing their equipment (inconsistency will lead to different operating assets values) and hence different ROI√.

- Also non-financial measures√ need to be considered.
- Any other valid comments should be given credit.

√ = 1 mark, total 4 marks

Question 8

Balanced scorecard

(14 marks)

Para Water

a.

Financial:

- Total profit√
- Average age of accounts receivable√

Customer:

- Customer satisfaction with accuracy of charge account bills√

Internal Processes:

- Percentage of charge account bills containing errors√

Learning and Growth:

- Percentage of sales clerks trained to correctly enter data on charge√

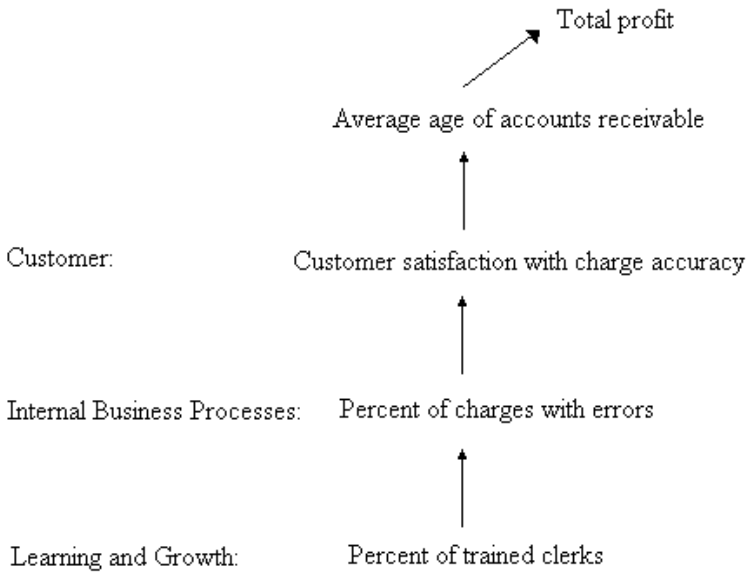
√ = 1 mark, total 5 marks

b. Action Plan – train sales clerks on data entry on sales orders√

√ = 1 mark, total 1 mark

c. Causal Link

b. Financial:



The percentage increase in trained sales clerks should reduce errors, that should increase accuracy of invoices, resulting in increase in

customer satisfaction that should see a reduction in the age of accounts receivable and bad debts with a resultant increase in total profits√√.

If the above does not happen then it suggests that the action plan is not effective√.

(5 for causal link; 2 for explanation; 1 for assessing.)

√ = **1 mark, total 8 marks**

Assignment 2

Semester x, 20xx

Assignment

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1	Business Finance Environment	20
2	Time Value of Money	21
3	Capital Budgeting	30
4	Working Capital Management	10
5	Long-Term Financing	5
6	Risk and Return	14
TOTAL		100

Question 1

Business finance environment

(20 marks)

a. A telecommunication company has recently launched a new mobile phone network. The project was financed through a series of bank loans arranged by the company's finance manager. Identify two primary activities of the finance manager in this situation and briefly explain how those activities are related to the firm's balance sheet.

6 marks

b. Finance can be classified into two major areas of study: financial services and managerial finance. Briefly describe the differences between the two.

4 marks

c. Suppose you have been offered a job as a financial advisor for a group of risk-averse investors. How would you differentiate risk-averse investors from other types of investors? Briefly explain your answer. Would you recommend a project with a relatively large dispersion of expected returns to more risk-averse investors or to less risk-averse investors? Explain why.

5 marks

d. What is the principal-agent relationship in the context of a business organisation? Briefly explain how this relationship can lead to the agency problem.

5 marks

Question 2

Time value of money

(21 marks)

a. Mr. Mighty has $15,000 to deposit in King Bank today at 5.1% interest compounded annually.

   i. Determine the balance of his savings account at the end of five years and at the end of ten years, respectively.

2 marks

   ii. Use your findings in part (i) to calculate the amount of interest earned in the first five years and the next five years, respectively. Briefly explain why the amounts of interest earned in each succeeding five-year period are similar or different.

4 marks

b. You have just started a new job. Based on your salary, you plan to make a deposit of $17,000 at the end of each year in a savings account that pays a fixed interest rate of 8% compounded annually. Suppose you are able to buy a small apartment at the end of six years for a guaranteed price of $129,000. Determine whether you will have enough money to buy the apartment at the end of six-year period. Briefly explain your answer.

5 marks

c. You have just agreed to sell your car to your friend. You are given an option of either receiving a total of $75,000 today or being paid $13,000 at the end of each year for the next 8 years. If you can earn 9% interest rate compounded annually from your bank, which option should you take? Briefly explain your answer.

5 marks

d. BVO Manufacturing Company has the option of making an investment in a new machine that will cost $150,000 today. It is estimated that this investment will provide the net cash inflows to the company over the next four years as shown in the following table.

End of Year	Net Cash Inflows
1	$35,000
2	$50,000
3	$40,000
4	$60,000

Should the company make this investment if it requires a minimum annual rate of return of 11% compounded annually? Show your workings.

5 marks

Question 3

Capital budgeting techniques

(30 marks)

Alberta Limited is considering two mutually exclusive projects. The relevant cash flows for each project are shown in the table below.

	Project Ajax	Project Eden
Initial Investment	$55,000	$60,000
Year	Net Cash Inflows	
1	$22,000	$35,000
2	$22,000	$25,000
3	$22,000	$20,000
4	$22,000	$15,000

a. Define the terms "mutually exclusive projects" and "independent projects".

4 marks

b. Determine the payback period of each project. If the company has the maximum acceptable payback period of three years, which project(s) should the company invest in? Explain why.

7 marks

c. Suppose the company has a cost of capital of 12%. Determine the Net Present Value (NPV) of each project. Which project is preferred in this situation and why?

7 marks

d. The finance manager at Alberta Limited is considering using the following equation to determine the risk-adjusted discount rate for each project.

$(RADR_j)$

$$(RADR_j) = R_F + [b_j \times (k_m - R_F)]$$

Where:

R_F = Risk-free rate of return

b_j = Beta for project j

k_m = Cost of capital.

Suppose the risk-free rate (R_F) observed in the market is 8% (k_m) and the market rate of return is 14%. The beta (b_j), which is a measure of risk, for project Ajax is 0.75 and the beta for project Eden is 2.0. Determine the risk-adjusted net present value for each project. Which project is preferred in this situation and why?

8 marks

e. Compare your investment decision made in part (c) to that made in part (d). Briefly explain why they are similar or different.

4 marks

Question 4

Working capital management

(10 marks)

Serco Industries is concerned about managing cash in an efficient manner. The average age of inventories is 75 days and accounts receivable are collected in 45 days. Accounts payable are paid approximately 30 days after they arise. All calculations are based on a 365-day year. The firm spends $40 million on operating cycle investments each year, at a constant rate.

a. Determine the firm's operating cycle, cash conversion cycle and the amount of financing required to support the firm's cash conversion cycle.

6 marks

b. Explain why a financial manager must pay attention to the firm's cash conversion cycle. Discuss how the firm's financial manager might be able to efficiently manage the firm's cash conversion cycle.

4 marks

Question 5

Long-term financing

(5 marks)

Ordinary shareholders are suppliers of long-term capital for the firm. What risks do ordinary shareholders take that other suppliers of long-term capital do not?

Explain how those risks affect the cost of equity financing for the firm.

5 marks

Question 6

Risk and return

(14 marks)

Slender Limited must choose between two asset purchases. The annual rate of return and the related probabilities given in the following table summarise the firm's analysis so far on these alternatives.

Project A			Project B	
Rate of Return	Probability		Rate of Return	Probability
-10%	0.01		10%	0.05
10%	0.04		15%	0.10
20%	0.05		20%	0.10
30%	0.10		25%	0.15
40%	0.15		30%	0.20
50%	0.30		35%	0.15
60%	0.15		40%	0.10
70%	0.10		45%	0.10
80%	0.05		50%	0.05
90%	0.04			
100%	0.01			

a. For each project, calculate:

   i. The range of possible returns

   ii. The expected value of return

   iii. The standard deviation of the returns

6 marks

b. Construct a bar chart of each distribution of rates of return.

4 marks

c. Which project would you consider to be the least risky? Explain your answer.

4 marks

Assignment 2 — Solutions

Semester x, 20xx

Assignment

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Question 1

Business finance environment

(20 marks)

a. A telecommunication company has recently launched a new mobile phone network. The project was financed through a series of bank loans arranged by the company's finance manager. Identify two primary activities of the finance manager in this situation and briefly explain how those activities are related to the firm's balance sheet.

The two primary activities of the financial manager in relation to the firm's balance sheet are:

i. Making investment decision, which is the launch of new mobile phone network in this case. Launching a new project increase the company's assets, so the investment decision concerns the asset side of the balance sheet.

ii. Making financing decisions, which is the borrowing from banks in this case. This decision increases the company's debts and hence it deals with the liabilities side of the balance sheet.

*(Marking criteria**:** 1 mark for identifying each activity correctly, 2 marks for a brief explanation of each activity)*

6 marks

b. Finance can be classified into two major areas of study: financial services and managerial finance. Briefly describe the differences between the two.

Financial services are concerned with the advice on financial products to individuals, business and government.

Managerial finance is concerned with the duties of the financial manager in the business firm. In other words, it is concerned with the management of the firm's funds within the firm. The duties of the financial manager may include capital budgeting, financial forecasting, credit administration, investment analysis, and funds procurement for the firm.

(Marking criteria: 2 marks for a brief description of each)

4 marks

c. Suppose you have been offered a job as a financial advisor for a group of risk-averse investors. How would you differentiate risk-averse investors from other types of investors? Briefly explain your answer. Would you recommend a project with a relatively large dispersion of expected returns to more risk-averse investors or to less risk-averse investors? Explain why.

Different types of investors have different risk preferences. The risk preference of the risk-averse investors is that they required higher expected returns to compensate them for taking greater risk. Risk-averse investors seek to avoid risk and as a result they tend to be conservative rather than aggressive when accepting risk for their investment.

A project with a relatively large dispersion of returns is considered a risky project. So, this project should be recommended to less risk-averse investors.

(Marking criteria: 3 marks for how to differentiate risk-averse investors with reasonable explanation, 1 mark for project recommendation and 1 mark for the explanation)

5 marks

d. What is the principal-agent relationship in the context of a business organisation? Briefly explain how this relationship can lead to the agency problem.

Owners (principal) of the firm hire financial managers (agents) to manage the firm for the owners' benefit.

In theory, financial managers would agree with the goal of owner wealth maximisation. In practice, however, managers may place personal goals ahead of corporate goals. This conflict is called the agency problem.

(Marking criteria: 2 marks for describing the relationship and 3 marks for the explanation)

5 marks

Question 2

Time value of money

(21 marks)

a. Mr Mighty has $15,000 to deposit in King Bank today at 5.1% interest compounded annually.

i. Determine the balance of his savings account at the end of five years and at the end of ten years, respectively.

Future value at the end of five years:

$$FV_5 = \$15{,}000 \times (1.051)^5$$

$$= \$15{,}000 \times 1.282371$$

$$= \$19{,}235.56$$

Future value at the end of ten years:

$$FV_{10} = \$15{,}000 \times (1.051)^{10}$$

$$= \$15{,}000 \times 1.644475$$

$$= \$24{,}667.12$$

(Marking criteria: 1 mark for each future value)

2 marks

ii. Use your findings in part (i) to calculate the amount of interest earned in the first five years and the next five years, respectively. Briefly explain why the amounts of interest earned in each succeeding five-year period are similar or different.

The amount of interest earned in the first five years:

$$FV_5 - PV = \$19{,}235.56 - \$15{,}000$$

$$= \$4{,}235.56$$

The amount of interest earned in the next five years:

$$FV_{10} - FV_5 = \$24{,}667.12 - \$19{,}235.56$$

$$= \$5{,}431.56$$

The increasing change in interest earned is due to compounding, the earning of interest on previous interest earned. The longer the

savings period is, the larger the total amount of interest collected will be. The amount of interest earned increases in each succeeding five-year period is due to the greater length of time that the principal sum of $15,000 is deposited. The incremental interest earned per five-year period increases with each subsequent five-year period, because every time interest is paid it is being paid on both the principal and all previous interest payments. The greater the previous interest earned, the greater the impact of compounding

(Marking criteria: 1 mark for each of the correct answer, 2 marks for the explanation)

4 marks

b. You have just started a new job. Based on your salary, you plan to make a deposit of $17,000 at the end of each year in a savings account that pays a fixed interest rate of 8% compounded annually. Suppose you are able to buy a small apartment at the end of six years for a guaranteed price of $129,000. Determine whether you will have enough money to buy the apartment at the end of six-year period. Briefly explain your answer.

(Marking criteria: 3 marks for calculation, 2 marks for explaining whether you can accumulate enough money to buy the house)

5 marks

Using the formula for the future value of an ordinary annuity to find how much you can accumulate your bonus until the end of the next six-year period.

$$\begin{aligned} FVA_n &= PMT \times \frac{1}{i} \times \left[(1+i)^n - 1\right] \\ &= \$17{,}000 \times \frac{1}{0.08} \times \left[(1.08)^6 - 1\right] \\ &= \$124{,}710.79 \end{aligned}$$

By depositing $17,000 regularly at the end of each year, you will have $124,710.79 at the end of six years. However, this amount is not enough for you to buy the apartment worth $129,000 at the end of six years.

Alternatively, you can find the present value of bonuses as follows:

$$\begin{aligned} PVA_n &= PMT \times \frac{1}{i} \times \left[1 - \frac{1}{(1+i)^n}\right] \\ &= \$17{,}000 \times \frac{1}{0.08} \times \left[1 - \frac{1}{(1.08)^6}\right] \\ &= \$78{,}588.95 \end{aligned}$$

Then compare this amount to the present value of the house price.

$$\begin{aligned} PV &= \frac{FV_n}{(1+i)^n} \\ &= \frac{\$129{,}000}{(1.08)^6} \\ &= \$81{,}291.88 \end{aligned}$$

The present value of the house price at the end of six-year period is $81,291.88, which is greater than the present value of bonus of $78,588.95.

Both methods arrive at the same conclusion. That is, the amount of bonus is not enough to finance the apartment.

c. You have just agreed to sell your car to your friend. You are given an option of either receiving a total of $75,000 today or being paid $13,000 at the end of each year for the next 8 years. If you can earn 9% interest rate compounded annually from your bank, which option should you take? Briefly explain your answer.

(Marking criteria: 3 marks for calculation, 2 marks for explaining which alternatives to choose)

5 marks

The easiest way to answer this question is to find the present value of $13,000 which will be paid at the end of the following eight years. This can be found by using the present value of an ordinary annuity formula.

$$\begin{aligned} PVA_n &= PMT \times \frac{1}{i} \times \left[1 - \frac{1}{(1+i)^n}\right] \\ &= \$13{,}000 \times \frac{1}{0.09} \times \left[1 - \frac{1}{(1.09)^8}\right] \\ &= \$71{,}952.65 \end{aligned}$$

The present value of an ordinary annuity is $71,952.65 which is less than $75,000. Therefore, it is better off to take the total amount today.

Alternatively, the two options can be compared by finding the future values of both cash flows. The future value of $75,000 is:

$$\begin{aligned} FV_n &= PV \times (1+i)^n \\ &= \$75{,}000 \times (1.09)^8 \\ &= \$149{,}442.2 \end{aligned}$$

The future value of $13,000 to be received at the end of the following eight years is:

$$FVA_n = PMT \times \frac{1}{i} \times \left[(1+i)^n - 1\right]$$

$$= \$13{,}000 \times \frac{1}{0.09} \times \left[(1.09)^8 - 1\right]$$

$$= \$143{,}370.2$$

Clearly, the $13,000 annuity yields smaller future value. It is better off to take the total payment of $75,000 today.

Note that both methods of calculation arrive at the same conclusion.

d. BVO Manufacturing Company has the option of making an investment in a new machine that will cost $150,000 today. It is estimated that this investment will provide the net cash inflows to the company over the next four years as shown in the following table.

End of Year	Net Cash Inflows
1	$35,000
2	$50,000
3	$40,000
4	$60,000

Should the company make this investment if it requires a minimum annual rate of return of 11% compounded annually? Show your workings.

(Marking criteria: 4 marks for the correct present value of each year, 1 mark for a brief explanation)

4 marks

End of Year	CF_t	PVIF	$PV(CF_t)$
1	$35,000	0.9009	$31,531.53
2	$50,000	0.8116	$40,581.12
3	$40,000	0.7312	$29,247.66
4	$60,000	0.6587	$39,523.86
Total			$140,884.17

The company should not make an investment in the new product because the present value of net cash inflows of $140,884.17 is less than the cost of investment of $150,000.

(Marking criteria: 4 marks for the correct present value of each year, 1 mark for a brief explanation)

5 marks

Question 3

Capital budgeting techniques

(30 marks)

Alberta Limited is considering two mutually exclusive projects. The relevant cash flows for each project are shown in the table below.

	Project Ajax	Project Eden
Initial Investment	$55,000	$60,000
Year	Net Cash Inflows	
1	$22,000	$35,000
2	$22,000	$25,000
3	$22,000	$20,000
4	$22,000	$15,000

a. Define the terms "mutually exclusive projects" and "independent projects".

Mutually exclusive projects are projects that compete with one another, so that the acceptance of one eliminates the others from further consideration.

Independent projects are projects with cash flows that are unrelated or independent of one another. The acceptance of one does not eliminate the others from further consideration.

(Marking criteria: 2 marks for each of the definitions)

4 marks

b. Determine the payback period of each project. If the company has the maximum acceptable payback period of three years, which project(s) should the company invest in? Explain why.

$$\text{Payback period of project Ajax} = \frac{\$55{,}000}{\$22{,}000} = 2.5 \textit{ years}$$

Payback period of project Eden

	Project B	
Year	Cash Inflows	Balance
0		-$60,000
1	$35,000	-$25,000
2	$25,000	$0
3	$20,000	
4	$15,000	

Payback period of project Eden is two years.

Project Eden must be chosen in this case. The reasons for this are as follows: (i) the two projects are mutually exclusive, so only one project can be selected even though Project Ajax's payback period is less than the maximum acceptable payback period. (ii) Project Eden has a shorter payback period than the other. It should be noted that the shorter the payback period leads to a quicker recovery of the initial investment and the lower risk exposure of the project.

(Marking criteria: 2 marks for the payback of each project, 1 mark for the correct project selection, 2 marks for the reasonable explanation)

7 marks

c. Suppose the company has a cost of capital of 12%. Determine the Net Present Value (NPV) of each project. Which project is preferred in this situation and why?

Project Ajax:

$$PVA_n = PMT \times \frac{1}{i} \times \left[1 - \frac{1}{(1+i)^n}\right]$$

$$= \$22{,}000 \times \frac{1}{0.12} \times \left[1 - \frac{1}{(1.12)^4}\right]$$

$$= \$66{,}821.69$$

$$NPV = \$66{,}821.69 - \$55{,}000$$

$$= \$11{,}821.69$$

Project Eden:

Year	Net Cash Inflows	Present Value
1	$35,000	$31,250.00
2	$25,000	$19,929.85
3	$20,000	$14,235.60
4	$15,000	$9,532.77
	Sum	**$74,948.22**

$$NPV = \$74{,}948.22 - \$60{,}000$$

$$= \$14{,}948.22$$

The NPV of project Eden is greater than the NPV of project Ajax, so project Eden is preferred.

(Marking criteria: 3 marks for the NPV of each project and 1 mark for explaining the investment decision)

7 marks

d. The finance manager at Alberta Limited is considering using the following equation to determine the risk-adjusted discount rate for each project.

$(RADR_j)$

$$RADR_j = R_F + [b_j \times (k_m - R_F)]$$

Where:

R_F = Risk-free rate of return

b_j = Beta for project j

k_m = Cost of capital

Suppose the risk-free rate (R_F) observed in the market is 8% and the market rate of return (k_m) is 14%. The beta (b_j), which is a measure of risk, for project Ajax is 0.75 and the beta for project Eden is 2.0. Determine the risk-adjusted net present value for each project. Which project is preferred in this situation and why?

The risk-adjusted discount rate (RADR) for each project:

$$RADR_{Alberta} = 0.08 + [0.75 \times (0.14 - 0.08)]$$
$$= 0.125 = 12.5\%$$

$$RADR_{Edena} = 0.08 + [2.0 \times (0.14 - 0.08)]$$
$$= 0.20 = 20\%$$

Project Ajax's risk-adjusted NPV:

$$PVA_n = PMT \times \frac{1}{i} \times \left[1 - \frac{1}{(1+i)^n}\right]$$

$$= \$22{,}000 \times \frac{1}{0.125} \times \left[1 - \frac{1}{(1.125)^4}\right]$$

$$= \$66{,}124.07$$

$$NPV = \$66{,}124.07 - \$55{,}000$$

$$= \$11{,}124.07$$

Project Eden's risk-adjusted NPV:

Year	Net Cash Inflows	Present Value
1	$35,000	$29,166.67
2	$25,000	$17,361.11
3	$20,000	$11,574.07
4	$15,000	$7,233.80
	Sum	**$65,335.65**

$$NPV = \$65{,}335.65 - \$60{,}000$$
$$= \$5{,}335.65$$

The risk-adjusted NPV of project Ajax is greater than the risk-adjusted NPV of project Eden, therefore, project Ajax is preferred in this situation.

(Marking criteria: 1 mark for the RADR of each project, 2 marks for the risk-adjusted NPV of each project and 2 marks for explaining the investment decision.)

8 marks

e. Compare your investment decision made in part (c) to that made in part (d). Briefly explain why they are similar or different.

In part (c), the NPVs were calculated without accounting for risk. This led to the acceptance of project Eden due to its NPV is greater than that of project Ajax. On the other hand, risk was accounted for in part (d) by means of calculating the risk-adjusted discounted rate. This rate can accommodate the trade-off between risk and return in the sense that the higher the risk, the higher the required rate of return. Project Eden is considered riskier as its beta is greater than that of project Ajax. In order to account for the risk difference between the two projects, the discount rate (the required rate of return) for project Eden must be higher than that of project Ajax. By using the risk-adjusted discount rate to calculate the NPV for each project, the resulting risk-adjusted NPVs in part (d) revealed that project Ajax is preferred. The investment decisions made in part (c) and (d) differ due to the fact that the former did not account for risk while the latter took risk into consideration. The risk-adjusted NPV is preferred as it is considered more appropriate and more closely related to the real world situation.

(Marking criteria: Mark ranges from 4 for a very clear and reasonable explanation to 0 for irrelevant and totally unclear.)

4 marks

Question 4

Working capital management

(10 marks)

Serco Industries is concerned about managing cash in an efficient manner. The average age of inventories is 75 days and accounts receivable are collected in 45 days. Accounts payable are paid approximately 30 days after they arise. All calculations are based on a 365-day year. The firm spends $40 million on operating cycle investments each year, at a constant rate.

Required:

a. Determine the firm's operating cycle, cash conversion cycle and the amount of financing required to support the firm's cash conversion cycle.

$$OC = AAI + ACP$$
$$= 75 + 45$$
$$= 120 \ days$$

$$CCC = OC - APP$$
$$= 120 - 30$$
$$= 90 \ days$$

$$daily \ operating \ \text{exp} enditure = \frac{total \ outlays}{365 \ days}$$
$$= \frac{\$40{,}000{,}000}{365 \ days}$$
$$= \$109{,}589.04$$

$$amount \ of \ financing \ required = Daily \ operating \ expenditure \times CCC$$
$$= \$109{,}589.04 \times 90$$
$$= \$9{,}863{,}013.70$$

(Marking criteria: 2 marks for OC, 2 marks for CCC, and 2 marks for the amount of financing required.)

6 marks

b. Explain why a financial manager must pay attention to the firm's cash conversion cycle. Discuss how the firm's financial manager might be able to efficiently manage the firm's cash conversion cycle.

This is because cash conversion cycle indicates the amount of time a firm's resources are tied up in low return assets. The longer the cash conversion cycle the greater the amount of investment tied up. Any extension of the cycle can result in higher costs and lower profits.

Turnover inventory (reducing AAI) as quickly as possible without stock-outs that result in lost sales. Collect accounts receivable (reducing ACP) as quickly as possible without losing sales from high-pressure collection techniques. Pay accounts payable (lengthening APP) as slowly as possible without damaging the firm's credit rating. Or, a combination of these can reduce the cash conversion cycle.

(Marking criteria: 1 mark for explaining the importance of CCC, 1 mark for each of the following suggestions: reducing AAI, reducing ACP, lengthening APP.)

4 marks

Question 5

Long-term financing

(5 marks)

Ordinary shareholders are suppliers of long-term capital for the firm. What risks do ordinary shareholders take that other suppliers of long-term capital do not?

Explain how those risks affect the cost of equity financing for the firm.

Ordinary shareholders are the true owners of the firm, since they invest in the firm only upon the expectation of future returns. They are not guaranteed any return, but merely get what is left over after all the other claims have been satisfied. Since the ordinary shareholders receive only what is left over after all other claims are satisfied, they are placed in a quite uncertain or risky position with respect to returns on invested capital.

As a result of this risky position, they expect to be compensated in terms of both dividends and capital gains of sufficient quantity to justify the risk they take. Hence, cost of equity is considered relatively higher than the costs of other forms of financing.

(Marking criteria: 2 marks for the correct description of shareholders' risks, 3 marks for the reasonable explanation.)

5 marks

Question 6

Risk and return

(14 marks)

Slender Limited

a. Calculations:

Project A

i. Range: 1.00 – (–0.10) = 1.10

ii. Expected return: $\bar{k} = \sum_{i=1}^{n} k_i \times P_{ri}$

Rate of Return k_i	**Probability P_{ri}**	**Weighted Value $k_i \times P_{ri}$**	**Expected Return $\bar{k} = \sum_{i=1}^{n} k_i \times P_{ri}$**
–0.10	0.01	–0.001	
0.10	0.04	0.004	
0.20	0.05	0.010	
0.30	0.10	0.030	
0.40	0.15	0.060	
0.45	0.30	0.135	
0.50	0.15	0.075	
0.60	0.10	0.060	
0.70	0.05	0.035	
0.80	0.04	0.032	
1.00	0.01	0.010	
	1.00		0.450

iii. Standard Deviation: $\sigma = \sqrt{\sum_{i=1}^{n} (k_i - \bar{k})^2 \times P_{ri}}$

k_i	$\bar{k}$	$k_i - \bar{k}$	$(k_i - \bar{k})^2$	P_{ri}	$(k_i - \bar{k})^2 \times P_{ri}$
–0.10	0.450	–0.550	0.3025	0.01	0.003025
0.10	0.450	–0.350	0.1225	0.04	0.004900
0.20	0.450	–0.250	0.0625	0.05	0.003125
0.30	0.450	–0.150	0.0225	0.10	0.002250
0.40	0.450	–0.050	0.0025	0.15	0.000375
0.45	0.450	0.000	0.0000	0.30	0.000000

k_i	$\bar{k}$	$k_i - \bar{k}$	$(k_i - \bar{k})^2$	P_{ri}	$(k_i - \bar{k})^2 \times P_{ri}$
0.50	0.450	0.050	0.0025	0.15	0.000375
0.60	0.450	0.150	0.0225	0.10	0.002250
0.70	0.450	0.250	0.0625	0.05	0.003125
0.80	0.450	0.350	0.1225	0.04	0.004900
1.00	0.450	0.550	0.3025	0.01	0.003025
					0.027350

$$\sigma_{\text{Project 257}} = \sqrt{0.027350} = 0.165378$$

Project B

i. Range: $0.50 - 0.10 = 0.40$

ii. Expected return: $\bar{k} = \sum_{i=1}^{n} k_i \times P_{ri}$

Rate of Return k_i	Probability P_{ri}	Weighted Value $k_i \times P_{ri}$	Expected Return $\bar{k} = \sum_{i=1}^{n} k_i \times P_{ri}$
0.10	0.05	0.0050	
0.15	0.10	0.0150	
0.20	0.10	0.0200	
0.25	0.15	0.0375	
0.30	0.20	0.0600	
0.35	0.15	0.0525	
0.40	0.10	0.0400	
0.45	0.10	0.0450	
0.50	0.05	0.0250	
	1.00		0.300

iii. Standard Deviation: $\sigma = \sqrt{\sum_{i=1}^{n} (k_i - \bar{k})^2 \times P_{ri}}$

k_i	$\bar{k}$	$k_i - \bar{k}$	$(k_i - \bar{k})^2$	P_{ri}	$(k_i - \bar{k})^2 \times P_{ri}$
0.10	0.300	–0.20	0.0400	0.05	0.002000
0.15	0.300	–0.15	0.0225	0.10	0.002250
0.20	0.300	–0.10	0.0100	0.10	0.001000
0.25	0.300	–0.05	0.0025	0.15	0.000375
0.30	0.300	0.00	0.0000	0.20	0.000000
0.35	0.300	0.05	0.0025	0.15	0.000375
0.40	0.300	0.10	0.0100	0.10	0.001000

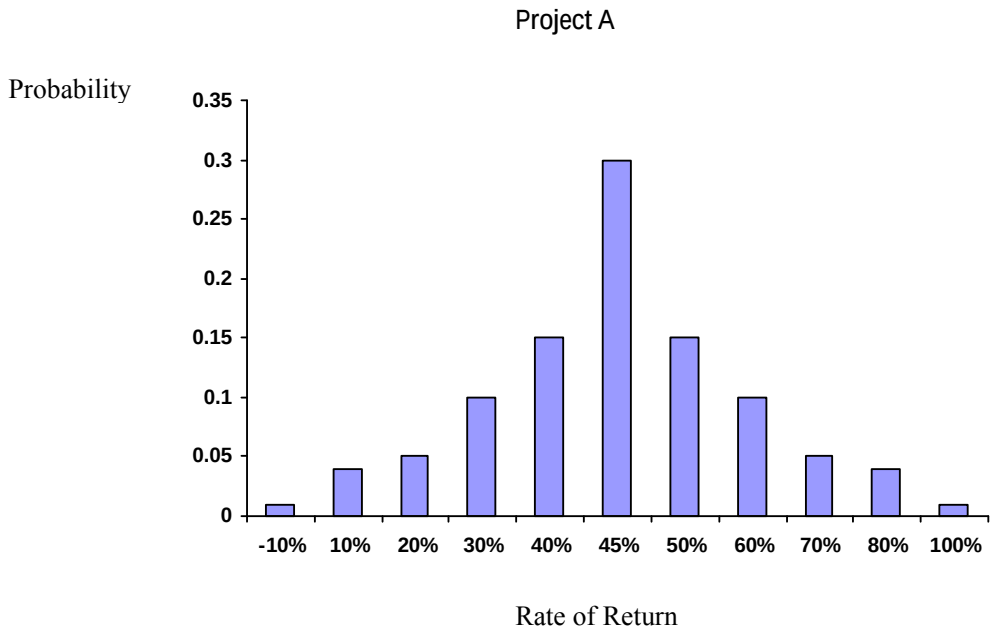
k_i	$\bar{k}$	$k_i - \bar{k}$	$(k_i - \bar{k})^2$	P_{ri}	$(k_i - \bar{k})^2 \times P_{ri}$
0.45	0.300	0.15	0.0225	0.10	0.002250
0.50	0.300	0.20	0.0400	0.05	0.002000
					0.011250

$$\sigma_{\text{Project 432}} = \sqrt{0.011250} = 0.106066$$

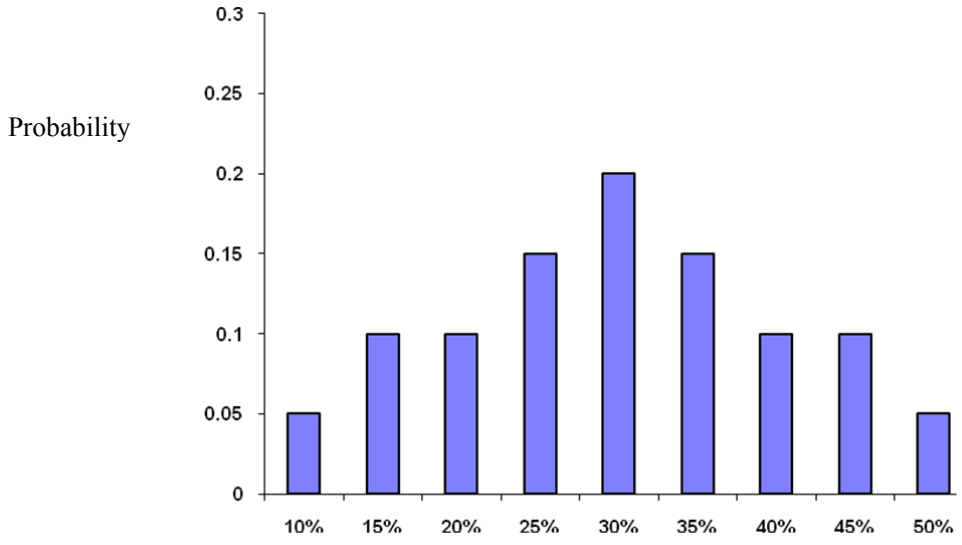
(Marking Criteria: 2 marks for the range for each project; 2 marks for the expected value for each project; 2 marks for the standard deviation for each project)

6 marks

b. Bar Charts



Project B



(Marking criteria: 2 marks for each bar chart for each project.)

4 marks

c. Summary Statistics

	Project A	**Project B**
Range	1.100	0.400
Expected Return ($\bar{k}$)	0.450	0.300
Standard Deviation (σ_k)	0.165	0.106

Since Projects A and B have differing expected values, the standard deviation should be the criterion by which the risk of the asset is judged. Since Project B has a smaller standard deviation, it is the opportunity with lower risk.

(Marking criteria: 1 mark for the summary for each project; 1 mark for identifying that standard deviation should be used to assess the relative risk; 2 marks for a conclusion and reason.)

4 marks

C9 Accounting and Finance Exam Questions

[Add institute name here]

Accounting and Finance

Date: xxxxxx 20xx

Start time: xxxxpm

Time allowed: 3 hours, plus 10 minutes reading time

Total marks: 100 marks

Weighting: 50% of course

Instructions:

Answer ALL questions.

Answer the questions directly in the answer booklet provided.

Read each question carefully.

Answer only what is asked for.

Please write clearly.

Summary of paper:

Question	Type/Topic	Marks
1	Budgeting	20
2	Cost-volume-profit	15
3	Absorption and Variable Costing	7
4	Activity-Based Costing	13
5	Investment Proposal	20
6	Cost of Capital	20
7	Managing Working Capital	5
TOTAL		100

Question 1
Budgeting
(20 marks)

On 26 April 20xx Tom Andrews submitted the master budget below for the sales division of Dunbar Ltd for the month of May, 20xx.

On 5 June 20xx he completed the budget below and submitted it to the company Chief Financial Officer (CFO).

	Master	Actual	Variances
Sales units	24,000	30,000	F
	$000	$000	
Variable costs			
Sales commissions	7,200	8,400	U
Travel expenses	15,600	18,300	U
Free samples given out	2,400	3,100	U
Total variable costs	25,200	29,800	U
Fixed costs			
Advertising	3,600	4,200	U
Rent	3,000	3,000	
Salaries	5,000	4,400	F
Vehicle depreciation	1,000	1,000	
Total fixed costs	12,600	12,600	
Total costs	37,800	42,400	U

F = favourable
U = unfavourable

On Monday 14 June 20xxx Tom was called into the CFO's office. The CFO began by praising Tom's division for the positive sales performance, but then angrily stated that he had let the costs for the month get out of control. Tom left the meeting really upset and feeling that something was not quite right. He has come to you for advice and assistance in responding to the CFO.

Required:

a. On the attached sheet (Appendix 1) compile a flexed budget with variances.

13 marks

b. Draft a response to the CFO, stating why you have compiled a flexed budget and what this reveals about the performance of the sales division for the month of May 2010.

7 marks

Question 2

Cost-Volume-Profit

(15 marks)

Michael Parkinson has decided to operate a small bakery making pies. The product is to be sold to restaurants and cafes. Michael has obtained the following information:

- The cost of baking equipment is $5,000, and the equipment is expected to last for five years, after which the equipment has no re-sale value. The maximum daily output of the equipment is 500 pies.
- He rents a small factory. The rental per week is $100.
- Other fixed costs amount to $7,500 per annum that includes maintenance, electricity and office overheads.
- Michael will work full time in his new business, and therefore he has to give up his job at a bakery for which he gets $750 per week. He will draw the same amount of salary from the new business.
- Based on the market information, Michael believes the pie can be sold at $1.50 each and that he should be able to sell an average of 8,000 pies every month.
- Material costs for the pie amount to $0.35 per pie.
- Other variable costs including gas, sauce and packing, are $0.15 per pie.

Required:

a. Calculate the contribution margin for the pie.

3 marks

b. Calculate the annual breakeven units and dollars.

3 marks

c. Calculate the profit (before tax) for the first year if Michael would be able to get if he manages to sell an average of 8,000 units per month.

3 marks

d. Michael expects to make $60,000 profit after tax (the tax rate is 35%) in the first year to finance his business expansion. How many pies must he sell in a year to achieve the profit target?

3 marks

e. Michael was asked to submit a quote for providing pies to a restaurant at a special price of $0.80 each. In return for the special price, the restaurant will guarantee Michael an annual purchase of not less than 12,000 units. Advise Michael whether he should accept the order. Justify your reason.

3 marks

Question 3

Absorption and Variable Costing

(7 marks)

Burns Company sells its products for $66 each. The current production level is 25,000 units, although only 20,000 units are anticipated to be sold.

Unit manufacturing costs are:

Direct materials	$12.00
Direct manufacturing labour	$18.00
Variable manufacturing costs	$9.00
Total fixed manufacturing costs	$180,000

Marketing expenses:

$6.00 per unit, plus $60,000 per year

Required:

a. Prepare an income statement using absorption costing.

3 marks

b. Prepare an income statement using variable costing.

4 marks

Question 4

Activity-based Costing
(13 marks)

The Doors Manufacturing Company produces two types of entry doors: Deluxe and Standard. The assignment basis for support costs has been direct labour dollars. For 2010, the company compiled the following data for the two products:

	Deluxe	Standard
Sales	50,000 units	400,000 units
Sales price per unit	$650.00	$475.00
Direct material and labour costs per unit	$180.00	$130.00
Manufacturing support costs per unit	$ 80.00	$120.00

Last year, the company purchased an expensive robotics system to allow for more decorative door products in the deluxe product line. The company's Chief Financial Officer suggested that an ABC analysis could be valuable to help evaluate a product mix and promotion strategy for the next sales campaign. She obtained the following ABC information for 2010:

Activity	Cost Drive	Cost	Total	Deluxe	Standard
Setups	Setups	$ 500,000	500	400	100
Machine-related	Machine hrs	$44,000,000	600,000	300,000	300,000
Packing	shipments	$ 5,000,000	250,000	50,000	200,000

Required:

a. Using the current system, calculate the estimated total cost of manufacturing one unit for each type of door and the profit per unit for each type of door.

2 marks

b. Using the current system, estimated manufacturing overhead costs per unit are less for the deluxe door ($80 per unit) than the standard door ($120 per unit). What is a likely explanation for this?

1 mark

c. Using the activity-based costing data presented above, calculate the revised estimated total cost to manufacture one unit of each type of entry door.

7 marks

d. Is the deluxe door as profitable as the original data estimated? Why or why not?

3 marks

Question 5

Investment Proposal

(20 marks)

To cater for additional customer demand, King Manufacturing (KM) is considering buying a new machine, which will improve work efficiency, as well as offering new products to customers. The machine will cost $250,000. John Hamilton, director of KM expects the machine will be sold for $50,000 at the end of the fourth year, when it will be replaced with a new model. The following is a projection of the additional income from the machine for the next four years:

Year 1	$80,000
Year 2	$90,000
Year 3	$65,000
Year 4	$55,000

KM has sufficient cash flow to finance the purchase of the machine. However, the directors also consider investing the money elsewhere which promises an annual return of 13%.

Required:

a. You are required to calculate the following three investment appraisal measures for this project:

- Accounting Rate of Return (ARR);
- Payback Period (PP); and
- Net Present Value (NPV).

9 marks

b. Write a memorandum to John Hamilton, and explain to him what ARR, PP and NPV are, as well as the decision rule for each, together with your recommendation whether KM should purchase the new machine.

11 marks

Question 6

Cost of capital

(20 marks)

a. Cactus Manufacturing has 50% of debt and 50% of equity in its capital structure. The firm is in the process of analysing its investment decision-making procedures. During the past month, two mutually exclusive projects have been evaluated by the firm; Projects North and South. A summary of the project analysis along with the investment decision is provided as follows:

Basic variables	Project North	Project South
Cost	$100,000	$100,000
Life	20 years	20 years
IRR	7%	12%
Least-Cost Financing:		
Source	Debt	Equity
Cost (After Tax)	6%	14%
Investment Decision:		
Action	Accept	Reject
Reason	7% IRR > 6% cost	12% IRR < 14% cost

Required:

Evaluate the appropriateness of the firm's decision-making procedures and recommend improvements to its procedures. Explain if the acceptance of Project North and rejection of Project South is in the best interest of the firm's owners.

9 marks

b. Quick Lift Limited is going to raise new capital by using bonds, preference shares and ordinary shares. If the capital is raised successfully, the market value of each capital component that the firm targets in its capital structure will be as shown in the table below:

Source of Capital	Market Value
Bonds	$2,500,000
Preference shares	$1,500,000
Ordinary shares	$2,000,000

The current tax rate of the company is 30%. The table below summarises all the relevant information regarding the firm's capital raising.

	Bonds	Preference Shares	Ordinary Shares
Face or par value		$10.00	$1.00
Underpricing per share		$0.50	$0.05
Market interest rate	7.69%		
Promised annual dividend		8.00%	
Projected dividend next year			$0.12 per share
Dividend growth rate			4.00%
Flotation cost		$0.40 per share	$0.07 per share
Life	10 years	infinite	infinite

Required:

Calculate the cost of each source of finance and the weighted average cost of capital (WACC). Explain how the company can reduce this weighted average cost of capital, assuming that there is no cost of financial distress.

11 marks

Question 7

Managing working capital

(5 marks)

Select ONE of the components of working capital below and discuss how to effectively manage this item as a way of managing net working capital:

- Cash/cash at bank
- Accounts Receivable
- Inventory

5 marks

Appendix 1

STUDENT ID Number_____

Question 1

Budget of Dunbar Ltd Sales Division for the month of May 20xx.

	Master	Actual	Master/ actual Variances	Flexed	Flexed/ actual Variances $	F/U
Sales units	24,000	30,000	F			
	$000	$000				
Variable costs						
Sales commissions	7,200	8,400	U			
Travel expenses	15,600	18,300	U			
Free samples given out	2,400	3,100	U			
Total variable costs	25,200	29,800	U			
Fixed costs						
Advertising	3,600	4,200	U			
Rent	3,000	3,000				
Salaries	5,000	4,400	F			
Vehicle depreciation	1,000	1,000				
Total fixed costs	12,600	12,600				
Total costs	37,800	42,400	U			

F = favourable
U = unfavourable

Appendix 2

Discount Table

Present value of $1 received in n periods of time

Period	8%	9%	10%	11%	12%	13%	14%	15%
1	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870
2	0.857	0.842	0.826	0.812	0.797	0.783	0.769	0.756
3	0.794	0.772	0.751	0.731	0.712	0.693	0.675	0.658
4	0.735	0.708	0.683	0.659	0.636	0.613	0.592	0.572
5	0.681	0.650	0.621	0.593	0.567	0.543	0.519	0.497
6	0.630	0.596	0.564	0.535	0.507	0.480	0.456	0.432
7	0.583	0.547	0.513	0.482	0.452	0.425	0.400	0.376
8	0.540	0.502	0.467	0.434	0.404	0.376	0.351	0.327
9	0.500	0.460	0.424	0.391	0.361	0.333	0.308	0.284
10	0.463	0.422	0.386	0.352	0.322	0.295	0.270	0.247

C9 Accounting and Finance Exam Answers

[Add institute name here]

Accounting and Finance

Date: xxxxxx 20xx

Start time: xxxxpm

Time allowed: 3 hours, plus 10 minutes reading time

Total marks: 100 marks

Weighting: 50% of course

Instructions:

Answer ALL questions.

Answer the questions directly in the answer booklet provided.

Read each question carefully.

Answer only what is asked for.

Please write clearly.

Summary of paper:

Question	Type/Topic	Marks
1	Budgeting	20
2	Cost-volume-profit	15
3	Absorption and Variable Costing	7
4	Activity-Based Costing	13
5	Investment Proposal	20
6	Cost of Capital	20
7	Managing Working Capital	5
TOTAL		100

Question 1

Budgeting

(20 marks)

a. Budget of Dunbar Ltd Sales Division for the month of May 20xx.

	Master	Actual	Master/actual Variances	Flexed	Flexed/actual Variances $	F/U
Sales units	24,000	30,000	F	30,000√	-	-√
	$000	$000				
Variable costs						
Sales commissions	7,200	8,400	U	9,000√	600√	F√
Travel expenses	15,600	18,300	U	19,500√	1,200√	F√
Free samples given out	2,400	3,100	U	3,000√	100√	U√
Total variable costs	25,200	29,800	U	31,500√	1,700√	F√
Fixed costs						
Advertising	3,600	4,200	U	3,600√	600√	U√
Rent	3,000	3,000		3,000√		
Salaries	5,000	4,400	F	5,000√	600√	F√
Vehicle depreciation	1,000	1,000		1,000√		
Total fixed costs	12,600	12,600		12,600√		
Total costs	37,800	42,400	U	44,100√	1,700√	F√

√ = ½ mark, total **13 marks**

b.

- Master budget is evaluating Tom's actual performance against budgeted volume.
- The increase in volume has increased variable costs.
- Flexed budget is compiled based on the adjusted volume – no volume variance – and so the flexed budget variable figures are adjusted for volume.
- Flexed budget indicates that the issue Tom had was caused by an initial volume variance.
- New variances show that Tom has kept his costs well under control, given the increase in sales.
- Variable costs are 6% under budget and this is favourable
- Fixed costs are, in total equal to budget
- Total costs are 4 % under budget and this is favourable.

Points in the response – any of the above points worth 1 mark each up to a maximum of

7 marks

Question 2

Cost-Volume-Profit

(15 marks)

Required:

a.

Workings

Fixed Costs	
Equipment depreciation	1,000.00
Rent (52 x 100)	5,200.00
Others	7,500.00
Salary for Michael	39,000.00
Total fixed costs	52,700.00

Variable Costs	
Materials	0.35
Other variable costs	0.15
Total variable costs	0.50

Contribution margin	
Selling price	1.50
Less: Variable costs	0.50
	1.00

3 marks

b.

Breakeven unit	
Fixed costs/contribution margin per unit	
($52,700/$1.00) =	52,700 units

Breakeven dollars	
Sale price x breakeven unit	
(52,700 x $1.50) =	$79,050

3 marks

c.

Income Statement	
Sale units = 8,000 x 12 =	96,000

Sales revenue	144,000
Less: Variable costs (96,000 x 0.50)	48,000
Contribution margin	96,000
Less: Fixed overheads	52,700
Profit before tax	43,300

3 marks

d.

Targeted profit before tax		
($60,000 / (1-35%)	92,307.69	
Units required to achieve the targeted profit		
(Fixed costs + Targeted profit)/Contribution margin per unit		
($52,700 + $92,307.69)/$1 =	145,008	

3 marks

e.

The contribution margin for this order is $3,600 (12,000 units X $0.30).

1 mark

Total units produced are 108,000 in a year (96,000 + 12,000). It is within the annual production limit of 182,500 (500 x 365).

1 mark

Michael should accept the order since it makes a contribution margin of $3,600 and that the business has the capacity to produce it.

1 mark

Question 3

Absorption and Variable Costing

(7 marks)

a. Absorption-costing income statement:

Sales (20,000 × $66)		$1,320,000
Cost of goods sold (20,000 × $46.20*)		924,000√
Gross margin		396,000√
Marketing:		
Variable (20,000 × $6)	$120,000√	
Fixed	60,000√	
		180,000√
Operating income		$216,000√

* $12.00 + $18.00 + $9.00 + ($180,000/25,000) = $46.20

√ = ½ mark, total 3 marks

b. Variable-costing income statement:

Sales (20,000 × $66)			$1,320,000√
Variable costs:			
Cost of goods sold (20,000 × $39*)		$780,000√	
Marketing (20,000 × $6)		120,000	900,000√
Contribution margin√		420,000√	
Fixed costs:			
Manufacturing			$180,000√
Marketing		60,000√	240,000
Operating income			$180,000√

* $12.00 + $18.00 + $9.00 = $39

√ = ½ mark, total 4 marks

Question 4

Activity-based costing

(13 marks)

Required:

a.

- Currently estimated deluxe-entry door total cost per unit is $260 = $180 + $80.√
- Currently estimated standard-entry door total cost per unit is $250 = $130 + $120.√
- Currently estimated deluxe-entry door profit per unit is $390 = $650 - $260.½√
- Currently estimated standard-entry door profit per unit is $225 = $475 - $250. ½√

√ = ½ mark, total 2 marks

b. Support manufacturing costs are currently allocated based on direct labour dollars. Because the deluxe doors are manufactured using the new robotics system, it appears that less direct labour is needed to manufacture each unit in the deluxe product line.√

1 mark

c.

- Manufacturing overhead cost driver rates:
- Setup activity is $1,000/setup = $500,000/500 setups.√
- Machine-related activity is $73.33/machine hour = $44,000,000/600,000 machine hours.√
- Packing activity is $20/shipment = $5,000,000/250,000 shipments.√
- Revised overhead costs per unit:
- Deluxe-entry door is $468 per unit = [($1,000 × 400) + ($73.33 × 300,000) + ($20 × 50,000)] / 50,000 units.√
- Standard-entry door is $65.25 per unit = [($1,000 × 100) + ($73.33 × 300,000) + ($20 × 200,000)] / 400,000 units.√
- Revised total cost per unit for the deluxe-entry door is $648.00 = $180.00 + $468.00.√
- Revised total cost per unit for the standard-entry door is $195.25 = $130.00 + $65.25.√

7 marks

d. No, the deluxe door is not as profitable as originally estimated because the deluxe door requires a disproportionate share of the overhead activities (the robotics system) and thus, more of the overhead costs are assigned to the deluxe door when using an ABC system.√

- Revised profit per unit for the deluxe-entry door is $2.00 = $650.00 - $648.00. ½√
- Revised profit per unit for the standard-entry door is $279.75 = $475.00 - $195.25. ½√
- Currently estimated deluxe-entry door profit per unit is $390 = $650 - $260. ½√
- Currently estimated standard-entry door profit per unit is $225 = $475 - $250. ½√

3 marks

Question 5

Investment Proposal

(20 marks)

Required:

a.

Accounting Rate of Return	
Average profit	
Year 1	80,000
Year 2	90,000
Year 3	65,000
Year 4	55,000
Total	290,000
Less: Depreciation	200,000
Total profit	90,000
Average profit	22,500
Average investment	
Initial investment	250,000
Residual value	50,000
	300,000
($300,000/2) =	150,000
ARR = ($22,500/$150,000)*100	15.0%

(Marking criteria: 1 mark for the average profit, 1 mark for average investment, plus 1 mark for the ARR.)

3 marks

Payback Period	
Cash inflows	
Year 1	80,000
Year 2	90,000
Year 3	65,000
Year 4	55,000

Total profit for the first 3 years amounts to $235,000, leaving $15,000 to be recouped in the fourth year. So the payback is 3 years + ($15,000/$55,000) = 3.27 years

2 marks

Net Present Value				
Outflows				(250,000)√
Inflows				
Year 1	80,000	0.885	70,800√	
Year 2	90,000	0.783	70,470√	
Year 3	65,000	0.693	45,045√	
Year 4	105,000	0.613	64,365√	250,680√
				680√√

√ = ½ mark, total 4 marks

b. Explanation for each following:

- **ARR** – 15% per annum. That is the average return the business will get based on average investment. The decision rule associated with ARR varies among entities. 15% return is considered low for this project, given the risk involved.

2 marks

- **Payback –** is 3.27 years. It means it will take KM 3.27 years to recoup the initial outlay with net cash inflows. Decision rule with PP varies among entities. Given the fact that the useful life of the machine is only four years, the PP of 3.27 years is considered unsatisfactory.

2 marks

- **NPV –** has a small positive cash flow of $680. The total future cash inflows over the life of the project are greater than the initial investment. The decision rule is the project should go ahead if the NPV is positive.

2 marks

- Recommendation is based on discussion above.

2 marks

- Memorandum format

1 mark

- Writing

2 marks

Question 6

Cost of capital

(20 marks)

a. Cactus Manufacturing

The firm is basing its decision on the cost to finance a particular project rather than the firm's combined cost of capital. This decision-making method is considered inappropriate as it may lead to erroneous accept/reject decisions. The firm should use its overall cost of capital as a criterion as it provides better decisions. This is because it takes into consideration the long run interrelationship of financing decisions.

Since the firm's capital structure consists of both debt and equity, the more appropriate approach is to calculate the firm's overall weighted average cost of financing (or WACC) and then compare this number to the rates of return offered by each project. The firm should select the project that provides the rate of return greater than the firm's WACC. The firm's weighted average cost of capital in this case would be 0.5 x 6% + 0.5 x 14% = 10%. With this cost, the company would have rejected project North that provides the IRR of 7% and would have accepted the project South yielding the IRR of 12%.

It is obvious that project South yielding 12% IRR is considered better than project North that provides only a 7% of IRR, but the company rejected the former and accepted the latter. The decision made by the firm is not considered as in the best interest of the firm's owners as the firm is not undertaking an investment that maximises the firm's value. By using a specific cost of capital, either debt or equity alone, to evaluate investment opportunities is clearly not in the best interest of the firm's shareholders.

(Marking criteria: 3 marks for the evaluation on the appropriateness of the firm's decision-making procedures, 3 marks for the recommendation for the more appropriate method, 3 marks for the explanation about the owner's interest.)

9 marks

b. Quick Lift

After-tax cost of debt:

$$k_i = k_d \times (1 - T) = 7.69\% \times (1 - 0.30) = 5.38\%$$

Cost of preference shares:

$$D_p = 8\% \times \$10 = \$0.80$$

$$N_p = \$10.00 - \$0.50 - \$0.40 = \$9.10$$

$$k_p = \frac{D_P}{N_P} = \frac{\$0.80}{\$9.10} = 8.79\%$$

Cost of new ordinary shares:

$$N_n = \$1.00 - \$0.05 - \$0.07 = \$0.88$$

$$k_n = \frac{D_1}{N_n} + g = \frac{\$0.12}{\$0.88} + 0.04 = 17.64\%$$

Source of capital	Market value	Weight	After-tax cost	Weighted Cost
Long-term debt	$2,500,000	0.42	5.38%	2.2596%
Preference shares	$1,500,000	0.25	8.79%	2.1975%
Ordinary shares	$2,000,000	0.33	17.64%	5.8212%
Total	$6,000,000	1.00		10.28%

The company weighted average cost of capital is 10.28%. In order to reduce the firm's WACC, the firm should replace ordinary shares, which are the most expensive, by preference shares, which are cheaper, or even by bonds, which are the cheapest, if there is no probability of financial distress.

(Marking criteria: 2 marks for after-tax cost of debt, 2 marks for cost of preference shares, 2 marks for ordinary shares, 2 marks for WACC, 3 marks for the explanation.)

11 marks

Question 7

Managing working capital

(5 marks)

Discussion on what the item is √ and how to effectively manage this item as a way of managing net working capital: √√√√

- Cash/cash at bank
- Accounts Receivable
- Inventory

5 marks