

**Paper 10- COST & MANAGEMENT ACCOUNTING AND
FINANCIAL MANAGEMENT**

Paper 10- Cost and Management Accounting and Financial Management

Full Marks: 100

Time allowed: 3 hours

This paper is divided into two Sections A & B, each carrying 50 marks.
Further each Section has been divided into two parts.

**SECTION – A (Cost and Management Accounting)
PART- I**

1. Answer the following questions:

(A) Choose the correct answer from the given four alternatives.

[1x6=6]

- (i) Management accounting is concerned with data collection from _____.
- (a) internal sources
 - (b) external sources
 - (c) internal and external sources
 - (d) internal or external sources
- (ii) An opportunity cost is the cost of
- (a) lost business
 - (b) unplanned new business
 - (c) obtaining new business opportunities
 - (d) the next best alternative course of action:
- (iii) Which of the following is not an example of functional budget?
- (a) Production budget
 - (b) Cost of production budget
 - (c) Materials budget
 - (d) None of the above
- (iv) Standard cost of material for output of 2,600 units is ₹ 71,500 and actual output is 2,550 units. If material mix variance is ₹ 1,095 adverse, what will be the material usage variance?
- (a) ₹1375 (Adverse)
 - (b) ₹ 2470 (Adverse)
 - (c) ₹1570 (Adverse)
 - (d) ₹2400 (Favourable)
- (v) In cost accounting, purpose of variance analysis is to:
- (a) understand reasons for variances.
 - (b) take remedial measures.
 - (c) improve future performances
 - (d) All of the above.
- (vi) Learning curve theory is not applicable to

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- (a) Direct labour
- (b) Material
- (c) Spoilage and defective works
- (d) Overhead

Answer:

- i. (c)
- ii. (a)
- iii. (d)
- iv. (b)
- v. (d)
- vi. (d)

(B) Match the following: [4×1=4]

	Column 'A'		Column 'B'
1.	Budgetary control provides basis for	A.	Unavoidable fixed cost
2.	Cost Accounting	B.	Encourages slack
3.	General Account Overhead	C.	Suitable information to operating management
4.	Incremental Budgeting	D.	Remuneration plan

Answer:

- 1. D
- 2. C
- 3. A
- 4. B

(C) Say True or False for the following question: [4×1=4]

- (i) The information in the management accounting system is used for three different purposes.
- (ii) When sales value (₹) is the limiting factor, products are ranked based on Profit Volume ratio.
- (iii) One of the principles of responsibility accounting is 'a target is fixed for each department or responsibility center.
- (iv) Idle time variance is always favourable.

Answer :

- (i) True
- (ii) True
- (iii) True
- (iv) False

PART -II

Answer any three questions out of four questions

[12×3=36]

2. (a) Fastride Cycle Ltd. purchases 20,000 bells p.a from outside supplier at ₹ 10 each . The management feels that these be manufacture the item within the factory. A machine costing ₹ 50,000 will be required to manufacture the item within the factory. The machine has an annual capacity of 30,000 units and life of 5 years . The following additional information are available:

Labour cost = ₹ 2

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Material cost per bell will be = ₹ 4

Variable overheads = 100% of labour cost

You are required to advise whether:

(i) The company should continue to purchase the bells from outside supplier or should make them in the factory ; and

(ii) The company should accept an order to supply 5,000 bells to the market at a selling price of ₹8.5 per unit? [4]

(b) A factory is capable of operating 5000 machine hours during a month interchangeable for any one or more products Gamma, Alpha & Beta. The following details are ascertained:

(1)

Products	No. of units per 100 hours	Material cost per unit (₹)
Gamma	25	5
Beta	50	3
Alpha	100	2

(2) Labour cost per machine hour ₹2 ; variable overhead per machine hour ₹3.

(3) The fixed cost of the department per month is ₹10,000.

(4) the share capital is ₹5, 40,000 and the directors expected 20% profit (before taxation).

(5) All financial expenses are included in the cost.

The following three proposals are to be considered:

(i) To fix the selling price by adding 20% on cost.

(ii) To use marginal costing technique for price fixation.

Evaluate the aforesaid three proposals and select the best proposal. [8]

Answer:

(a)

Cost of production per bell	₹
Material	4
Labour	2
Variable overhead (100% of labour)	2
Variable cost	8
Add : fixed cost (depreciation)	0.50
Cost of production per bell	8.50

Purchases cost of bell outside = ₹ 10

Annual savings in production of bells [20,000 bells (₹10- ₹ 8.50)]= ₹30,000.

Working notes :

Calculation of depreciation per unit

Depreciation p.a. = ₹ 50,000/5years = ₹ 10,000 p.a

Depreciation per unit = ₹ 10,000/20,000 = ₹ 0.50 p.u

(i) Since the marginal cost per unit of ₹8.5 is lower than the market price of ₹10, it is recommended to manufacture the component in the factory.

(ii) Marginal cost per bell is Rs. 8.00 . As depreciation of the machine is recovered on 20,000 bells, there will be no additional depreciation on the extra 5,000 bells to be sold in the market. Further the machine has additional capacity too. Therefore, the company is advised to supply 5,000 bells to the market at Rs. 8.50 per unit and make a profit of Re. 0.50 per unit i.e., total profit Rs. 2,500.

(b) Working Notes

Desired profit per annum

20% ROI = 5,40,000 × 20/100 = ₹ 1,08,000

Desired profit per month = ₹ 1,08,000 /12 = ₹ 9,000.

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Statement showing possible production per month :

Particulars	Gamma	Beta	Alpha
Total available machine hour	5,000	5,000	5,000
No. of units per 100 machine hour	25	50	100
Possible production (units)	1250	2500	5000

(i) Profitability statement per month (selling price fixed by adding 20% on cost)- Proposal I			
Particulars	Products		
Costs :	Gamma	Beta	Alpha
Material	6,250	7,500	10,000
Labour	10,000	10,000	10,000
Overhead			
Variable	15,000	15,000	15,000
Fixed	10,000	10,000	10,000
Total cost	41,250	42,500	45,000
Add : profit (20% on cost)	8,250	8,500	9,000
Sales	49,500	51,000	54,000

Proposal I is not correct since products Gamma and Beta are unable to earn the desired profit of ₹ 9,000 based on the return on investment.

(ii) Profitability Statement per month (fixation of selling price using marginal costing technique) – Proposal II			
Particulars	Products		
Variable costs :	Gamma	Beta	Alpha
	1,250	2,500	5,000
Material	6,250	7,500	10,000
Labour	10,000	10,000	10,000
Variable overhead	15,000	15,000	15,000
(a)	31,250	32,500	35,000
Desired contribution :			
Fixed costs	10,000	10,000	10,000
Profit (20% on investment)	9,000	9,000	9,000
(b)	19,000	19,000	19,000
Sales (a) +(b)	50,250	51,500	54,000
Selling price per unit (₹)	40.20	20.60	10.80

Proposal II is best suited since the selling price not only covers the cost but also earns the desired profit of ₹9,000 p.m.

3. (a) From the following particulars for a period reconcile the actual profit with the budgeted profit.

	Budgeted	Actual
	(₹ Lac)	(₹ Lac)
Direct Material	50.00	66.00
Direct Wages	30.00	33.00
Variable overheads	6.00	7.00
Fixed overheads	10.00	12.00
Net Profit	4.00	8.50
	100.00	126.50

Actual material price and wage rates were higher by 10%. Actual sales prices are also higher by 10%. [8]

(b) A manufacturing co. operates a costing system and showed the following data in

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respect of the month of November:

Actual no. of working days	22
Actual man hours worked during the month	8,600
No. of products produced	850
Actual overhead incurred	3,600
Relevant information from the company's budget and standard cost data is as follows :	
Budgeted no. of working days per month	20
Budgeted man hours per month	8,000
Standard man hours per month	10
Standard overhead rate per month per hour	50p.

You are required to calculate :

1. FOH Efficiency Variance
2. FOH Capacity Variance. [2+2=4]

Answer:

(a)

Sales Price Variance	$126.5 - [126.5 \times 100/110] =$	11.5(F)
Sales Volume Variance	$[126.5 \times 100/110] - 100 =$	15.0(F)
Sales Value Variance	$126.5 - 100$	26.5(F)
% of Volume Increase	15%	
Material Price Variance	$[66 \times 100/110] - 66$	6(A)
Material Volume Variance	$[50 \times 15/100] =$	7.5(A)
Material Usage Variance	$[50 \times 115/100] - [66 \times 100/110]$	2.5(A)
Material Cost Variance	$50 - 66$	16(A)
Wage Rate Variance	$[33 \times 100/110] - 33 =$	3(A)
Wage Volume Variance	$[30 \times 15/100] =$	4.5(A)
Wage Efficiency Variance	$[30 \times 115/100] - [33 \times 100/110] =$	4.5(F)
Wage Cost Variance	$30 - 33$	3.0(A)
Variable Overhead Volume Variance	$[6 \times 15/100] =$	0.9(A)
Variable Overhead Efficiency Variance	$[6 \times 115/100] - 7$	0.1(A)
Variable Overhead Cost Variance	$6 - 7 =$	1.0(A)
Fixed Overhead Cost Variance	$10 - 12$	2.0(A)

Statement showing the reconciliation of budgeted profit with actual profit

OR

Profit Variance Statement

Particulars		₹ (in lakhs)
Budgeted Profit		4.00
Add: Sales Price Variance	11.5	
Sales Volume Variance	15	
Wage Efficiency Variance	4.5	31.00
		35.00
Less: Material Price Variance	6.00	
Material Volume Variance	7.50	
Material Usage Variance	2.50	
Wage Rate Variance	3.00	
Wage Volume Variance	4.50	
Variable Overhead Volume Variance	0.90	

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Variable Overhead Efficiency Variance	0.10	
Fixed Overhead Cost Variance	2.00	26.50
Actual Profit		8.50

(b)

SRSH(1) (₹)	SRAH(2) (₹)	SRRBH(3) (₹)	SRBH(4) (₹)	ARAH(5) (₹)
$0.5 \times 8,500$	$0.5 \times 8,600$	$0.5 \times 8,800$	$0.5 \times 8,000$	
4,250	4,300	4,400	4,000	3,600

$$SR = \frac{\text{Budgeted Fixed Overhead}}{\text{Budgeted Hours}} = \frac{4,000}{8,000} = 0.50$$

$$RBH = \frac{22}{20} \times 8,000 = ₹8,800$$

$$SH = 850 \times 10 = 8,500$$

Where

(1) SRSH = Standard Cost of Standard Fixed overhead = ₹ 4,250

(2) SRAH = Standard Cost of Actual overhead = ₹ 4,300

(3) SRRBH = Revised Budgeted overheads = ₹ 4,400

Computation of Required Variances:

a. FOH efficiency Variance = (1) – (2) = ₹ 50(A)

b. FOH Capacity Variance = (2) – (3) = ₹ 100 (A)

4.(a) A manufacturing company has two division –Q and P. Division Q is mainly engaged in production of an electronic device and Division P packs and labels the product and sells it in the market. Division Q supplies 25,000 units of the product per month to P for packaging and labeling. Division Q incurs ₹ 16 as the variable cost for the product and fixed cost of ₹ 9,00,000 per year . Investment in fixed asset is ₹ 9,30,000. The division plans to have 12 % return on fixed asset as normal profits. Division P incurs ₹ 10 per product as variable expenses for packaging and marketing.

(i) Find the Transfer Price per unit of the product that Division Q can charge for transfer to P.

(ii) What will be profit of Division P if it can sell all the products in the market at ₹ 80 per unit?

(iii) If Division P can sell only 15,000 units of the product per month and asks Division Q to supply 15,000 units , what will be the effect on the effect on the Transfer Price and the profits of the divisions ?

[2+3+2=7]

(b) As a Cost and Management Accountant of Prachin Ltd., prepare a Sales Overhead Budget for the months of January, February and March from the estimates given below:

Expenses per month:	₹
Advertisement	3,000
Salaries of the Sales Department	4,500
Expenses of the Sales Department	1,500
Counter Salesmen's Salaries and Dearness Allowance	6,000

Commission to counter salesmen @ 1% on their sales.

Travelling salesmen's commission @ 10% on their sales and expenses @ 5% on their sales.

The sales during the period were estimated as under:

Month	Counter sales	Travelling salesmen sales
	₹	₹
January	80,000	12,000
February	1,20,000	13,000
March	1,40,000	20,000

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Answer:

(a) (i) Computation of Transfer Price to be charged by Q to P:

	₹
Variable cost per unit	16
Fixed cost per unit (9,00,000/3,00,000)	3
Return per unit (9,30,000 × 12%)/ 3,00,000	0.372
	19.372

(ii) Computation of Profit of Division 'P'

		₹
Transfer price		19.372
Variable cost		10
		29.372
Contribution & Profit per unit	(80- 29.372)	50.628
Monthly profit	(25,000×50.628)	12,65,700
Yearly profit	(3,00,000×50.628)	1,51,88,400

(iii) Effect on Transfer price and profits:

	₹	₹
Variable cost per unit		16
Fixed cost per unit	(9,00,000/1,80,000)	5
Return per unit	(9,30,000×12%)/1,80,000	0.62
Transfer price:		21.62
Variable cost of packaging & marketing		10
		31.62
Contribution & profit per unit	(80-31.62)	48.38

(b) Sales Overhead Budget :

	January	February	March
	₹	₹	₹
Counter sales	80,000	1,20,000	1,40,000
Travelling salesmen's sales	12,000	13,000	20,000
Total sales	92,000	1,33,000	1,60,000
Sales overheads			
Variable :			
Commission on counter sales @ 1%	800	1,200	1,400
Travelling salesmen's Commission @10% on Travelling Salesmen's Sales	1,200	1,300	2,000
Expenses on travelling			
Salesmen's sales @ 5%	600	650	1,000
Fixed :			
Advertisement	3,000	3,000	3,000
Salaries of the Sales Department	4,500	4,500	4,500
Expenses of the Sales Department	1,500	1,500	1,500
Counter Salesmen's Salaries and Dearness Allowance	6,000	6,000	6,000
Total Sales Overheads	17,600	18,150	19,400

5. Short notes (any three questions out of four questions)

[3×4=12]

- (a) Principal Budget Factor
- (b) Differential Cost Analysis
- (c) Negotiated Pricing
- (d) Differences between Absorption costing and Marginal costing.

Answer:

(a) Principal Budget Factor:

Budgets cover all the functional areas of the organisation. For the effective implementation of the budgetary system, all the functional areas are to be considered which are interlinked. Because of these interlinks, certain factors have the ability to affect all other budgets. Such factor is known as principle budget factor.

Principal Budget factor is the factor the extent of influence of which must first be assessed in order to ensure that the functional budgets are reasonably capable of fulfillment. A principal budget factor may be lack of demand, scarcity of raw material, non-availability of skilled labour, inadequate working capital etc.

If for example, the organisation has the capacity to produce 2500 units per annum. But the production department is able to produce only 1800 units due to non-availability of raw materials. In this case, non-availability of raw materials is the principal budget factor (limiting factor). If the sales manger estimates that he can sell only 1500 units due to lack of demand. Then lack of demand is the principal budget factor.

This concept is also known as key factor, or governing factor. This factor highlights the constraints with in which the organisation functions.

(b) Differential Cost Analysis:

Differential Cost is the change in the costs which results from the adoption of an alternative course of action. The alternative actions may arise due to change in sales volume, price, product mix (by increasing, reducing or stopping the production of certain items), or methods of production, sales, or sales promotion, or they may be due to 'make or buy' or 'take or refuse' decisions. When the change in costs occurs due to change in the activity from one level to another, differential cost is referred to as incremental cost or decremental cost, if a decrease in output is being considered, i.e. total increase in cost divided by the total increase in output. However, accountants generally do not distinguish between differential cost and incremental cost and the two terms are used to mean one and the same thing.

The computation of differential cost provides an useful method of analysis for the management for anticipating the results of any contemplated changes in the level or nature of activity. When policy decisions have to be taken, differential costs worked out on the basis of alternative proposals are of great assistance.

The determination of differential cost is simple. Differential cost represents the algebraic difference between the relevant costs for the alternatives being considered. Thus, when two levels of activities are being considered, the differential cost is obtained by subtracting the cost at one level from the cost of another level.

(c) Negotiated Pricing:

Under this method, the transfer prices may be fixed through negotiations between the selling and the buying division. Sometimes it may happen that the concerned product may be available in the market at a cheaper price than charged by the selling division. In this situation the buying division may be tempted to purchase the product from outside sellers rather than the selling division. Alternatively, the selling division may notice

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that in the outside market, the product is sold at a higher price but the buying division is not ready to pay the market price. Here, the selling division may be reluctant to sell the product to the buying division at a price, which is less than the market price. In all these conflicts, the overall profitability of the firm may be affected adversely. Therefore, it becomes beneficial for both the divisions to negotiate the prices and arrive at a price, which is mutually beneficial to both the divisions. Such prices are called as 'Negotiated Prices'. In order to make these prices effective care should be taken that both, the buyers and sellers should have access to the available data including about the alternatives available if any. Similarly, buyers and sellers should be free to deal outside the company, but care should be taken that the overall interest of the organisation is not affected.

- The main limitation of this method is that lot of time is spent by both the negotiating parties in fixation of the negotiated prices.
- Negotiating skills are required for the managers for arriving at a mutually acceptable price, otherwise there is a possibility of conflicts between the divisions.

(d) Differences between Absorption costing and Marginal costing:

Absorption costing	Marginal costing
Both fixed and variable costs are considered for product costing and inventory valuation.	Only variable costs are considered for product costing and inventory valuation
Fixed costs are charged to the cost of production. Each product bears a reasonable share of fixed cost and thus the profitability of a product is influenced by the apportionment of fixed costs.	Fixed costs are regarded as period costs. The profitability of different products is judged by their P/V ratio.
Cost data are presented in conventional pattern. Net Profit of each product is determined after 'subtracting fixed cost along with their variable cost.	Cost data are presented to highlight the total contribution of each product
The difference in the magnitude of opening stock and closing stock affects the unit cost of production due to the impact of related fixed cost.	The difference in the magnitude of opening stock and closing stock does not affect the unit cost of production
In case of absorption costing the cost per unit reduces, as the production increases as it is fixed cost which reduces, whereas, the variable cost remains the same per unit	In case of marginal costing the cost per unit remains the same, irrespective of the production as it is valued at variable cost

Section – B (Financial Management) PART-I

6. Answer the following questions:

(A) Choose the correct answer from the given four alternatives.

[1x6=6]

- (i) ROI (Return on Investment) can be decomposed into the following ratios:
- (a) Overall Turnover Ratio and Current Ratio
 - (b) Net Profit Ratio and Fixed Assets Turnover
 - (c) Working Capital Turnover Ratio and Net Profit Ratio
 - (d) Net Profit Ratio and Overall Turnover Ratio .

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- (ii) "Shareholders' wealth" in a firm is reflected by:
- (a) the number of people employed in the firm.
 - (b) the book value of the firm's assets less the book value of its liabilities.
 - (c) the amount of salary paid to its employees.
 - (d) the market price per share of the firm.
- (iii) Which of the following is not a source of fund?
- (a) Issue of Capital
 - (b) Issue of Debenture
 - (c) Decrease in Working Capital
 - (d) Increase in Working Capital.
- (iv) If EBIT = ₹ 1,00,000, Fixed Assets = ₹ 2,00,000, Sales = ₹ 10,00,000 and Variable Cost = ₹7,00,000. Then, the Operating Leverage will be
- (a) 2
 - (b) 3
 - (c) 6
 - (d) 4
- (v) Which one of the following activities is outside the purview of dividend decision in financial management?
- (a) Identification of the profit after taxes
 - (b) Measurement of the cost of funds
 - (c) Deciding on the pay-out ratio
 - (d) Considering issue of bonus shares to equity shareholders.
- (vi) Which of the following statements is correct?
- (a) A higher Receivable Turnover is not desirable.
 - (b) Interest Coverage Ratio depends upon Tax Rate.
 - (c) Increase in Net Profit Ratio means increase in Sales.
 - (d) Lower Debt-Equity Ratio means lower Financial Risk.

Answer:

- (i) (d)
- (ii) (d)
- (iii) (d)
- (iv) (b)
- (v) (b)
- (vi) (d)

(B) Match the statement in Column I with the most appropriate statement in column II: [1x4=4]

	Column I		Column II
1	Dividend policy has no effect on its value of assets	A	Graham & Dodd
2	Learning Curve	B	Fixed Costs are charged to Cost of Production
3	Absorption Costing	C	Human Phenomenon
4	Market Price of share will increase when company declares dividend rather than when it does not	D	Modigliani & Miller

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Answer:

1. D
2. C
3. B
4. A

(C) State whether the following statements are True or False.

[1x4=4]

- (i) A Depository Receipt in the US market is called American Depository Receipt (ADR).
- (ii) Net Present Value method cannot serve as the best decision criteria for selection of projects when they are mutually exclusive
- (iii) Debt Service Coverage Ratio indicates the liquidity of a firm in relation to its ability to meet projected daily expenditure from operations.
- (iv) Bill Discounting is defined as the relationship between the seller of goods and a financial firm, called the Factor.

Answer:

- (i) True
- (ii) False
- (iii) False
- (iv) False

PART-II

Answer any three Question from Q. No. 7,8,9 and 10. Each question carries 12 marks

7.(a) The following is the summary of Financial Ratios and form of a TEXTILE COMPANY having a sale of ₹ 32 lakh:

Sales to net worth (times)	2.3
Current debt to net worth (%)	42
Total debt to net worth (%)	75
Current ratio(times)	2.9
Net sales to inventory (times)	4.7
Fixed asset to net worth (%)	53.2

Proforma Balance Sheet

Net worth	-----	Fixed assets	-----
Long-term debt	-----	Cash	-----
Current debt	-----	Stock	-----
		Sundry debtors	568889
	-----		-----

You are required to complete the Proforma Balance Sheet.

[6]

(b) Compute cash provided from operations during the year 2018, from the following data:

Particulars	April 1, 2018	March 31, 2019
Sundry debtors	60,000	80,000

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Sundry creditors	96,000	60,000
Outstanding expenses	6,000	12,000
Outstanding income	2,000	3,000
Stock- in - trade	1,10,000	1,20,000
Prepaid expenses	6,000	4,000
Accumulated depreciation (no retirement during the year)	1,00,000	1,20,000
Provision for doubtful account	3,000	4,000
Dividend payable	-----	6,000
Bills receivable	20,000	24,000
Bills payable	16,000	12,000
Net income (as per profit and loss account)	----	1,60,000

[6]

Answer:

(a)

Proforma Balance Sheet of the Textile Company as on.....

Liabilities	Amount (₹)	Assets	Amount (₹)
Net worth	13,91,304	Fixed assets	7,40,173
Long -term debt	4,59,130	Cash	4,44,869
Current debt	5,84,348	Stock	6,80,851
		Sundry debtors	568889
	24,34,782		24,34,782

Working Notes:

1. Net worth = ₹ 32,00,000 ÷ 2.3 = ₹ 13,91,304
2. Current debt = (₹ 13,91,304/100) × 42 = ₹ 5,84,348
3. Total debt = (₹ 13,91,304/100) × 75 = ₹ 10,43,478
4. Long-term debt = ₹ 10,43,478 – ₹ 5,84,348 = ₹ 4,59,130
5. Fixed assets = (₹ 13,91,304/1,000) × 532 = ₹ 7,40,173.
Current assets = ₹ 5,84,348 × 2.9 = ₹ 16,94,609.
Inventory = ₹ 32,00,000 ÷ 4.7 = ₹ 6,80,851.
Cash = ₹ 16,94,609 - (₹ 6,80,851 + ₹ 5,68,889) = ₹ 4,44,869

(b) Determination of Cash from operation:

	₹	₹
Net income as P&L A/c		1,60,000
Add: Depreciation		20,000
Working capital from business operations		1,80,000
Less: Transactions other than cash, increasing working capital:		
(i) Increase in current assets:		
Sundry debtors	20,000	
Outstanding income	1,000	
Stock - in - trade	10,000	
Bills receivable	4,000	(35,000)
(ii) Decrease in current liabilities:		
Sundry creditors	36,000	
Bills payable	4,000	(40,000)
Add: Transactions other than cash, decreasing working capital :		
(i) Decrease in current assets:		
Prepaid expenses	2,000	2,000

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(ii) Increase in current liabilities:		
Outstanding expenses	6,000	
Provision for doubtful accounts	1,000	
Dividends payable	6,000	13,000
Cash from operations		1,20,000

8.(a) M.R garments Ltd. manufactures readymade garments and sell them on credit basis through a network of dealers. Its present sale is ₹ 120 lakh per annum with 20 days credit period. The company is contemplating an increase in the credit period with a view to increase sales. Present variable costs are 70% of sales and the total fixed costs ₹ 16 lakhs per annum. The company expects pre-tax return on investment @ 25%. Some other details are given as under:

Proposed credit policy	Average collection period (days)	Expected annual sales (₹ in lakhs)
I	30	130
II	40	140
III	50	148
IV	60	150

Which credit policy should the company adopt? Present your answer in a tabular form. Assume 360 days a year. Calculation should be made upto two digits after decimal.

[6]

(b) The following information are supplied to you:

	(₹)
Total Earnings	2,00,000
No. of equity shares(of ₹ 100 each)	20,000
Dividend Paid	1,50,000
Price/Earning Ratio	12.5

(i) Ascertain whether the company is the following an optimal dividend policy.

(ii) Find out what should be the P/E ratio at which the dividend policy will have no effect on the value of the share.

(iii) Will your decision change, if the P/E ratio is 8 instead of 12.5?

[6]

Answer:

(a) Evaluation of proposed credit policies (Amount in ₹ lakhs)

Particulars	Present	Proposed (number of days)			
		I(30)	II(40)	III(50)	IV(60)
(a) Sales revenue	120	130	140	148	150
Less: Variable costs (VC)	84	91	98	103.6	105
Total contribution	36	39	42	44.4	45
Less: Fixed cost (FC)	16	16	16	16	16
Profit	20	23	26	28.4	29
Increase in profit due to increase in total contribution compared to present profit	----	3	6	8.4	9
(b) Investment in debtors / receivables:					
Total costs (VC+FC)	100	107	114	119.6	121
Debtors turnover ratio (DT)(360 / average collection period)	18	12	9	7.2	6

Answer to MTP_Intermediate_Syllabus 2016_JUNE 2020_Set 2

Average investment in debtors (total cost / DT)	5.56	8.92	12.67	16.61	20.16
Additional investment compared to present level	---	3.36	7.10	11.05	14.60
Cost to additional investment @ 25%	----	0.84	1.78	2.76	3.66
(c) Incremental profit [(a)-(b)]	----	2.16	4.22	5.64	5.34

Recommendation: Policy III (average collection period 60 days) is recommended as it yields maximum profit.

(b)

(i) The EPS of the firm is ₹10 (i.e., ₹ 2,00,000/20,000). The P/E Ratio is given at 12.5 and the cost of capital, k_e , may be taken at the inverse of P/E ratio. Therefore, k_e is 8 (i.e., 1/12.5). The firm is distributing total dividends of ₹1,50,000 among 20,000 shares, giving a dividend per share of ₹ 7.50. The value of the share as per Walter's model may be found as follows:

$$\begin{aligned}
 P &= \frac{D}{k_e} + \frac{(r/K_e)(E-D)}{K_e} \\
 &= \frac{7.50}{.08} + \frac{(0.1/.08)(10-7.5)}{.08} \\
 &= ₹132.81
 \end{aligned}$$

The firm has a dividend payout of 75% (i.e., ₹1,50,000) out of total earnings of ₹2,00,000. Since, the rate of return of the firm, r , is 10% and it is more than the k_e of 8%, therefore, by distributing 75% of earnings, the firm is not following an optimal dividend policy. The optimal dividend policy for the firm would be to pay zero dividend and in such a situation, the market price would be

$$\begin{aligned}
 P &= \frac{D}{K_e} + \frac{(r/K_e)(E-D)}{K_e} \\
 &= \frac{0}{.08} + \frac{(0.1/.08)(10-0)}{.08} \\
 &= ₹ 156.25
 \end{aligned}$$

So, theoretically the market price of the share can be increased by adopting a zero payout.

(ii) The P/E ratio at which the dividend policy will have no effect on the value of the share is such at which the k_e would be equal to the rate of return, r , of the firm. The k_e would be 10% ($=r$) at the P/E ratio of 10. Therefore, at the P/E ratio of 10, the dividend policy would have no effect on the value of the share.

(iii) If the P/E is 8 instead of 12.5, then the k_e which is the inverse of P/E ratio, would be 12.5 and in such a situation $k_e > r$ and the market price, as per Walter's model would be

$$\begin{aligned}
 P &= \frac{D}{K_e} + \frac{(r/K_e)(E-D)}{K_e} \\
 &= \frac{7.50}{.125} + \frac{(0.1/.125)(10-7.5)}{.125} \\
 &= ₹ 76
 \end{aligned}$$

9.(a) Calculate the WACC using the following data by using:

- (i) Book value weights
- (ii) Market value weights

The capital structure of the company is as under:

	(₹)
Debentures (₹100 per debenture)	5,00,000
Preference shares (₹100 per share)	5,00,000
Equity shares (₹10 per share)	10,00,000
Total	20,00,000

Answer to MTP_Intermediate_Syllabus 2016_JUNE 2020_Set 2

The market prices of these securities are:

Debentures ₹ 105 per debenture

Preference shares ₹ 110 per preference share

Equity shares ₹ 24 each.

Additional information:

(1) ₹ 100 per debenture redeemable at par, 10% coupon rate, 4% floatation costs, 10 year maturity.

(2) ₹ 100 per preference share redeemable at par, 5% coupon rate, 2% floatation cost and 10 year maturity.

(3) Equity share has ₹ 4 floatation cost and market price ₹ 24 per share.

The next year expected dividend is ₹ 1 with annual growth of 5%. The firm has practice of paying all earnings in the form of dividend.

Corporate tax rate is 50%.

[6]

(b) Ram Ltd. specialize in the manufacture of novel transistors. They have recently developed technology to design a new radio transistor capable of being used as an emergency lamp also. They are quite confident of selling all the 8,000 units that they would be making in a year. The capital equipment that would be required will cost ₹25 lakhs. It will have an economic life of 4 years and no significant terminal salvage value.

During each of the first four years promotional expenses are planned as under:

1st year	1	2	3	4
Advertisement	1,00,000	75,000	60,000	30,000
Others	50,000	75,000	90,000	1,20,000
Variable cost of production and selling expenses: ₹ 250 per unit				

Additional fixed operating costs incurred because of this new product are budgeted at ₹75,000 per year.

The company's profit goals call for a discounted rate of return of 15% after taxes on investments on new products. The income tax rate on an average works out to 40%. You can assume that the straight line method of depreciation will be used for tax and reporting.

Work out an initial selling price per unit of the product that may be fixed for obtaining the desired rate of return on investment.

Present value of annuity of ₹1 received or paid in a steady stream throughout 4 years in the future at 15% is 3.0079.

[6]

Answer :

(a) Cost of Equity (K_e) = $\frac{D_1}{P_0 - F} + g = \frac{1}{24 - 4} + 0.005 = 0.1$ or 10%

$$\begin{aligned} \text{Cost of Debt } (K_d) &= \frac{I(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} = \frac{10(1-0.5) + \frac{(100-NP)}{n}}{\frac{(RV+NP)}{2}} \\ &= \frac{10(1-0.5) + \frac{(100-96)}{10}}{\frac{(100+96)}{2}} = \frac{(5+0.4)}{98} = 0.055 \text{ (approx.)} \end{aligned}$$

$$\text{Cost of preference shares} = K_p = \frac{5 + \frac{2}{10}}{\frac{198}{2}} = \frac{5.2}{99} = 0.053 \text{ (approx.)}$$

(i) Calculation of WACC using book value weights

Answer to MTP_Intermediate_Syllabus 2016_JUNE 2020_Set 2

Source of capital	Book Value	Weights	After tax cost of capital	WACC(K ₀)
		(a)	(b)	(c)=(a)x(b)
10% Debentures	5,00,000	0.25	0.055	0.0137
5% Preference shares	5,00,000	0.25	0.053	0.0132
Equity shares	10,00,000	0.50	0.10	0.0500
	20,00,000	1.00		0.0769

WACC (K₀) = 0.0769 or 7.69%

(ii) Calculation of WACC using market value weights

Source of capital	Book Value	Weights	After tax cost of capital	WACC(K ₀)
		(a)	(b)	(c)=(a)x(b)
10% Debentures (₹105x5,000)	5,25,000	0.151	0.055	0.008
5% Preference shares (₹110x5,000)	5,50,000	0.158	0.053	0.008
Equity shares (₹24x1,00,000)	24,00,000	0.691	0.10	0.069
	34,75,000	1.00		0.085

WACC (K₀) = 0.085 or 8.5%

(b) Calculation of Selling Price

Let x be the selling price.

Evaluation under NPV method:

Initial Investment = 25,00,000

PV of operating cash inflows per annum

A. Sales p.a.	8,000X
B. Expenses:	
Depreciation [(25,00,000-0)/4]	6,25,000
Promotion Expenses	1,50,000
Variable costs (8,000 @ ₹250 per unit)	20,00,000
Fixed costs	75,000
Total	₹ 28,50,000
PBT(A-B)	=8000X-28,50,000
Less: Tax at 40%	=3,200X-11,40,000
PAT	=4,800X-17,10,000
Add: Depreciation	6,25,000
Cash inflow after tax	=4800X-10,85,000

At required return of 15%,

PV of total cash inflow = outflow

$$[4,800X - 10,85,000] \times 3.0079 = 25,00,000$$

$$14,437.92X - 32,63,572 = 25,00,000$$

$$14,437.92X = 32,63,572 + 25,00,000$$

$$X = \frac{32,63,572 + 25,00,000}{14,437.92}$$

$$= 399.196$$

$$= 400$$

Initial selling Price = ₹ 400

10. Write short notes on any three out of four questions :

[3×4=12]

- (a) Net Income Approach
- (b) Financial Leverage
- (c) Combined Leverage:
- (d) Internal Rate of return

Answer :

(a) Net Income Approach:

This approach was advocated by David Durand. According to this approach, capital structure has relevance and a firm can increase the value of the firm and minimise the overall cost of capital by employing debt capital in its capital structure. Accordingly, greater the debt capital in the capital structure, lower shall be the overall cost of capital and more shall be the value of the firm. (Some assumptions may be included and the theory may be represented in graphical form).

(b) Financial Leverage:

The Financial Leverage may be defined as a % increase in EPS associated with a given percentage increase in the level of EBIT. Financial leverage emerges as a result of fixed financial charge against the operating profits of the firm. The fixed financial charge appears in case the funds requirement of the firm is partly financed by the debt financing. By using this relatively cheaper source of finance, in the debt financing, the firm is able to magnify the effect of change in EBIT on the level of EPS. The significance of DFL may be interpreted as follows: Other things remaining constant, higher the DFL, higher will be the change in EPS for same change in EBIT. Higher the interest burden, higher is the DFL, which means more a firm borrows more is its risk. Since DFL depends on interest burden, it indicates risk inherent in a particular capital mix, and hence the name financial leverage.

(c) Combined Leverage:

A combination of the operating and financial leverages is the total or Combination Leverage. The operating leverage causes a magnified effect of the change in sales level on the EBIT level and if the financial leverage combined simultaneously, then the change in EBIT will, in turn, have a magnified effect on the EPS. A firm will have wide fluctuations in the EPS for even a small change in the sales level. Thus effect of change in sales level on the EPS is known as combined leverage. Thus Degree of Combined Leverage may be calculated as follows: $DCL = \text{Contribution} / \text{Earning after Interest}$.

(d) Internal Rate of return:

IRR method follows discounted cash flow technique which takes into account the time value of money. The internal rate of return is the interest rate which equates the present value of expected future cash inflows with the initial capital outlay. In other words, it is the rate at which NPV is equal zero. Whenever a project report is prepared, IRR is to be worked out in order to ascertain the viability of the project. This is also an important guiding factor to financial institutions and investors.

Formula:

$$C = \left\{ \frac{A_1}{(1+r)} \right\} + \left\{ \frac{A_2}{(1+r)^2} \right\} + \dots + \left\{ \frac{A_n}{(1+r)^n} \right\}$$

Where C = Initial Capital outlay.

A₁, A₂, A₃ etc. = Expected future cash inflows at the end of year 1, 2, 3 and so on.

r = Rate of interest

n = Number of years of project

In the above equation – 'r' is to be solved in order to find out IRR.

Computation of IRR

The Internal rate of return is to be determined by trial and error method. The following steps can be used for its computation, (i) Compute the present value of the cash flows from an investment, by using arbitrary by selected interest rate, (ii) Then compare the present value so obtained with capital outlay, (iii) If the present value is higher than the cost, then the present value of inflows is to be determined by using higher rate, (iv) This procedure is to be continued until the present value of the inflows from the investment are approximately equal to its outflow, (v) The interest rate that bring about equality is the internal rate of return.