

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

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

**Full Marks: 100**

**Time allowed: 3 hours**

**Part A - (Cost and Management Accounting)  
Section – I**

**1. Answer the following questions:**

**(a) Choose the correct answer from the given four alternatives:**

**[1×6 = 6]**

- (i) Profit volume ratio establishes the relationship between...**
  - a. Contribution and profit**
  - b. Fixed cost and contribution**
  - c. Profit and sales**
  - d. Contribution and sales value**
  
- (ii) A desire to achieve a particular goal with pursuit of that goal is called:**
  - a. motivation**
  - b. goal congruence**
  - c. effort**
  - d. autonomy**
  
- (iii) The scare factors are also known as**
  - a. Key factor**
  - b. Abnormal factor**
  - c. Linking factor**
  - d. None of the above**
  
- (iv) A budgeting process which demands each manager to justify his entire budget in detail from beginning is:**
  - a. Functional budget**
  - b. Master budget**
  - c. Zero base budgeting**
  - d. None of the above**

- (v) The sub-variance of material usage variance, known as Material mix variance is measured as
- a. Total standard cost - Total actual cost
  - b. Standard cost of revised standard mix - Standard cost of actual mix
  - c. (Standard unit price - Actual unit price) \* Actual quantity used
  - d. (Standard quantity - Actual quantity) \* Unit standard price
- (vi) Another name for the learning curve is a(n)
- a. experience curve
  - b. exponential curve
  - c. growth curve
  - d. production curve

Ans : 1(a)

i	ii	iii	iv	v	vi
d	a	a	c	b	a

- (b) Match the statement in Column I with the most appropriate statement in Column II:  
[1×4 = 4]

Column I	Column II
(i) Differential Cost	(A) Division of total cost into Fixed and Variable
(ii) Opportunity Cost	(B) Future cost
(iii) Marginal Cost	(C) Cost Cannot be controlled
(iv) Sunk Cost	(D) Cost can be controlled

Ans: 1(b)

Column I	Column II
(i) Differential Cost	(B) Future cost
(ii) Opportunity Cost	(D) Cost can be controlled
(iii) Marginal Cost	(A) Division of total cost into Fixed and Variable
(iv) Sunk Cost	(C) Cost Cannot be controlled

- (c) State whether the following statements are True' or 'False': [1x4=4]
- (i) Standard costs are used for external reporting.
  - (ii) A high P/V ratio for a business indicates that a slight decrease in sales volume results in higher profits.
  - (iii) Zero based budgeting involves identification of decision units.

(iv) Learning curve is a cost reduction technique.

Ans: 1(c)

- i. False,
- ii. False ,
- iii. True ,
- iv. False

**Section - II**

(Answer any three Question from Q. No 2, 3, 4 and 5. Each Question carries 12 Marks.)

2. (a) The following data relates to a manufacturing company:

Plant Capacity = 4,00,000 units per annum. Present Utilization = 40% Actual for the year 2014 were:

Selling price = ₹50 per unit, Material cost = ₹20 per unit,

Variable Manufacturing costs = ₹15 per unit and Fixed cost = ₹27,00,000.

In order to improve capacity utilization, the following proposal is considered: Reduce Selling price by 10% and spend additionally ₹3,00,000 in Sales

Promotion.

How many units should be produced and sold in order to increase profit by ₹8,00,000 per year?

(b) The following information is available for the first and second quarter of the year for Pankaj limited:

Quarter	Production (in units)	Semi- variable Cost
Quarter I	36,000	₹ 2,80,000
Quarter II	42,000	₹ 3,10,000

You are required to calculate the semi variable Cost and calculate Total Fixed Cost and Variable cost per unit.

[8+4=12]

Ans 2(a):

- A. Let the desired sales (in units) = x.
  - B. Revised SP (₹50 less 10%) =  $(50 - 5) = ₹45/\text{unit}$
  - C. Total Sales (A × B) =  $45x$
  - D. Less: Variable Cost:
    - Material cost @ ₹20 =  $20x$
    - Variable Mfg. cost @ ₹15 =  $15x$
- 
- 35x
- E. Revised Contribution (C) – (D) =  $10x$

F. Less: Total Fixed Costs:

Present Fixed cost ₹27,00,000

Addl. Promotion Exp. ₹3,00,000

₹30,00,000

G. Profit (E – F) = 10x – 30,00,000

10x – 30,00,000 = ₹5,00,000

(Desired Profit) See note ii below.

10x = ₹35,00,000

or x = 3,50,000 units.

**Ans 2(b):**

(1) Variable Cost per Unit (using Level of Activity Method)

$$\frac{\text{Difference in Costs}}{\text{Difference in Prodn Quantity}}$$
$$\frac{\text{`3,10,000} - \text{`2,80,000`}}{(42,000 - 36,000) \text{ units}}$$
$$= ₹5 \text{ per unit.}$$

(2) Fixed Cost = Total Costs Less Variable Costs (estimated using 36,000 units output level data)

= ₹2,80,000 – (36,000 units × ₹5)

= ₹1,00,000

[Note: 42,000 units' level can also be taken here.]

3. (a) The following information are provided to you for a month in respect of a workshop:

(i) Overhead cost variance – ₹1,400

adverse (ii) Overhead volume variance

– 1,000 adverse (iii) Budgeted hours -

1,200 hrs.

(iv) Budgeted overhead – ₹6,000

(v) Actual rate of recovery of overheads - ₹8 per hour

**You are required to compute:**

(1) Overhead expenditure variance

(2) Actual overheads incurred

(3) Actual hours for actual production

- (b) Gemini chemicals Ltd. Provides the following information from its records:

Material	Quantity (kgs)	Rate/kg (₹)
A	8	6
B	4	4
	12	

During April 2023, 1,000 kgs of GEMCO were produced. The actual consumption of material was as under:

Material	Quantity (kgs)	Rate/kg (₹)
A	760	7
B	500	5
	1,260	

Calculate: i. Material cost variance

ii. Material Price variance

[6+6=12]

**Ans: 3(a)** Working Notes:

Standard Rate of recovery of overhead rate

=BOH/BH= ₹6,000/1,200 hrs.

= ₹5

$$\begin{aligned} (1) \text{ Overhead expenditure variance} &= \text{BOH} - \text{AOH} \\ &= ₹6,000 - ₹6,400 \\ &= 400 \text{ (Adv)} \end{aligned}$$

Reconciliation of overheads expenditure variance

Overheads cost variance = Exp. Variance + Volume variance

$$₹1,400 \text{ (Adv)} = ₹400 \text{ (Adv)} + ₹1,000 \text{ (Adv)}$$

(2) Actual overheads incurred

SOH=1000 hrs at ₹ 5 = ₹ 5,000

O/H Cost Var. = SOH – AOH

$$₹1400A = ₹5000 - \text{AOH}$$

$$-₹1400 = ₹5000 - \text{AOH}$$

$$\text{AOH} = 5000 + 1400$$

$$= ₹ 6,400$$

(3) Actual hours for Actual production (AH)

= Actual overheads incurred/Actual rate of recovery of overheads

$$= ₹6,400 / ₹8$$

$$= 800 \text{ hours (AH)}$$

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**Ans 3(b) : Basic Calculations:**

Calculation of standard input for actual production (1,000 kgs.)

Standard output	Standard input
10 kgs	12 kgs
1,000 kgs	?

Standard input =  $12/10 \times 1,000 = 1,200$  kgs.

1. Standard Quantity for actual production:  
 Material – A =  $8/12 \times 1,200$  kgs = 800 kgs.  
 Material – B =  $4/12 \times 1,200$  kgs = 400 kgs.
  
2. Calculation of Revised Standard Quantity Actual Quantity at Standard mix)  
 Material – A =  $8/12 \times 1,260$  kgs = 840 kgs.  
 Material – B =  $4/12 \times 1,260$  kgs = 420 kgs.

Relevant cost details for computation of Material variances:

Particulars	Material – A	Material – B
Actual Price (AP)	₹7/kg	₹5/kg
Actual Quantity (AQ)	760 kgs	500 kgs
Standard Price (SP)	₹6/kg	₹4/kg
Standard Quantity (See Note – 2)	800 kgs	400 kgs
Revised Standard Quantity (RSQ) (See Note – 3)	840 kgs	420 kgs

Particulars	M 1(AP × AQ)	M2 (SP × AO)	M3 (SP × RSQ)	M4 (SP × SQ)
Material-A	$7 \times 760 = 5,320$	$6 \times 760 = 4,560$	$6 \times 840 = 5,040$	$6 \times 800 = 4,800$
Material- B	$5 \times 500 = 2,500$	$4 \times 500 = 2,000$	$4 \times 420 = 1,680$	$4 \times 400 = 1,600$

i.	Material Cost Variance	= M4 – M1
	Material – A = ₹4,800 – ₹5,320	= ₹520 (A)
	Material – B = ₹1,600 – ₹2,500	= ₹900 (A)
		₹1,420 (A)
ii.	Material Price variance	= M2 – M1
	Material – A = ₹4,560 – ₹5,320	= ₹760 (A)
	Material – B = ₹2,000 – ₹2,500	= ₹500 (A)
		₹1,260 (A)

4. (a) From the following data, prepare a Production Budget for ABC Co. Ltd., for the six months' period ending on 30th June, 2023. Stocks for the budgeted period:

(in units)

Product	As on 01 January, 2023	As on 30 June, 2023
A	6,000	10,000
B	9,000	8,000
C	12,000	17,500

Other relevant data:

Product	Normal loss in production	Requirement to fulfil sales programme (units)
A	4%	60,000
B	2%	50,000
C	5%	80,000

- (b) XYZ Ltd., which has a system of assessment of Divisional Performance on the basis of residual income, has two Divisions, Alfa and Beta. Alfa has annual capacity to manufacture 15,00,000 units of a special component that it sells to outside customers but has idle capacity. The budgeted residual income of Beta is ₹ 1,20,00,000 and that of Alfa is ₹ 1,00,00,000.

Other relevant details extracted from the budget for the current year are as follows:

Particulars of Alfa:

Sale (Outside customers)	12,00,000 units @ ₹ 180 per unit
Variable cost per unit	₹ 160
Divisional fixed cost	₹ 80,00,000
Capital employed	₹ 7,50,00,000
Cost of Capital	12%

Beta has received a special order for which it requires components similar to the ones made by Alfa. Fully aware of the idle capacity of Alfa, Beta has asked Alfa to quote for manufacture and supply of 3,00,000 units of the components with a slight modification during final processing. Alfa and Beta agreed that this will involve an extra variable cost to Alfa amounting to ₹ 5 per unit.

Calculate the transfer price, which Alfa should quote to Beta to achieve its budgeted residual income. [6+6=12]



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**Ans: 4(a)** Production budget for 6 months ending on 30 June 2023

Details	Products (units)		
	A	B	C
Budgeted sales	60000	50000	80000
Add: Closing stock	10000	8000	17500
Total required stock	70000	58000	97500
Less: Opening stock	6000	9000	12000
Net production	64000	49000	85500
Add: Normal loss in production = Net production × Normal Loss %/(100 - Normal Loss %)	(4%) 2666.67	(2%) 1000.00	(5%) 4500.00
Gross production	66666.67	50000.00	90000.00

**Ans 4(b)** Contribution required for budgeted Residual Income of Alfa:

	₹
Fixed Cost	8000000
Capital Charge on 75000000 ×12%	9000000
Residual Income	10000000
Total Contribution required	27000000

	₹	₹
Contribution required from existing units	$1200000 \times 20$	24000000
Contribution required on 300000 units	$27000000 - 24000000$	3000000
Required contribution per unit	$3000000/300000$	10
Variable cost per unit (existing)		160
Increase in variable cost per unit		5
Transfer Price per unit	$10 + 160 + 5$	175

**5. Write short note on any three of the following:**

**[4x3=12]**

- (a) **Key Factor**
- (b) **Steps involved in Zero Based Budgeting**
- (c) **State the general principles of Standard Costing.**
- (d) **Profit Variance**

**Ans: 5(a)** Key Factor:

Key factor is nothing but a limiting factor or deterring factor on sales volume, production, labour, materials and so on. The limiting factor normally differs from one to another. Volume of sales- the limiting factor is that production of required number of articles. Volume of production- the limiting factors are as follows: inadequate supply of raw materials, labour, inability to sell the produced articles and so on. The limiting factors are studied in the lights of the contribution. The limiting factor is bearing the inverse relationship with the volume of contribution. To study the worth of the business proposals among the limiting factors, the contribution is considered as a parameter to rank them one after another. Profitability = Contribution/Key Factor

### 5(b) Steps involved in Zero Based Budgeting:

The process of Zero-Base Budgeting involves the following steps:

- (i) Identification of 'Decision units'. Decision unit refers to a tangible activity or group of activities for which a single manager has the responsibility for successful performance.
- (ii) Preparation and development of decision packages. Preparation of decision packages are a set of documents which identify and describe activities of the unit in such a way that the management can evaluate and rank them against others competing for resources (limited) and decide whether to approve or disapprove.
- (iii) Ranking of priority included in decision packages for various decision units or of various decision packages for the same decision unit.
- (iv) Approval and Funding. Funding involves the allocation of available resources of the organisation to various decision units keeping in mind the alternative which has been selected and approved through ranking process.

### 5(c) The general principles of Standard Costing:

- 1 Predetermination of technical data related to production. i.e., details of materials and labour operations required for each product, the quantum of inevitable losses, efficiencies expected, level of activity, etc.
- 2 Predetermination of standard costs in full details under each element of cost, viz., labour, material and overhead.
- 3 Comparison of the actual performance and costs with the standards and working out the variances, i.e., the differences between the actuals and the standards.
- 4 Analysis of the variances in order to determine the reasons for deviations of actuals from the standards.
- 5 Presentation of information to the appropriate level of management to enable suitable action (remedial measures or revision of the standards) being taken.

### 5(d) Profit Variance:

This represents the difference between budgeted profit and actual profit.

The formula is: Profit Variance = Budgeted Profit – Actual Profit

- (i) **Price Variance:** It shall be equal to the price variance calculated with reference to turnover. It represents the difference of standard and actual profit on actual volume of sales.

The formula is:  $\text{Price Variance} = \text{Standard Profit} - \text{Actual Profit}$  or  $= \text{Actual Quantity Sold} \times (\text{Standard Profit per unit} - \text{Actual Profit per unit})$

- (ii) **Volume Variance:** The profit at the standard rate on the difference between the standard and the actual volume of sales would be the amount of volume variance.

The formula is:  $\text{Volume Variance} = \text{Budgeted Profit} - \text{Standard profit}$  or  $= \text{Standard Rate of Profit} \times (\text{Budgeted Quantity} - \text{Actual Quantity})$

**Part B - (Financial Management)**  
**Section - III**

**6. Answer the following questions:**

- (a) **Choose the correct answer from the given four alternatives:** [1x6=6]

(i) **In a Balance Sheet, equity and fixed assets are expressed in terms of them**

- a. **Market Value**
- b. **Cost**
- c. **Book Value**
- d. **Replacement Value**

(ii) **The measure of leverage is:**

- a. **PAT/Equity**
- b. **Equity/Debt**
- c. **Total Assets/Equity**
- d. **Total Debt/Equity**

(iii) **If the RBI intends to reduce the supply of money as part of an anti-inflation policy, it might**

- a. **Lower Bank rate**
- b. **Increase Cash Reserve Ratio**
- c. **Buy Govt. securities in open market**
- d. **Decrease Statutory Liquidity Ratio**

(iv) Purchase of Machinery by issue of shares should be \_\_\_\_\_ from Cash Flow statement.

- a. included
- b. excluded
- c. included with value 0
- d. None of the above.

(v) In mutually exclusive projects, project which is selected for comparison with others must have

- a. higher net present value
- b. lower net present value
- c. zero net present value
- d. none of above

(vi) The dividend-payout ratio is equal to

- a. the dividend yield plus the capital gains yield.
- b. dividends per share divided by earnings per share.
- c. dividends per share divided by par value per share.
- d. dividends per share divided by current price per share.

**Ans : 6(a)**

i	ii	iii	iv	v	vi
c	c	b	b	a	b

**(b) Match the statement in Column I with appropriate statement in Column II**  
**[1x4=4]**

Column I	Column II
(i) Common size analysis	(A) Earnings Yield
(ii) Earnings/Stock Price	(B) A technique uses in comparative analysis of financial statement
(iii) DOL	(C) Explains irrelevance of Dividend Policy
(iv) MM Model	(D) Contribution/EBIT

**Ans: 6(b)**

Column I	Column II
(i) Common size analysis	(B) A technique uses in comparative analysis of financial statement
(ii) Earnings/Stock Price	(A) Earnings Yield
(iii) DOL	(D) Contribution/EBIT
(iv) MM Model	(C) Explains irrelevance of Dividend Policy

- (c) State whether the following statements are True or False: [1x4=4]
- A goal or objective is a necessary first step for effective financial management.
  - An aggressive working capital policy would have low liquidity, higher risk, and higher profitability potential.
  - If a company has no fixed costs, its DOL equals 1.
  - According to the NOI approach to valuation, the total value of the firm is affected by changes in its capital structure.

Ans: 6(c)

- True,
- True,
- True,
- False

Section - IV

(Answer any three Question from Q. No 7, 8, 9 and 10. Each Question carries 12 Marks.)

7. (a) From the following Balance Sheet and additional information, you are required to calculate:
- Return on Total Resources
  - Return on Capital Employed
  - Return on Shareholders' Fund

Particulars	₹	Particulars	₹
Share Capital(₹10)	8,00,000	Fixed Assets	10,00,000
Reserves	2,00,000	Current Assets	3,60,000
8% Debentures	2,00,000		
Creditors	1,60,000		
	1,360,000		13,60,000

Net operating profit before tax is ₹2,80,000. Assume tax rate at 50%.  
Dividend declared amounts to ₹1,20,000/-

- (b) ABC Ltd. Company's Comparative Balance Sheet for 2023 and the Company's Income Statement for the year are as follows:

ABC Ltd.  
Comparative Balance Sheet March 31, 2023 and 2022  
(₹ in crores)

Particulars	2023			2022		
<b>Sources of funds:</b>						
<b>Shareholder's funds</b>						
Share Capital		140		140		
Retained earnings		110	250	92	232	
<b>Loan funds</b>						
Bonus payable			135		40	
<b>Total</b>			385			272
<b>Application of funds</b>						
<b>Fixed Assets</b>						
Plant and Equipment		430		309		
Less: Accumulated depreciation		(218)	212	(194)	115	
<b>Investments</b>			60		75	
<b>Current Assets</b>						
Inventory	205			160		
Accounts receivable	180			270		
Pre-paid expenses	17			20		
Cash	26	428		10	460	
<b>Less : Current liabilities and provisions</b>						
Accounts payable	230			310		
Accrued liabilities	70			60		
Deferred income-tax provision	15	315	113	8	378	82
<b>Total</b>			385			272

**ABC Ltd.**

**Income Statement for the year ended March 31, 2023**

(₹ in crores)

Sales	1,000
Less : Cost of goods sold	530
Gross margin	470
Less : Operating expenses	352
Net operating income	118
<b>Non-operating items:</b>	
Loss on sale of equipment	(4)
Income before taxes	114
Less : Income-taxes	48
<b>Net Income</b>	<b>66</b>

**Additional information:**

- (i) Dividends of ₹48 crores were paid in 2023.

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- (ii) The loss on sale of equipment of ₹4 crore reflects a transaction in which equipment with an original cost of ₹12 crore and accumulated depreciation of ₹5 crore was sold for ₹3 crore in cash.

**Required:**

Using the indirect method, determine the net cash provided by operating activities for 2023 and construct a statement of cash flows. [4+8=12]

**Ans: 7(a)**

(i) Return on Total resources = Profit after Tax / Total Assets × 100

$$= ₹140000 / ₹1360000 \times 100$$

$$= 10.29\%$$

(ii) Return on Capital Employed = Profit before Tax and Interest / Capital Employed

$$= ₹(280000 + 16000) / ₹(12,00,000) \times 100$$

$$= ₹296000 / ₹1200000 \times 100$$

$$= 24.7\%$$

(iii) Return on Shareholders' Fund = Profit after Tax / Shareholders' Fund

$$= ₹140000 / ₹1000000 \times 100$$

$$= 14\%$$

**Ans 7(b):**

Statement of net cash flows provided by operating activities by using indirect method for the year ended March 31, 2023

Operating Activities	₹
Net Income	66
Adjustment to convert net income to a cash basis :-	
Depreciation and amortization charges	29
Decrease in accounts receivable	90
Increase in inventory	(45)
Decrease in pre-paid expenses	3
Decrease in accounts payable	(80)
Increase in accrued liabilities	10
Increase in deferred income tax	7
Loss on sale of equipment	4
Net cash provided by operating activities	84
Cash Flow from Investing Activities	
Additions to property, building & equipment	(133)
Decrease in long term investments	15
Proceeds from sale of equipment	3
Net cash used in investing activities	(115)
Cash Flows from Financing Activities	
Increase in bonds payable	95

Cash dividends paid	(48)
Net cash used in financing activities	47
Net increase in cash & cash equivalents	16
Cash & cash equivalents at the beginning of year	10
Cash & cash equivalents at the end of year	26

8. (a) A proforma cost sheet of a Company provides the following data:

Particulars	₹
<b>Raw material cost per unit</b>	<b>117</b>
<b>Direct Labour cost per unit</b>	<b>49</b>
<b>Factory overheads cost per units (includes depreciation of ₹18 per unit at budgeted level of activity)</b>	<b>98</b>
<b>Total cost per unit</b>	<b>264</b>
<b>Profit</b>	<b>36</b>
<b>Selling price per unit</b>	<b>300</b>

Following additional information is available:

Average raw material in stock	:	4 weeks
Average work-in-process stock	:	2 weeks
(% completion with respect to		
Materials	:	80% ;
Labour and Overheads	:	60%)
Finished goods in stock	:	3 weeks
Credit period allowed to debtors	:	6 weeks
Credit period availed from suppliers	:	8 weeks
Time lag in payment of wages	:	1 week
Time lag in payment of overheads	:	2 weeks

The company sells one-fifth of the output against cash and maintains cash balance of ₹ 2,50,000.

**Required:**

Prepare a statement showing estimate of working capital needed to finance a budgeted activity level of 87,000 units of production. You may assume that production is carried on evenly throughout the year and wages and overheads accrue similarly.

(b) Find out Financial Leverage from the following data:

<b>Net Worth</b>	<b>₹50,00,000</b>
<b>Debt/Equity</b>	<b>3:1</b>
<b>Interest Rate</b>	<b>12%</b>
<b>Operating Profit</b>	<b>₹40,00,000</b>

[9+3=12]



**Ans 8(a) Estimation of Working Capital Needs**

**I. Investment in Inventory**

(i) Raw material Inventory =  $87,000 \times \frac{4}{52} \times ₹ 117$  7,83,000

(ii) Work-in-Process Inventory Material  
 =  $87,000 \times \frac{2}{52} \times 0.80 \times 117 = 3,13,200$

Labour and Overheads Cost (other than depreciation)

=  $87,000 \times \frac{2}{52} \times 0.60 \times 129 = 2,58,992$  5,72,192

(iii) Finished Goods Inventory (Cash Cost)

=  $87,000 \times \frac{3}{52} \times 246$  12,34,731

II Investment in Debtors (Cash Cost)

=  $87,000 \times \frac{6}{52} \times 0.8 \times 246$  19,75,569

III Cash Balance 2,50,000

Total Investment in Current Assets 48,15,492

**Current Liabilities and Deferred Payment**

(i) Creditors =  $87,000 \times \frac{8}{52} \times 117$  15,66,000

(ii) Wages outstanding =  $87,000 \times \frac{1}{52} \times 49$  81,981

(iii) Overheads outstanding (cash cost) 2,67,692

=  $87,000 \times \frac{2}{52} \times 80$

Total Deferred Payments 9,15,673

Net Working Capital (Current assets – Non-interest bearing current liabilities)

= ₹ (48,15,492 – 9,15,673) = ₹28,99,819

**Ans 8(b) Calculation of financial leverage**

Financial leverage =  $\frac{EBIT}{EBT}$

Net Worth = Equity = ₹ 50,00,000

So, debt = ₹ 50,00,000 L × 3 = ₹ 150,00,000L

Int. = ₹ 150,00,000 L × 12% = ₹ 18,00,000

EBT = Operating profit – Int.

= ₹ 40,00,000 - ₹ 18,00,000 = ₹ 22,00,000

$$\text{Financial leverage} = \frac{EBIT}{EBT} = \frac{40,00,000}{22,00,000} = 1.82$$

9. (a) Aries Limited wishes to raise additional finance of ₹10 lacs for meeting its investment plans. It has ₹2,10,000 in the form of retained earnings available for investment purposes.

The following are the further details:

- (i) Debt/equity mix 30% / 70%
- (ii) Cost of debt up to ₹1,80,000 10% (before tax) beyond ₹1,80,000 16% (before tax)
- (iii) Earnings per share ₹4
- (iv) Dividend pay-out 50% of earnings
- (v) Expected growth rate in dividend 10%
- (vi) Current market price per share ₹44
- (vii) Tax rate 50%

You are required to:

- a. determine the pattern for raising the additional finance.
- b. determine the post-tax average cost of additional debt.
- c. determine the cost of retained earnings and cost of equity, and Compute the overall weighted average after tax cost of additional finance.

- (b) Annu Ltd. is examining two mutually exclusive investment proposals. The management uses Net Present Value Method to evaluate new investment proposals. Depreciation is charged using Straight-line Method. Other details relating to these proposals are:

Particulars	Proposal X	Proposal Y
Annual Profit before tax (₹)	13,00,000	24,50,000
Cost of the Project (₹)	90,00,000	180,00,000
Salvage Value (₹)	1,20,000	1,50,000
Working Life	4 years	5 Years
Cost of capital	10%	10%
Corporate Tax Rate	30%	30%

The present value of ₹1 at 10% discount rates at the end of first, second, third, fourth and fifth year are 0.9091; 0.8264; 0.7513; and 0.6209 respectively. You are required to advise the company on which proposal should be taken up by it.

[6+6=12]

**Ans 9( a)**

Determination of pattern for raising additional finance:

Total additional finance required = ₹10,00,000

Debt Equity mix = 30:70

Therefore, Additional Debt = 10,00,000 x 30% = ₹3,00,000

Additional Equity = 10,00,000 x 70% = ₹7,00,000

Detailed pattern

Total equity:	₹	₹
Retained earnings	2,10,000	
Equity share Capital	4,90,000	7,00,000
Debt:		
10% debt	1,80,000	
16% debt	1,20,000	3,00,000
Total Additional finance		<u>10,00,000</u>

b) Calculation of Average Cost of additional debt:

Post Tax Cost of 10% debt = 10% (1-0.5) = 5%

Post Tax Cost of 16% debt = 16% (1- 0.5) = 8%

Average cost (after tax) of total debt = 5 x + 8 x = 6.2%

c) Computation of Cost of equity and cost of retained earnings:

Cost of equity (Ke) = = + 0.10 = 0.15

or 15%

Cost of Retained Earnings (Kr)

Kr = Ke (as there is no flotation cost)

Kr = 15%

d) Calculation of Weighted Cost of Capital

Elements	Amounts ₹	Weight	Specific Cost	Overall cost
Equity share capital	4,90,000	0.49	0.15	0.0735
Reserves	2,10,000	0.21	0.15	0.0315
10% Debt	1,80,000	0.18	0.05	0.0090
16% debt	1,20,000	0.12	0.08	0.0096
Total	10,00,000	1.00	-	0.1236

WACC = 12.36%

**Ans 9(b): Calculation of Annual Cash Inflow and Present Values:**

Particulars	Proposal X	Proposal Y
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Annual Profit Before Tax	13,00,000	24,50,000
Less: tax @ 30%	3,90,000	7,35,000
Annual Profit After Tax	9,10,000	17,15,000
Add: Depreciation (Annual)		
$\frac{90,00,000 - 1,20,000}{4}$	22,20,000	-
Proposal X :		
$\frac{1,80,00,000 - 1,50,000}{5}$	-	35,70,000
Proposal Y:		
Annual Cash inflow	31,30,000	52,85,000
P. V. of ₹1 for 1 to 4 year	31,698	-
P. V. of ₹1 for 1 to 5 year	-	37,907
Present value of Annual Cash Inflows	99,21,474	2,00,33,850
Add: Present value of salvage value:		
Proposal X: $1,20,000 \times 0.683$	81,960	-
Proposal Y: $1,50,000 \times 0.6209$	-	93,135
Total Present value	1,00,03,434	2,01,26,985
Less: Initial outflow	90,00,000	1,80,00,000
Net Present Value	10,03,434	21,26,985

Advice: Proposal Y should be accepted as it gives higher net present value.

10. Write short note on any three of the following:

[3x4=12]

- (a) Issue of Commercial Papers in India
- (b) Danger of too high amount of Working Capital
- (c) CAPM
- (d) NPV

**Ans:**

**10(a)** Issue of Commercial Papers in India: CP was introduced as a money market instruments in India in January, 1990 with a view to enable the companies to borrow for short term. Since the CP represents an unsecured borrowing in the money market, the regulation of CP comes under the purview of the Reserve Bank of India:

- (i) CP can be issued in multiples of ₹5 lakhs.
- (ii) CP can be issued for a minimum duration of 15 days and maximum period of 12 months.
- (iii) For issuing CP the company's net worth should be more than ₹4 crores.
- (iv) CP can neither be redeemed before maturity nor can be extended the beyond the maturity period.
- (v) CP issue requires a credit rating of P2 from CRISIL or A2 from ICRA.

**10(b)** Danger of too high amount of Working Capital:

- (i) It results in unnecessary accumulation of inventories and gives chance to inventory mishandling, wastage, pilferage, theft, etc., and losses increase.
- (ii) Excess working capital means idle funds which earns no profits for the business.
- (iii) It shows a defective credit policy of the company resulting in higher incidence of bad debts and adversely affects Profitability.
- (iv) It results in overall inefficiency

**10(c) CAPM :**

The capital asset pricing model explains the behaviour of security prices and provides a mechanism whereby investors could assess the impact of a proposed security investment on their overall portfolio risk and return. In other words, CAPM formally describes the risk –required return trade-off for securities. The assumptions for CAPM approach are:

- i) The efficiency of the security
- ii) Investor preferences.

The capital asset pricing model describes the relationship between the required rate of return, or the cost of equity capital and the non-diversifiable or relevant risk of the firm as reflected in its index of non-diversifiable risk.

Symbolically,  $K_e = R_f + \beta (R_m - R_f)$

Where  $K_e$  = Cost of equity capital

$R_f$  = Risk – free rate of return

$R_m$  = Return on market portfolio

$\beta$  = Beta of Security

**10(d) NPV :**

The net present value method is a classic method of evaluating the investment proposals. It is one of the methods of discounted cash flow techniques, which recognizes the importance of time value of money.

It is a method of calculating the present value of cash flows (inflows and outflows) of an investment proposal using the cost of capital as an appropriate discounting rate. The net present value will be arrived at by subtracting the present value of cash outflows from the present value of cash inflows. If the NPV is positive or at least equal to zero, the project can be accepted. If it is negative, the proposal can be rejected. Among the various alternatives, the project which gives the highest positive NPV should be selected.

This Method is particularly useful for the selection of mutually exclusive projects. It serves as the best decision criteria for mutually exclusive choice proposals.

However, it does not give solutions when the comparable projects are involved in different amounts of investment.