Intermediate
Group II
Paper 10: Cost & Management Accounting and Financial Management
(SYLLABUS – 2016)

SECTION - A
COST & MANAGEMENT ACCOUNTING

PART-I – Objective Question

I. Multiple Choice Questions (MCQ)

1. Cost Price is not fixed in case of:

A. Cost plus contracts
B. Escalation clause
C. De escalation clause
D. All of the above.

2. Continuous stock taking is a part of:

A. ABC analysis
B. Annual stock taking
C. Perpetual Inventory
D. None of these.

3. In Reconciliation Statements expenses shown only in financial accounts are:

A. Added to financial profit
B. Deducted from financial profit
C. Ignored
D. Added to costing profit.

4. Operating costing is applicable to:

A. Hospitals
B. Cinemas
C. Transport undertaking
D. All the above.

5. Flexible budget requires a careful study of:

A. Fixed, semi-fixed and variable expenses
B. Past and current expenses
C. Overheads, selling and administrative expenses
D. None of the above.

6. Which of the following items is not excluded while preparing a cost sheet?

A. Goodwill written off
B. Provision for taxation
C. Property tax on factory building
D. Interest paid.

7. The most important element of cost is:

A. Material
B. Labour
C. Overheads
D. All the above.

8. Continuous stock taking is a part of:

A. ABC analysis
B. Annual stock taking
C. Perpetual inventory
D. None of the above.

9. Depreciation is an example of:

A. Fixed cost
B. Variable cost
C. Semi variable cost
D. None of the above.

10. Joint cost is suitable for:

A. Infrastructure industry
B. Ornament industry
C. Oil industry
D. Fertilizer industry.

Answer:

1-A	2-C	3-A	4-D	5-A	6-C	7-A
8-C	9-A	10-C				

II. True / False

1. **Multiple costing is suitable for banking industry.**
2. **Cost ledger control account makes the cost ledger self balancing.**
3. **Production cost includes only direct costs related to the production.**
4. **CAS 9 is for direct expenses as issued by the Cost Accounting Standards Board (CASB) of the Institute of Cost Accountants of India.**
5. **ABC analysis is based on the principle of management by exception.**
6. **Slow moving materials have a high turnover ratio.**

7. **Cost of indirect material is apportioned to various departments.**
8. **Departments that assist producing Department indirectly, are called service departments.**
9. **Waste and scrap of material have small realisation value.**
10. **Bin card are not the part of accounting records.**

Answer:

1. False
2. True
3. False
4. False
5. True
6. False
7. False
8. True
9. False
10. True.

III. Matching:

	Column A		Column B
1	Research and Development Cost	A	CAS 2
2	Depreciation on computer purchased for office	B	Forms part of selling expenses
3	Abnormal loss is transferred to	C	Costing Profit and Loss Account
4	In electricity companies, the cost unit is	D	Kilowatt
5	The summary of all functional budgets	E	CAS 18
6	Cost of free samples of products distributed	F	Forms part of office administration expenses
7	In contract costing, cost unit is	G	Per contract
8	Capacity Determination	H	Not shown in the cost sheet but debited to profit & loss account
9	Scrap value of abnormal loss of finished output	I	Not shown in the cost sheet but credited to profit & loss account
10	Cash discount allowed	J	Master budget

Answer:

1-E 2-F 3-C 4-D 5-J 6-B 7-G
8-A 9-I 10-H

PART-II

Marginal Costing:

2. EON Ltd. sold 275,000 units of its product at ₹ 37.50 per unit (Manufacturing Costs of ₹ 14 and Selling costs of ₹3.50 per unit). Fixed Costs are incurred uniformly throughout the year and amount to ₹ 35,00,000 (including Depreciation of ₹15,00,000). There are no beginning or ending inventories.

Required-

i. Estimated Break-Even Sales Quantity and Cash Break Even Sales Level Quantity

ii. Estimate the PV Ratio

iii. Estimate the number of units that must be sldo to earn an Income (EBIT) of ₹ 2,50,000.

iv. Estimate the Sales Level to achieve an After Tax Income (PAT) of ₹ 2,50,000. Assume 40% Corporate Income Tax Rate.

Answer:

i. Contribution per unit=Sales Price –Variable Costs	= ₹37.50 - ₹17.50 = ₹ 20 per unit
ii. Break Even Quantity =Total Fixed Costs/Contribution per unit	= ₹ 35,00,000/₹ 20 = 175,000 units
iii. Cash Break Even Quantity=Cash Fixed Costs/ Contribution per unit	= ₹ 20,00,000/₹ 20 = 100,000 units
iv. PV Ratio=Contribution per unit/Sales Price per unit x 100	= ₹20.00/₹ 37.50 x100 = 53.33%
v. Required Profit(EBIT)= ₹ 250,000, Contribution required=FC+EBIT	= ₹ 35,00,000+ ₹ 250,000 = ₹37,50,000
vi. Quantity required to earn above profit of ₹ 250,000	= ₹ 37,50,000/₹ 20 = ₹ 187,500 units
vii. Since Tax Rate is 40%, PAT constitutes 60% of EBIT. Hence, if required PBT is ₹ 250,000, required EBIT=	= ₹ 250,000/60% = ₹ 4,16,667
viii. If Required Profit (EBIT)=₹ 4,16,667, Contribution required-FC +EBIT	= ₹ 35,00,000+₹ 4,16,667 = ₹ 39,16,667
ix. Quantity required to earn above PAT of ₹ 250,000	= 39,16,667/ ₹ 20 = 1,95,833 units.

3. Product B is one of a number of products produced and sold by Foxpro Ltd. The following information relates to Product B:

(a). Production / Sales per period is 2000 units

(b). Selling Price / Unit is ₹ 10.00

(c). Variable Costs / Unit is ₹ 6.30

(d) Fixed Costs of ₹ 5400 per period which are avoidable if production of Product B should not cease.

(e). ₹ 12,000 share of general company costs which will remain if the product is discontinued.

You are required to find out, by showing all appropriate calculations, the following:

(a) Discuss a claim by one management member that production and sale of Product B should be discontinued.

(b) At what production / sales level will Product B breakeven?

(c) Product B can be replaced by Product Y on the basis of one unit of Y for two units of B. Product Y has a selling price of ₹ 16 and a Contribution / Sales ratio of 0.3. Should the substation be implemented.

(i). If 500 units of B are to be replaced?

(ii). If all units of B are to be replaced?

Answer:

(a).	**Product-B**
Sales revenue	₹ 20,000
Less-Variable costs	12,600
Contribution	7,400
Less- Avoidable fixed cost	5,400
Net margin	2,000
Less- General fixed cost	12,000
Net loss	(10,000)

Product B is making a net loss, hence, the reason for management's decision to discontinue the product. It is however, making a contribution of ₹ 2,000 to company net cash inflows represented by its net margin. In the absence of any more profitable use of the capacity, its production should be continued.

(b). Contribution / Sales ratio-₹ 3.70 / ₹ 10 =0.37

Total fixed cost	= ₹ 17,400
Sales at break-even point	= Fixed cost/CS ratio
	= ₹ 17,400/0.37
	=₹ 47,027

(c) (i) If 500 units of B are replaced, fixed cost of ₹ 5,400 will remain

Contribution lost from B	=₹ 3.70 x 500
	=₹ 1,850
Contribution gained from Y	=₹ 16 x 0.3 x 250
	=₹1,200
Net loss to the company	₹ 650

It is better therefore, not to substitute.

(ii). If all of B is replaced, ₹ 5,400of fixed cost is avoided

Net loss from B (its net margin)	=₹2,000
Contribution gain from Y =₹ 16x0.3x1,000	=₹ 4,800
Net gain to the company	₹ 2,800

It is better in this situation to carry out the substitution.

Note: ₹ 12,000 share of general company costs should be ignored since they are unavoidable whatever decision is taken.

4. The following extracts are taken from sales budget of a Vesuvious Ltd. for current year

		(₹ '000)
Sales-40,000units@₹ 25 per unit		**1,000**
Selling costs:		
Advertising	**100**	
Salary of Salesman's	**80**	
Travelling expenses	**50**	
Rent of sales office	**10**	
Others	**10**	**250**

The management of the organization is considering a proposal to establish a new market in the eastern region in the next year. It is proposed to increase the advertising expenditure by 25% and appoint an additional sales supervisor at a salary of ₹ 30,000 per year to establish a market. This will involve additional travelling , hence, additional travelling expense shall increase by 10%. Target annual sales volume at the existing selling price for the new market is 10,000 units. The estimated variable cost of production is ₹ 12 per unit. Should the company try to establish the new market?

Answer:

Statement showing Different Cost and Revenues

Sales (Units)	Present-40,000	Budget-50,000	Incremental-10,000
Sales (a)	1,000	1,250	250
Selling Costs: (b)			
Advertising	100	125	25
Salary of sales persons	80	110	30
Travelling expenses	50	55	5
Rent	10	10	--
Others	10	10	--
Cost of goods sold(a)-(b)	750	940	190
Less- Variable cost of production	480	600	120
PROFIT	270	340	70

Incremental Return on Incremental Sales = ₹ 70,000/₹250,000 x100

=28%.

Analysis- The incremental return is higher than the current return, hence, it is suggested to implement the proposal.

5. Hi-tech Manufacturing Co. is presently evaluating two possible processes for the manufacture of a toy. The following information is available:

Particulars	**Process A**	**Process B**
Variable cost per unit	**₹ 12**	**₹ 14**
Sales price per unit	**₹20**	**₹ 20**
Total fixed costs per year	**₹ 30,00,000**	**₹ 21,00,000**
Capacity (in units)	**430,000**	**500,000**
Anticipated sales (Next year, in units)	**400,000**	**400,000**

Suggest:

(i) Which process should be chosen?

(ii) Would you change your answer as given above, if you were informed that the capacities of the two processes are as-A 600,000 units & B 500,000 units?

Answer:

Particulars	**Process A**	**Process B**
Sale price p.u.	₹ 20	₹20
Variable cost p.u.	₹12	₹14
Contribution p.u.	₹8	₹6
Fixed costs p.a.	₹ 30,00,000	₹ 21,00,000
BEQ=[4/3]	375,000 units	350,000 units
Anticipated sales quantity	400,000 units	400,000 units
MOS Quantity (6-5)	25,000 units	50,000 units
Anticipated Profit(7x3)	₹ 2,00,000	₹ 300,000

Analysis & calculation:

1. Indifference point = Change in fixed costs / Change in contribution p.u.
   = 30,00,000-21,00,000/8-6
   = 900,000/2
   =450,000 units
2. Since anticipated sales (400,000 units) is below the Indifference point (450,000 units), the option with the lower fixed cost is preferable. Hence, Process B is preferable (as reflected by higher anticipated profit)
3. No change in answer even if capacity of Process A increases, since anticipated sales is only 400,000 units.

Standard Costing:

6. Zeda Company has a normal capacity of 120 machines, working 8 hours per day of 25 days in a month. The Fixed Overheads are budgeted at ₹1,44,000 per month. The standard time required to manufacture one unit of product is 4 hours. In April, the Company worked 24 days of 840 machine hours per day and produced 5,305 units of output. The Actual Fixed Overheads were ₹ 1,42,000. From the above, compute all FOH related variances.

Answer:

1. Basic Calculations

(a)Budgeted Hours = 120 machines × 8 hours × 25 days = 24,000 machine hours.

(b)Budgeted output = $\frac{24{,}000 \text{ hours}}{4 \text{ hours per unit}}$ = 6,000 units

(c)FOH Standard Rate per hour = $\frac{\text{Budgeted FOH}}{\text{Budgeted Hours}} = \frac{₹1{,}44{,}000}{24{,}000 \text{ hours}}$ = ₹6 per hours

(d)FOH Standard Rate per unit = $\frac{\text{Budgeted FOH}}{\text{Budgeted Output}} = \frac{₹1{,}44{,}000}{6{,}000 \text{ hours}}$ = ₹24 pear unit

2. Variance Computation Chart

Col (1): AO × SR	**COL (2) : AH ×SR**	**(3): PFOH = BFOH × AD/BD**	**COL (4) : BFOH**	**COL (5) : AFOM**
5,305 units × ₹24 pu =₹ 1,27,320	(24 × 840) hrs × ₹6 ph = ₹ 1,20,960	₹1,44,000 × 24/25 = ₹1,38,240	₹1,44,000 (Given)	₹1,42,000 (Given)

Efficiency variance	+ **Capacity** variance	+ **Calendar** variance	+ **Expenditure** variance
= ₹1,27,320	= ₹1,20,960	= ₹1,38,240	= ₹1,44,000
– ₹1,20,960	- ₹1,38,240	- ₹1,44,000	- ₹1,42,000
= ₹6,360 F	= ₹17,280 A	= ₹5,760 A	=₹2,000 F

FOH **Volume** Variance + FOH **Expenditure** Variance b/fd as above ₹
= ₹1,27,320 – ₹1,44,000 = ₹16,680 A =₹ 2,000 F

Total FOH Cost Variance
=₹1,27,320 – ₹1,42,000 =₹ 14,680 A

7. Nandana Ltd manufactures a commercial product for which the Standard Cost per unit is as follows:

Particulars			₹
Material:	**5 kg @ ₹4 per kg**		**20.00**
Labour:	**3 hours @ ₹10 per hour**		**30.00**
Overhead	**Variable:**	**3 hours @ ₹1 per hour**	**3.00**
	Fixed:	**3 hours @ ₹0.50 per hour**	**1.50**
	Total		**54.50**

During January, 600 units of the product were manufactured at the cost shown below:

	Particulars	₹
Material Purchased	**5,000 kg @ ₹4.10 per kg (Material used: 3,500 kg)**	**20,500**
Direct Labour	**1,700 hours @ ₹9**	**15,300**
Variable Overhead		**1,900**
		900
	Total	**38,600**

The Flexible Budget required 1,800 Direct Labour Hours for operation at the monthly activity level used to set the Fixed OH Rate.

Calculate the following items. Also reconcile the Standard and Actual cost of Production.

(a) **Material Price Variance.**	(f) **Variable Overhead Efficiency Variance,**
(b) **Material Usage Variance.**	(g) **Fixed Overhead Expenditure Variance,**
(c) **Labour Rate Variance.**	(h) **Fixed Overhead Volume Variance,**
(d) **Labour Efficiency Variance.**	(i) **Fixed Overhead Capacity Variance,**
(e) **Variable Overhead Expenditure Variance,**	(j) **Fixed Overhead Efficiency Variance,**

Solution:

1. Computation of Material cost variances

Col. (1): SQ × SP	Col. (2) : AQ × SP	Col. (3) : AQ × AP
(600 units × ₹5 Kg) × ₹ 4 = ₹ 12,000	3,500 Kg × ₹4 Kg = ₹ 14,000	3,500 Kg × ₹4.10 = ₹ 14,350

Usage Variance = ₹12,000 – ₹14,000 = ₹2,000 A + Price Variance
= ₹14,000 – ₹14,350 = ₹3500 A

Total Material Cost Variance = ₹12,000 – ₹14,350
= ₹ 2,350 A

Note: Material Purchase Price Variance = Purchase Qty × (Std Price - Actual Price)
= 5,000 × (₹ 4 – ₹ 4.10) = ₹**500 Adv.**

2. Computation of Labour Cost variance

Col. (1): SH × SR	Col. (2) : AH × SR	Col. (3) : AH × AR
(600 × ₹3 hours) × Rs 10 = ₹ 18,000	1,700 hours × ₹10 = ₹ 17,000	1,700 hours × ₹9 = ₹ 15,300

Efficiency Variance = ₹18,000 – ₹17,000 = ₹1,000 F + **Rate** Variance
= ₹ 17,000 – ₹ 15,300 = ₹1,700 F

Total Labour Cost Variance = ₹18,000 – ₹15,300
= ₹2,700 F

3. Computation of VOH Cost variance

Col. (1): SH × SR	Col. (2) : AH × SR	Col. (3) : AVOH
(600 × 3 hours) × ₹ 1 = ₹ 1,800	1,700 hours × Rs 1 = ₹1,700	Given = ₹ 1,900

VOH Efficiency Variance + **VOH Efficiency** Variance
= ₹1,800 –₹1,700 = ₹100 F = ₹1,700 – ₹1,900 = ₹ 200 A

Total VOH Cost Variance = ₹1,800 – ₹1,900 = ₹100 A

4. Computation of FOH Cost variance

Col. (1): AO × SR	Col. (2) : Total AH × SR	Col. (3) : BFOH	Col. (4) : BFOH
(600 × 3) × Re 0.50 = ₹ 900	1,700 hours × Re 0.50 = ₹ 850	1,800 hours × Re 0.50 = ₹ 900	Given = ₹ 900

Efficiency Variance + **Capacity** Variance + **Expenditure** var.
= ₹900 –₹850 = ₹50 F = ₹ 850 – ₹ 900 = ₹50 A ₹900 –₹900 = Nil

FOH Volume Variance + **FOH Expenditure** Variance b/fd as above
= ₹50 – ₹50 = Nil = Nil

Total FOH cost variance = Nil

5. Reconciliation of Standard and actual Costs

Particulars	₹	₹	₹
Standard Cost: 600 units at × ₹ 54.50 pu		Fav.	**32,700**
Adjust: Effect of Variances:	Adv.		
Material Usage	2,000		
Material Purchase Price (since RM Stock is valued at Std Cost)	500		
Labour Efficiency		1,000	
Labour Rate		1,700	
VOH Efficiency		100	
VOH Expenditure	200		
FOH Variances	Nil	Nil	
Total of Variances	**2,700**	**2,800**	**100 Fav.**
Actual Cost: Given 38,600 less RM Stock at Std Cost: 1,500 kg × ₹ 4/kg 6,000			**32,600**

8. The standard cost of a certain chemical mixture is as under:

40% of Material A at ₹ 20 per tonne. 60% of Material B at ₹ 30 per tonne.

A standard loss of 10% is expected in production. The following actual cost data is given for the period.

180 tonnes material A at a cost of ₹ 18 per tonne.

220 tonnes material B at a cost of ₹ 34 per tonne.

The weight produced is 364 tonne.

Calculate and present:

(a) **Material Price Variance.**
(b) **Material Mix Variance.**
(c) **Material Yield Variance.**
(d) **Material Cost Variance.**
(e) **Material Usage Variance.**

Solution:

Calculation of variances

M_1 — Actual cost of Material used:
Material A — 180 tonnes × ₹ 18 = 3,240
Material B — 220 tonnes × ₹ 34 = 7,480 ₹ 10,720

M_2 — Standard cost material used
Material A —180 tonnes × ₹ 20 = 3,600
Material B —220 tonnes × ₹ 30 = 6,600 ₹10,200

M_3 — Standard cost of material, if it had been in standard proportions.

Standard Qty. of Material A in

$$\text{Material A} = \frac{\text{Standard mix in kg.}}{\text{Weight of Std. mix}} \times \frac{\text{Weight in}}{\text{actual mix}} \times \frac{\text{Standard rate}}{\text{of Mat. A per kg.}}$$

$$= \frac{40 \text{ kg.}}{100 \text{ kg.}} \times 400 \text{ kg} \times ₹20 \text{ or } ₹3,200 \quad \text{.....(i)}$$

Standard Qty. of Material B in

$$\text{Material B} = \frac{\text{Standard mix in kg.}}{\text{Weight of Std. mix}} \times \frac{\text{Weight in}}{\text{actual mix}} \times \frac{\text{Standard rate}}{\text{of Material}}$$

$$= \frac{60 \text{ kg.}}{100 \text{ kg.}} \times 400 \text{ kg} \times ₹30 \text{ or } ₹7,200 \quad \text{.....(ii)}$$

Adding (i) and (ii) we get the value of M_3

= ₹3,200 + ₹ 7,200 or ₹ 10,400.

M_4 — Standard cost of output.

Let us find out the standard cost, when input is 100 kg.

Standard Mix	Standard rate	Standard cost
40 kg	₹20	₹800
60 kg	30	1,800
100 kg		2,600
Loss 10% 10		-------
90 kg		2,600

It means for output of 90 kg. standard cost will be ₹ 2,600.

Standard cost of actual output of 364 kg. this will be: $= \frac{2,600}{90} \times 364$ or ₹10,516.

Variances

(a) Material Price Variance = $M_1 - M_2$ = ₹ 10,720 - 10,200 or ₹ 520 (A)

(b) Material Mix Variance = $M_2 - M_3$ = 10,200 -10.400 or ₹200 (F)

(c) Material Yield Variance = $M_3 - M_4$ = ₹10,400 – ₹ 10,516 or ₹ 116 (F)

(d) Material Cost Variance = $M_1 - M_4$ = 10,720 - 10,516 or ₹ 204 (A)

Alternatively, it can be found out as follows:

(x)= Material Price Variance + Material Mix Variance + Material Yield Variance

(y)= ₹ 520 (A) + ₹ 200 (F) + ₹ 116 (F) = ₹ 204 (A)

(z) = Material Usage Variance = $M_2 - M_4$ = 10,200-10,516 or ₹ 316(F)

Alternatively, it can be found out as follows:

(z)= Mat. Mix Variance + Mat. Yield Variance

= 200 (F)+ 116(F) =₹ 316(F)

9. From the following data, calculate:

(1) Sales Value Variance.

(2) Sales Price Variance.

(3) Sales Mix Variance.

(4) Sales Quantity Variance.

(5) Sales Value Volume Variance.

	Standard			Actual		
	Qty. (kgs)	Sales price ₹ (kg)	Total	Qty. (kgs)	Sales price ₹ (kg)	Total
Product X	**500**	**5.00**	**2,500**	**500**	**5.00**	**2,500**
Product Y	**400**	**6.00**	**2,400**	**600**	**6.25**	**3,750**
Product Z	**300**	**7.00**	**2,100**	**400**	**6.75**	**2,700**
	1,200		**7,000**	**1,500**		**8,950**

Answer:

1. SV_1—Actual sales value realised = ₹ 8,950 (Given)		
2. SV_2—Standard Value of Actual Sales.		
Product X	500 × 5 =	₹ 2,500
Product Y	600 × 6 =	₹ 3,600
Product Z	400 × 7 =	₹ 2,800
Total		₹ 8,900

3. SV_3—Standard value of actual sales, if these sales had been effected according to the ratio of standard mix.

Product X = (500 ÷ 1200) × 1,500 × 5 = ₹ 3125

Product y = (400 ÷ 1200) × 1,500 × 6= ₹ 3,000

Product Z = (300 ÷ 1200) × 1,500 × 7 = ₹ 2,625

Total 8,750

4. SK4—Standard value of sales as per standard or budget = ₹ 7,000 (Given).

Variance

1. Sales Value Price Variance = SV_1 - SV_2 = ₹ 8,950 - 8,900 or ₹ 50(F)
2. Sales Value Mix Variance = SV_2 – SV_3 = ₹ 8,900 – ₹ 8,750 or ₹ 150(F)
3. Sales Value Quantity Variance = SV_3 – SV_4 = ₹ 8,750 – ₹ 7,000 or ₹1,750(F)
4. Sales Value Variance = SV_1 - SV_4 = ₹ 8,950- ₹ 7,000 or ₹ 1,950 (F)

Alternatively, it can be worked out as under:

= Sales Value price Variance + Sales Value Mix Variance + Sales value Quantity Variance

= ₹ 50 (F) + ₹ 150 (F) + ₹ 1,750 (F)

= ₹ 1,950 (F)

5. Sales Value Volume Variance =SV_2 -SV_4 = ₹ 8,900 – ₹ 7,000 or ₹ 1,900(F)

Alternatively, it is the sum total of sales value mix variance and sales value quantity variance.

= ₹ 150 (F) + ₹ 1,750 (F) or ₹ 1,900 (F).

Transfer Pricing & Budgeting:

10. Telco 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 numbers of a special component which it sells to outside customers; but has idle capacity. The budgeted residual income of Beta is ₹ 120 lakhs while that of Alfa is ₹ 100 lakhs. Other relevant details extracted from the budget of Alfa for the year are:

Sale (to outside customers)	**12 lakh units @ ₹ 180 per unit**
Variable cost per unit	**₹ 160**
Divisional fixed cost	**₹ 80 lakhs**
Capital employed	**₹ 750 lakhs**
Cost of capital	**12%**

Beta has just received a special order for which it requires componens similar to the ones made by Alfa. Fully aware of Alfa's unutilized capacity, Beta has asked Alfa to quote for manufacture and supply of 300,000 numbers of the components with a slight modification during final processing. Alfa and Beta agree that this will involve an extra variable cost of ₹ 5 per unit.

(i) Calculate the transfer price which Alfa should quote to Beta to achieve its budgeted residual income

(ii) Indicate the circumstances in which the proposed transfer price may result in a suboptimal decision for the Telco Ltd. as a whole.

Answer:

(i). Calculation of Transfer Price to be quoted by Alfa to Beta based on Residual Income:

	(₹ lakhs)
Fixed costs	80
Return on capital employed (₹ 750 lakhs x 12/100)	90
Residual income desired	100
	270

Desire contribution per unit:

Selling price per unit – Variable cost per unit

= ₹ 180 -160

= ₹ 20 per unit

Total desired contribution

12,00,000 units x ₹ 20 per unit

=₹ 240 lakhs.

Minimum contribution to be earned from sale of additional 3 lakh units

= ₹ 270 lakhs - ₹ 240 lakhs

=₹ 30 lakhs.

Contribution per unit on additional 300,000 units

=₹ 30,00,000/300,000 units

=₹ 10 per unit

Variable cost of modification per unit = ₹ 5

Hence, the minimum transfer price per unit to be quoted will be

= ₹ 160 + ₹10+ ₹5

= ₹ 175.

(ii). Beta can buy from outside at less than the variable cost of manufacture, ₹ 165. Then only the decision to transfer at the price of ₹ 175 will become suboptimal for the group as a whole.

11 .The following details are made available by an autonomous division of Tetra Ltd. for the month of April, 2018:

Particulars	Budget	Actuals
Sales	**24,00,000**	**22,00,000**
Direct materials	**6,00,000**	**5,20,000**
Direct labour	**8,00,000**	**7,56,000**
Variable overheads	**5,00,000**	**4,72,000**
Fixed overheads	**3,00,000**	**3,00,000**
Total	**22,00,000**	**20,48,000**
Profit	**2,00,000**	**1,52,000**
Production/ Sales (units)	**20,000**	**18,000**

(a) Prepare a flexible budget of the division for April, 2018

(b) Analyze the variation in profit between the budget and actual in as much detail as possible.

Answer:

(a). Flexible Budget for April, 2018 along with the Budget and Actual:

Sales (units)	Budget-20,000	Flexible budget-18000	Actuals-18,000	Remarks-18,000
Sales value	24,00,000	21,60,000	22,00,000	@₹ 120 for 18,000 units
Direct materials	600,000	540,000	520,000	25% of sales value
Direct labour	800,000	720,000	756,000	33 1/3% o of sales value
Variable overheads	500,000	450,000	472,000	20% of sales value
Fixed overheads	300,000	300,000	300,000	
	22,00,000	**20,10,000**	**20,48,000**	
PROFIT	**200,000**	**150,000**	**152,000**	

(b). Analysis of Variance:

The variance in profit between the budget and actual is ₹ 48,000(A) and this is analysed as:

	₹	₹
(i) Sales price variance	=21,60,000-22,00,000	40,000(F)
(ii) Direct material cost variance	=5,40,000-5,20,000	20,000(F)
(iii) Direct labour cost variance	=7,20,000-7,56,000	36,000(A)
(iv) Variable overhead cost variance	=4,50,000-4,72,000	22,000(A)
(v) Sales margin volume variance	(Budgeted Sales-Actual Sales) x Standard profit per unit =(20,000-18,000) x Rs 10	20,000(A)
(vi) Fixed overhead cost variance	(Standard fixed overhead of actual production –Actual fixed overhead) = (18,000 x Rs 15)-3,00,000	30,000(A)
Net variance		48,000(A)

12. Jagruti Ltd. will pay a royalty @10% of selling price fixed by it for sale in local market less landed cost of imported items of the kit less cost of standard items purchased locally. Considering the above information, calculate the selling price that should be fixed for local sales so as to set 20% profit on selling price.

Answer:

Landed cost of imported parts per kit	₹3640
Cost of indigenously manufactured parts per kit	₹4500
Assembly and other overhead	₹1000
Technical know-how	₹ 10
Total cost excluding Royalty	₹ 9150
Add-Royalty	₹ 685*
	₹ 9835
Profit 20% on sales or 25% on cost	₹ 2459
Selling price for local market	₹12,294

Working Notes:

*Supposing Selling Price = x and Royalty=y

X=(₹9150+y) +25% (9150+y)

Or, x=₹ 9150 +y +₹ 2287.50 +0.25y

Or, x= ₹ 11437.50 +1.25y .....(i)

We also know that

Y=0.10(x-₹ 3640-₹1800)

Or y=0.10x –₹544 .....(ii)

Multiplying (ii) by 1.25

1.25y=0.125x-₹680 .....(iii)

± 1.25y = ± x ± ₹11437.50 .....(iv)

Or 0.875x = ₹ 10757.50

Or x=₹ 12,294 (appx)
Putting the value of x in (iv) above
1.25y= x-₹ 11437.50
1.25y= ₹ 12294-₹ 11437.50
Or y= 685(appx).

13. The Budget manager of Philips Electricals Ltd. is preparing a flexible budget for the accounting year commencing from 1.4.2017. The company produces one product-Kaypee. Direct material costs ₹ 7 per unit, Direct labour averages ₹ 2.50 per hour and requires 1.60 hours to produce one unit of Kaypee. Salesman are paid a commission of ₹ 1 per unit sold. Fixed selling and administration expenses amount to Rs 85,000 per year. Manufacturing overheads under specified conditions of volume have been estimated as follows:

Volume of production (units)	**1,20,000**	**1,50,000**
Expenses: **Indirect material**	**264,000**	**330,000**
Indirect labour	**150,000**	**187,500**
Inspection	**90,000**	**112,500**
Maintenance	**84,000**	**102,000**
Supervision	**198,000**	**234,000**
Depreciation-Plant & equipment	**90,000**	**90,000**
Engineering services	**94,000**	**94,000**
Total manufacturing overheads	**9,70,000**	**11,50,000**

Normal capacity of production of the company is 125,000 units. Prepare a budget of total cost at 140,000 units of output.

Answer:

Working notes:

1. Variable costs per unit:

		₹
Direct material		7.00
Direct labour	(1.60 hours x ₹ 2.50)	4.00
Sales commission		1.00
Indirect material	(₹ 264,000 / 120,000 units) (₹ 330,000 / 150,000 units)	2.20*
Indirect labour	(₹ 150,000/120,000 units) (₹ 187,500 / 150,000 units)	1.25*
Inspection	(₹ 90,000/120,000 units) (₹ 112,500/150,000 units)	0.75*

*Indirect material, indirect labour and inspection costs directly vary with the number of units produced.

2. Fixed costs (No change in cost irrespective of level of production) ₹

Depreciation-Plant & equipment	90,000
Engineering services	94,000
Selling and administration expenses	85,000

3. Semi-variable expenses- Maintenance and supervision expenses are in the nature of semi-variable expenses. The variable component of these expenses can be divided by applying the following formula:

= Change in cost / Change in production level

(a) Maintenance expenses:

(i) Variable cost = ₹ 102,000 - ₹84,000/ 150,000 -120,000
= ₹ 0.60 per unit

(ii) Fixed cost = ₹ 84,000 -(120,000 x Re 0.60)
= ₹ 12,000

(b) Supervision expenses:

(i) Variable cost = ₹ 234,000 - ₹ 198,000/150,000-120,000
= ₹ 1.20 per unit

(ii) Fixed cost = ₹ 198,000 -(120,000 x ₹ 1.20)
= ₹ 54,000.

Flexible Budget of Philips Electricals Ltd. for the year 2017-18 (Budgeted output-140,000 units)

		₹
Variable cost:		
Direct material (@₹ 7)		980,000
Direct labour (@₹ 4)		560,000
Indirect material (@₹ 2.20)		308,000
Indirect labour (@ ₹ 1.25)		175,000
Inspection (@ ₹ 0.75)		105,000
Maintenance (@₹ 0.60)		84,000
Supervision (@ ₹1.20)		168,000
Sales commission (@₹ 1.00)		140,000
	(a)	**25,20,000**
Fixed cost:		
Maintenance		12,000
Supervision		54,000
Depreciation-Plant and equipment		90,000
Engineering services		94,000
Selling and administrative expenses		85,000
	(b)	**3,35,000**
Total cost	**(a) + (b)**	**28,55,000**

14. Delta Ltd. fixes the interdivisional transfer prices for its product on the basis of cost plus a return on investment in the division. The budget for Division A for 2017-18 is as under:

Fixed assets	**₹ 250,000**
Current assets	**₹ 150,000**
Debtors	**₹ 100,000**
Annual fixed cost of the division	**₹ 400,000**
Variable cost per unit of the product	**₹ 10.00**

Budgeted volume **200,000 units per year**

Desired ROI **28%**

Determine the transfer price for Division A.

If the volume (in units) can be increased by 10%, what will be the impact on transfer price?

Answer:

Calculation of desired Return on Investment:

Fixed Assets	₹ 250,000
Current Assets	₹ 150,000
Stock	₹ 100,000
Total investment in business	₹ 500,000
Desired return (₹ 500,000 x 28/100)	₹ 140,000

Calculation of Transfer Price:

Variable cost (200,000 units x ₹ 10)	₹ 20,00,000
Fixed cost of Division A p.a.	₹ 400,000
Total cost	₹ 24,00,000
Add desired Return	₹ 140,000
Total amount to be charged	₹ 25,40,000
Inter divisional transfer price p.u. (₹ 25,40,000 /200,000 units)	₹ 12.70

Impact on Transfer price if the volume is increased by 10%:

Variable cost (220,000 units x ₹ 10)	₹22,00,000
Fixed cost	₹400,000
Total cost	₹ 26,00,000
Add- desired return on investment	₹ 140,000
Total amount to be charged	₹ 27,40,000

Interdivisional transfer price = ₹ 27,40,000 / 220,000 units
= ₹ 12.45 per unit

Due to increase in sales volume the transfer price will be reduced by Re 0.25 (i.e. ₹ 12.70 - ₹12.45) per unit.

15. (a) Sunk Cost

Sunk costs are historical costs which are already incurred i.e. sunk in the past and are not relevant to the particular decision making problem being considered. Sunk costs are those that have been incurred for a project and which will not be recovered if the project is terminated. While considering the replacement of a plant, the depreciated book value of the old asset is irrelevant as the amount is sunk cost which is to written-off at the time of replacement.

(b). Uniform Costing

Answer: Uniform costing is not a particular method of costing. It is adoption of common accounting principles and in some cases common methods by member companies in the same industry so that their cost figures may be comparable. Uniform costing can be defined as the use by several undertakings of the same costing principle and practices'.

In other words, it is a technique or method of costing by which different firms of a field or industry apply similar costing system so as to produce cost data which have maximum comparability.

Standard costs may be developed and cost-control is secured in firm through mutual comparison. Relative efficiency and inefficiencies in production may be identified and suitable steps may be suggested to control and reduce the cost. The objectives of uniform costing are to standardize accounting methods and to assist in determining suitable prices of products of firms which adopt this method.

Uniform costing can be adopted if certain pre-conditions exists. The success of a uniform costing system depends primarily on the cooperation extended by different units or firm towards the working of the system. Every unit should agree to supply required accounting and costing information without reservation to a central body formed by them for implementation of the uniform costing scheme. This body has to correlate, analyze and consolidate the information received from the different units.

(c). What do you mean about 'Responsibility Accounting'

One of the recent developments in the field of management accounting is the responsibility accounting, which is helpful in exercising cost control. Responsibility Accounting is a system of accounting that recognizes various responsibility centers throughout the organization and reflects the plans and actions of each of these centers

by assigning particular revenues and costs to the one having the pertinent responsibility. It is also called profitability accounting and activity accounting. It is a system in which the person holding the supervisory posts as president, function head, foreman, etc are given a report showing the performance of the company or department or section as the case may be. The report will show the data relating to operational results of the area and the items of which he is responsible for control. Responsibility accounting follows the basic principles of any system of cost control like budgetary control and standard costing. It differs only in the sense that it lays emphasis on human beings and fixes responsibilities for individuals. It is based on the belief that control can be exercised by human beings, so responsibilities should be fixed for individuals.

Principles of responsibility accounting are as follows:

(a) A target is fixed for each department or responsibility center.

(b) Actual performance is compared with the target.

(c) The variances from plan are analysed so as to fix the responsibility.

(d) Corrective action is taken by higher management and is communicated.

(d). Discuss the process of installation of Cost Accounting System.

Cost Accounting System has to be specially designed for an undertaking to meet its specific needs. Before installing a cost system proper care should be taken to study and taken into account all the aspects involved as otherwise the system will be a misfit and full advantages will not be realized from it. The following points should be looked into and the prerequisites satisfied before installing a cost system:

(i)The nature, method and stages of production, the number of varieties and the quantity of each product and such other technical aspects should be examined. It is to be seen how complex or how simple the production methods are and what is the degree of control exercised over them.

(ii) The size, layout and organisation of the factory should be studied.

(iii) The methods of purchase, receipt, storage and issue of materials should be examined and modified wherever considered necessary.

(iv) The wage payment methods should be studied.

(v) The requirements of the management and the policy adopted by them towards cost control should be kept in view.

(vi) The cost of the system to be installed should be considered. It is needless to emphasize that the installation and operation of system should be economic.

(vii) The system should be simple and easy to operate.

(viii) The system can be effectively run if it is appropriate and properly suited to the organisation.

(ix) Forms and records of original entry should be so designed and to involve minimum clerical work and expenditure.

(x) The system should be so designed that cost control can be effectively exercised.

(xi) The system should incorporate suitable procedure for reporting to the various levels of management. This should be based on the principles of exception.

(e). State the significance of 'Management Accounting'.

The various advantages that accrue out of management accounting are enumerated below:

(1) Delegation of Authority: Now a day the function of management is no longer personal, management accounting helps the organisation in proper delegation of authority for the attainment of the vision and mission of the business.

(2) Need of the Management : Management Accounting plays the role in meeting the need of the management.

(3) Qualitative Information: Management Accounting accumulates the qualitative information so that management would concentrate on the actual issue to deliberate and attain the specific conclusion even for the complex problem.

(4) Objective of the Business: Management Accounting provides measure and reports to the management thereby facilitating in attainment of the objective of the business.

(f). State the advantages of Budgetary Control:

(i) Budgetary control aims at maximisation of profits through optimum utilisation of resources.

(ii) It is a technique for continuous monitoring of policies and objectives of the organisation.

(iii) It helps in reducing the costs, thereby helps in better utilisation of funds of the organisation.

(iv) All the departments of the organisation are closely coordinated through establishment of plans resulting in smooth functioning of the organisation.

(v) Since budgets fix the responsibilities of the executives, they act as a plan of action for them there by reducing some of their work.

(vi) It facilitates analysis of variances, thereby identifying the areas where deficiencies occur and proper remedial action can be taken.

(vii) It facilitates the management by exception.

(viii) Budgets act as a motivating force to achieve the desired objective of the organisation.

(ix) It assists delegation of authority and is a powerful tool of responsibility accounting.

(x) It helps in stabilizing the conditions in industries which face seasonal fluctuations.

(xi) It helps as a basis for internal audit.

(xii) It provides a suitable basis for introducing the payment by results system.

(xiii) It ensures adequacy of working capital to the organisation.

(xiv) It aids in performance analysis and performance reporting system.

(xv) It aids in obtaining bank credit.

(xvi) Budgets are forerunners of standard costs in the sense that they create necessary conditions to suit setting up of standard costs.

(g). State the Objectives and Advantages of Production budget:

- Optimum utilisation of the productive resources of the organisation;
- Maintaining low inventory which results in risk of deterioration and fall in prices;
- Focus on the factors that are necessary to frame policies and plan sequence of operations;
- Projection of policies framed, on the basis of past performance, into the future to get the desired results;
- To see that right materials are provided at right place and at right time;
- Helps in scheduling of production so that delivery dates are met and customer satisfaction is gained;
- Helpful in preparation of projected profit and loss statement, which is useful in evaluation of performance and profitability.

(h). What do you mean by Performance Budgeting:

Performance Budgeting is synonymous with Responsibility Accounting which means thus the responsibility of various levels of management is predetermined in terms of output or result keeping in view the authority vested with them. The main concepts of such a system are enumerated below:

(a) It is based on a classification of managerial level for the purpose of establishing a budget for each level. The individual in charge of that level should be made responsible and held accountable for its performance over a given period of time.

(b) The starting point of the performance budgeting system rests with the organisation chart in which the spheres of jurisdiction have been determined. Authority leads to the responsibility for certain costs and expenses which are forecast or present in the budget with the knowledge of the manager concerned.

(c) The costs in each individual or department's budget should be limited to the cost controllable by him.

(d) The person concerned should have the authority to bear the responsibility.

(i). Zero Base Budgeting:

It differs from the conventional system of budgeting mainly it starts from scratch or zero and not on the basis of trends or historical levels of expenditure. In the customary budgeting system, the last year's figures are accepted as they are, or cut back or increases are granted. Zero based budgeting on the other hand, starts with the premise that the budget for next period is zero so long the demand for a function, process, project or activity is not justified for each rupee from the first rupee spent. The assumptions are that without such a justification no spending will be allowed. The burden of proof thus shifts to each manager to justify why the money should be spent at all and to indicate what would happen if the proposed activity is not carried out and no money is spent.

The first step in the process of zero base budgeting is to develop an operational plan or decision package. A decision package identifies and describes a particular activity with a view to:

(i) Evaluate and allotted ranking the activity against other activities competing for the same scarce resources, and

(ii) Decide whether to accept or reject or amend the activity.

For this purpose, each package should give details of costs, returns, purpose, expected results, the alternatives available and a statement of the consequences if the activity is reduced or not performed at all.

The advantages of Zero based budgeting are:

(a) Out of date and inefficient operations are identified.

(b) Allows managers to promptly respond to changes in the business environment.

(c) Instead of accepting the current practice, it creates a challenging and questioning attitude.

(d) Allocation of resources is made according to needs and the benefits derived.

(e) It has a psychological impact on all levels of management which makes each manager to pay his way.

(j). State distinctive features of Learning Curve Theory:

.

(i) Learning curve is not a cost reduction technique. It is a naturally occurring human phenomenon.

(iii) It is a human characteristic that a person engaged in repetitive task will improve his performance over time.

(iv) In the initial stage of production, generally the workers do not have the confidence of completing the job successfully. When they produce a few units, they gain confidence. People learn from errors.

(v) When the workers produce more and more units, they come to know the problems and their reasons. Now they are able to avoid the problems.

(vi) The workers are able to find the new methods of doing the job; they are able to complete task in less time.

(vii) Better equipments and tools are developed.

(viii) Better product designs lead to increased efficiency.

SECTION - B
Financial Management

PART-I – Objective Question

1. (a) Multiple Choice Questions (MCQ)

(i) Which of the following is not a characteristic of GDR?

(A) Is a negotiable instrument

(B) Carry voting rights

(C) Freely tradable in International Market

(D) Denominated in US Dollars.

(ii)Which of the following is a feature of Factoring?

(A)Tool of short term borrowing

(B)Purchase of export bill only.

(C)Used in Export business only.

(D)Done without recourse to the client.

(iii)Which of the following is a Profitability Ratio?

(A)Proprietary Ratio

(B)Debt –equity Ratio

(C)Price Earnings Ratio

(D)Fixed Asset Ratio.

(iv) GP Margin=20%, GP=₹54000, Sales=

(A) ₹300000

(B) ₹270000

(C) ₹280000

(D) ₹290000

(v) EBIT=₹1120000, PBT=₹320000, Fixed Costs=₹700000, Operating Leverage=

(A) 1.625

(B) 2.625

(C) 6.625

(B) 3.625

(vi) 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.

(vii)Determinants of credit policy relates to:

(A) Credit standards

(B)Credit terms

(C)Collection Procedures

(D)All of the above

(viii)The following is not a Discounted Cash Flow Technique:

(A) NPV

(B) PI

(C)Accounting of Average rate of return

(D) IRR

(ix) β(Beta) of a security measures its:

(A)Diversifiable risk

(B) Financial risk

(C) Market risk

(D) None of above.

(x)Following method is also known as 'Benefit Cost Ratio.'

(A) NPV

(B)IRR

(C)ARR

(D) PI

(b)Match the following:

Column 1	Column 2
(A) Capital Budgeting	**(i) Money Market Instrument**
(B) Commercial Paper	**(ii) NOPAT/Sales*Sales/Average Capital Employed**
(C) Debtors Turnover Ratio	**(iii)Capital structure theory**
(D) ROI	**(iv)Change in working capital between two Balance Sheet dates**
(E)Fund Flow Statement	**(v) Initial Investment/Annual Cash Inflows**
(F) NPV	**(vi)Functional area of Financial Management**
(G) Payback Period	**(vii) Credit Sales/Average collection period**
(H) Net Income Approach	**(viii)EBIT/EBT**
(I) ADR	**(ix)Negotiable Instrument**
(J) Financial Leverage	**(x)Cost of Capital**

(c) State whether the following statement are True/False.

(i) Cost of capital is highest in Equity share Financing.

(ii) Bill Financing is least liquid from Banker's point of view

(iii) Payout Ratio=Earning per Equity share/Dividend per equity share

(iv) Liquid Assets=Current Assets-Inventory

(v) Under cash credit/overdraft arrangement , a predetermined limit for borrowing is specified by the bank.

(vi) As per TANDON Committee norms under method 1 the proprietor should contribute 75% of Working Capital Gap.

(vii) Value of right=Cum right share price minus Ex right share price

(viii)Combined leverage=Contribution/EBT

(ix) DPP=Discounted Annual Cash Flow/Investment

(x) Project can be accepted when NPV is positive or at least zero

Ans:

1(a)

(i)-(B)	(ii)-(A)	(iii)-(C)	(iv)-(B)	(v)-(A)	(vi)-(D)
(vii)-(D)	(viii)-(C)	(ix)-(C)	(x)-(D)		

1(b)

(A)-(vi)	(B)-(i)	(C)-(vii)	(D)-(ii)	(E)-(iv)	(F)-(x)
(G)-(v)	(H)-(iii)	(I)-(ix)	(J)-(viii)		

1(c)

(i)True	(ii)False	(iii)False	(iv)True	(v)True	(vi)False
(vii)True	(viii)True	(ix)False	(x) True		

Part II: Subjective Questions

Financial Ratio Analysis

2) The following accounting information and financial ratios of PQR Ltd. relate to the year ended 31st March, 2018:

Gross Profit 15% of Sales; Net Profit 8% of Sales; Raw Materials consumed 20% of works cost, Direct wages 10% of works cost, Stock of Raw materials equals to 3 months usage; stock of finished goods is 6% of works Cost, debt collection period 60 days. All sales are on credit.

Fixed Assets to Sales 1:3 ; Fixed Assets to Current Assets 13:11 ; Current ratio 2:1 ; Long term loans to current liabilities 2:1 ; Capital to Reserves & Surplus 1:4.

If value of fixed assets as on 31st March, 2017 amounted to ₹26 lakhs, prepare a summarised Profit and Loss Account of the company for the year ended 31st March, 2018 and also the Balance Sheet as on 31st March, 2018.

Ans: (2)

(a) Working Notes:

(i) Calculation of Sales

$$\frac{\text{Fixed Assets}}{\text{Sales}} = \frac{1}{3}$$

$$\therefore \frac{26,00,000}{Sales} = \frac{1}{3} \Rightarrow Sales = ₹\ 78,00,000$$

(ii) Calculation of Current Assets

$$\frac{\text{Fixed Assets}}{\text{Current Assets}} = \frac{13}{11}$$

$$\frac{26,00,000}{\text{Current Assets}} = \frac{13}{11} \Rightarrow \text{Current Assets} = ₹\ 22,00,000$$

(iii) Calculation of Raw Material Consumption and Direct Wages

	₹
Sales	78,00,000
Less: Gross Profit	11,70,000
Works Cost	66,30,000
Raw Material Consumption (20% of Works Cost)	₹13,26,000
Direct Wages (10% of Works Cost)	₹ 6,63,000

(iv) Calculation of Stock of Raw Materials (= 3 months usage)

$= 13,26,000 \times \frac{3}{12} = ₹\ 3,31,500$

(v) Calculation of Stock of Finished Goods (= 6% of Works Cost)

$= 66,30,000 \times \frac{6}{100} = ₹\ 3,97,800$

(vii) Calculation of Current Liabilities

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = 2$$

$$\frac{22,00,000}{\text{Current Liabilities}} = 2 \Rightarrow \text{Current Liabilities} = ₹\,11,00,000$$

(vii) Calculation of Debtors

$$\text{Average collection period} = \frac{\text{Debtors}}{\text{Credit Sales}} \times 365$$

$$\frac{\text{Debtors}}{78,00,000} \times 365 = 60 \Rightarrow \text{Debtors} = ₹\,12,82,191.78 \text{ or } ₹\,12,82,192$$

(viii) Calculation of Long term Loan

$$\frac{\text{Long term Loan}}{\text{Current Liabilities}} = \frac{2}{1}$$

$$\frac{\text{Long term loan}}{11,00,000} = \frac{2}{1} \Rightarrow \text{Long term loan} = ₹\,22,00,000.$$

(ix) Calculation of Cash Balance

Current assets		22,00,000
Less: Debtors	12,82,192	
Raw materials stock	3,31,500	
Finished goods stock	3,97,800	20,11,492
Cash balance		1,88,508

(x) Calculation of Net worth

Fixed Assets		26,00,000
Current Assets		22,00,000
Total Assets		48,00,000
Less: Long term Loan	22,00,000	
Current Liabilities	11,00,000	33,00,000
Net worth		15,00,000

Net worth = Share capital + Reserves = 15,00,000

$$\frac{\text{Capital}}{\text{Reserves and Surplus}} = \frac{1}{4} \Rightarrow \text{Share Capital} = 15,00,000 \times \frac{1}{5} = ₹\,3,00,000$$

$$\text{Reserves and Surplus} = 15,00,000 \times \frac{4}{5} = ₹\,12,00,000$$

Profit and Loss Account of PQR Ltd for the year ended 31st March, 2018

	Particulars	₹	Particulars	₹
To	Direct Materials	13,26,000	By Sales	78,00,000
To	Direct Wages	6,63,000		
To	Works (Overhead) Balancing figure	46,41,000		
To	Gross Profit c/d (15% of Sales)	11,70,000		
		78,00,000		78,00,000
To	Selling and Distribution Expenses (Balancing figure)	5,46,000	By Gross Profit b/d	11,70,000
To	Net Profit (8% of Sales)	6,24,000		
		11,70,000		**11,70,000**

Balance Sheet of PQR Ltd.as at 31st March, 2018

Liabilities	₹	Assets	₹
Share Capital	3,00,000	Fixed Assets	26,00,000
Reserves and Surplus	12,00,000	Current Assets:	
Long term loans	22,00,000	Stock of Raw Material	3,31,500
Current liabilities	11,00,000	Stock of Finished Goods	3,97,800
		Debtors	12,82,192
		Cash	1,88,508
	48,00,000		**48,00,000**

3) A company has a profit margin of 20% and asset turnover of 3 times. What is the company's return on investment? How will this return on investment vary if?

Profit margin is increased by 5%?

Asset turnover is decreased to 2 times?

Profit margin is decreased by 5% and asset turnover is increase to 4 times?

Ans:

Net profit ratio = 20% (given)

Assets turnover ratio = 3 times (given)

Return on Investment (ROI) = Net Profit ratio x Assets turnover ratio

= 20% x 3 times = 60%

If net profit ratio is increased by 5 %:

Then Revised Net Profit Ratio = 20 + 5 = 25%

Asset Turnover Ratio (as before) = 3 times

∴ROI = 25 % x 3 times = 75%

If assets turnover ratio is decreased to 2 times:

NP Ratio (as before) = 20%

Revised Asset Turnover Ratio = 2 times

∴ROI = 20% x 2 times = 40 %

If net profit ratio falls by 5% and assets turnover ratio raises to 4 times:

Then Revised NP Ratio = 20 – 5 = 15%

Revised Asset Turnover Ratio = 4 times

∴ ROI = 15% x 4 = 60%

Cash Flow Analysis

4) From the information contained in Income Statement and Balance Sheet of 'A' Ltd., prepare Cash Flow Statement:

Income Statement for the year ended March 31, 2018

		₹
Net Sales	**(A)**	**2,52,00,000**
Less:		
Cash Cost of Sales		**1,98,00,000**
Depreciation		**6,00,000**
Salaries and Wages		**24,00,000**
Operating Expenses		**8,00,000**
Provision for Taxation		**8,80,000**
	(B)	**2,44,80,000**
Net Operating Profit (A – B)		**7,20,000**
Non-recurring Income – Profits on sale of equipment		**1,20,000**
		8,40,000
Retained earnings and profits brought forward		**15,18,000**
		23,58,000
Dividends declared and paid during the year		**7,20,000**
Profit and Loss Account balance as on March 31, 2018		**16,38,000**

Balance Sheet as on

Assets:	**March 31, 2017 (₹)**	**March 31, 2018 (₹)**
Fixed Assets:		
Land	**4,80,000**	**9,60,000**
Buildings and Equipment	**36,00,000**	**57,60,000**
Current Assets:		
Cash	**6,00,000**	**7,20,000**
Debtors	**16,80,000**	**18,60,000**
Stock	**26,40,000**	**9,60,000**
Advances	**78,000**	**90,000**
	90,78,000	**1,03,50,000**
Liabilities and Equity:	**March 31, 2017 (₹)**	**March 31, 2018 (₹)**
Share Capital	**36,00,000**	**44,40,000**
Surplus in Profit and Loss Account	**15,18,000**	**16,38,000**
Sundry Creditors	**24,00,000**	**23,40,000**
Outstanding Expenses	**2,40,000**	**4,80,000**
Income-tax payable	**1,20,000**	**1,32,000**
Accumulated Depreciation on Buildings and Equipment	**12,00,000**	**13,20,000**
	90,78,000	**1,03,50,000**

The original cost of equipment sold during the year 2017-18 was ₹ 7,20,000.

Ans:

Cash Flow Statement of Company A Ltd. for the year ending March 31, 2018

Cash flows from Operating Activities

	`
Net Profits before Tax and Extra-ordinary Item	16,00,000
Add: Depreciation	6,00,000
Operating Profits before Working Capital Changes	22,00,000
Increase in Debtors	(1,80,000)
Decrease in Stock	16,80,000
Increase in Advances	(12,000)
Decrease in Sundry Creditors	(60,000)
Increase in Outstanding Expenses	2,40,000
Cash Generated from Operations	38,68,000
Income tax Paid	8,68,000
Net Cash from Operations	30,00,000

Cash flows from Investment Activities

	₹
Purchase of Land	(4,80,000)
Purchase of Buildings and Equipment	(28,80,000)
Sale of Equipment	3,60,000
Net Cash used in Investment Activities	(30,00,000)

Cash flows from Financing Activities

	₹
Issue of Share Capital	8,40,000
Dividends Paid	(7,20,000)
Net Cash from Financing Activities	1,20,000
Net increase in Cash and Cash Equivalents	1,20,000
Cash and Cash Equivalents at the beginning	6,00,000
Cash and Cash Equivalents at the end	7,20,000

Buildings and Equipment Account

	₹		₹
Balance b/d	36,00,000	Sale of Asset	7,20,000
Cash/Bank (purchase) (Balancing figure)	28,80,000	Balance c/d	57,60,000
	64,80,000		64,80,000

Accumulated Depreciation on Buildings and Equipment Account

	₹		₹
Sale of Asset (Accumulated depreciation)	4,80,000	Balance b/d	12,00,000
		Profit and Loss (Provisional)	6,00,000
Balance c/d	13,20,000		
	18,00,000		18,00,000

Statement showing Sale of Asset

	₹
Original Cost	7,20,000
Less: Accumulated Depreciation	4,80,000
Net Cost	2,40,000
Profit on Sale of Asset	1,20,000
Sale Proceeds from Asset Sales	3,60,000

Funds Flow Analysis

5) Following are the financial statements of Z Ltd.:

Balance Sheet as on

	March 31, 2017 ₹	March 31, 2016 ₹
Capital and Liabilities:		
Share capital, ₹ 10 par value	1,67,500	1,50,000
Share premium	3,35,000	2,37,500
Reserves and Surplus	1,74,300	1,23,250
Debentures	2,40,000	–
Long-term loans	40,000	50,000
Creditors	28,800	27,100
Bank Overdraft	7,500	6,250
Accrued expenses	4,350	4,600
Income-tax payable	48,250	16,850
	10,45,700	6,15,550

	March 31, 2017 ₹	March 31, 2016 ₹
Assets:		
Land	3,600	3,600
Building, net of depreciation	6,01,800	1,78,400
Machinery, net of depreciation	1,10,850	1,07,050
Investment in 'A' Ltd.	75,000	–
Stock	58,800	46,150
Prepaid expenses	1,900	2,300
Debtors	76,350	77,150
Trade Investments	40,000	1,05,000
Cash	77,400	95,900
	10,45,700	6,15,550

Income Statement
for the year ended March 31, 2017

	₹
Net Sales	13,50,000
Less: Cost of goods sold and operating expenses (including depreciation on buildings of ₹ 6,600 and depreciation on machinery of ₹ 11,400)	12,58,950
Net operating profit	91,050
Gain on sale of trade investments	6,400

Gain on sale of machinery	**1,850**
Profits before tax	**99,300**
Income-tax	**48,250**
Profits after tax	**51,050**

Additional information:

(i) Machinery with a net book value of ₹ 9,150 was sold during the year.

(ii) The shares of 'A' Ltd. were acquired by issue of debentures.

Required:

Prepare a Funds Flow Statement (Statement of changes in Financial position on Working capital basis) for the year ended March 31, 2017.

Ans:

Schedule of Changes in Working Capital

	March 31, 2017	March 31, 2016	Impact on Working Capital	
			Increase	Decrease
Current Assets				
Stock	58,800	46,150	12,650	–
Prepaid expenses	1,900	2,300	–	400
Debtors	76,350	77,150	–	800
Trade Investments	40,000	1,05,000	–	65,000
Cash	77,400	95,900	–	18,500
	2,54,450	3,26,500	12,650	84,700
Current Liabilities				
Creditors	28,800	27,100	–	1,700
Bank overdraft	7,500	6,250	–	1,250
Accrued expenses	4,350	4,600	250	–
Income tax payable	48,250	16,850	–	31,400
	88,900	54,800	250	34,350
Net Working Capital	1,65,550	2,71,700	12,900	1,19,050
Decrease in net working capital	1,06,150	–	1,06,150	–
	2,71,700	2,71,700	1,19,050	1,19,050

Machinery Account

	₹		₹
Balance b/d	1,07,050	Sale of machinery (given)	9,150
Purchase of machinery (plug)	24,350	Depreciation (given)	11,400
		Balance c/d	1,10,850
	1,31,400		1,31,400

Trade Investments Account

	₹		₹
Balance b/d	1,05,000	Cash (sale of trade investments)	65,000
		Balance c/d	40,000
	1,05,000		1,05,000

Estimation of Funds flow from Operations

		₹
Profits after tax		51,050
Add: Depreciation on Buildings	6,600	
Depreciation on Machinery	11,400	18,000
		69,050
Less: Gain on sale of machinery		1,850
Funds from Operations		67,200

Gain on sale of trade investments has been considered as an operating income. Trade investments have been considered as part of current assets.

Statement of Changes in Financial Position (Working Capital basis) for the year ended March 31, 2017

Sources:	₹
Funds from operations	67,200
Sale of machinery on gain (9,150 + 1,850)	11,000
Debentures issued (₹ 2,40,000 – 75,000)	1,65,000
Investment in 'A' Ltd. financial transaction and hence not affecting working capital	
Issue of share capital (including share premium)	1,15,000
Financial Resources Provided	3,58,200
Uses:	
Purchase of building (6,01,800 + 6,600 – 1,78,400)	4,30,000
Purchase of machinery	24,350
Payment of long-term loan	10,000
Financial Resources Applied	4,64,350
Net Decrease in Working Capital	1,06,150

Working Capital Management

6) Hello Limited is launching a new project for the manufacture of a unique component. At full capacity of 48,000 units, the cost will be as follows:

	Cost per unit ₹
Material	40
Labour and Variable Expenses	20
Fixed Manufacturing and Administrative Expenses	10
Depreciation	5
	75

The selling price per unit is expected at ₹100 and the selling expenses per unit will be ₹ 5, 80% of which is variable.

In the first two years production and sales are expected to be as follows:

Year	Production	Sales
1	30,000 units	28,000 units
2	40,000 units	36,000 units

To assess working capital requirement, the following additional information is given:

(a) Stock of raw material -3 months' average consumption.
(b) Work-in-progress-Nil.
(c) Debtors-1 month average sales.
(d) Creditors for supply of materials- 2 months average purchases of the year.
(e) Creditors for expenses- 1 month average of all expenses during the year.
(f) Cash balance-₹ 20,000

Stock of finished goods is taken at average cost.

You are required to prepare for the two years:

(1) A projected statement of profit/loss
(2) A projected statement of working capital requirements.

Ans:

Hello Ltd.

(1) Projected Statement of Profit/Loss

	Year I ₹	Year II ₹
Production in units	15,000	20,000
Sales in units	14,000	18,000
Sales Revenue @ ` 100 per unit (A)	28,00,000	36,00,000
Cost of Production		
Material @ ₹ 40 per unit	12,00,000	16,00,000
Direct labour & variable expenses @₹ 20 per unit	6,00,000	8,00,000
Fixed manufacturing & Administrative expenses @ ₹10 on 48,000 units	4,80,000	4,80,000
Depreciation @ ₹ 5 for 48,000 units	2,40,000	2,40,000
Total Cost of Production	25,20,000	31,20,000
Add: Opening stock of finished goods at	-	1,68,000

average cost $\frac{*25,20,000}{30,000}\times 2,000$		*
Cost of goods available	25,20,000	32,88,000
Less: Closing stock of finished goods at average cost $\frac{\#32,88,000}{42,000}\times 6,000$	1,68,000	4,69,714#
Cost of goods sold	23,52,000	28,18,286
Add: Selling expenses (Variable at ₹4)	1,12,000	1,44,000
Selling expenses fixed at ₹ 1	48,000	48,000
Cost of Sales (B)	25,12,000	30,10,286
Profit A-B	**2,88,000**	**5,89,714**

Working Notes

		Year I ₹	Year II ₹
(a)	Creditors for supply of material		
	Materials consumed	12,00,000	16,00,000
	Add: Closing stock of Average consumption (3 months)	3,00,000	4,00,000
		15,00,000	20,00,000
	Less: Opening Stock	-	3,00,000
	Purchases	15,00,000	17,00,000
	Average purchases per month (Creditors)	1,25,000	1,41,667
	Creditors (2 months for goods)	2,50,000	2,83,334
(b)	Creditors for expenses	1,03,334*	1,22,667*
	Total of Current Liabilities (B)	3,53,334	4,06,001
	*Labour, Manufacturing expenses & Selling expenses		
		6,00,000	8,00,000
		4,80,000	4,80,000
		1,12,000	1,44,000
		48,000	48,000
		12,40,000	14,72,000
		12	12

(2) Projected Statement of Working Capital Requirements

	Year I ₹	Year II ₹
Current Assets:	3,00,000	4,00,000
Stock of materials (3 months average consumption)		
Finished Goods	1,68,000	4,69,714

Debtors (one month)	2,33,334	3,00,000
Cash	20,000	20,000
Total Current Assets (A)	7,21,334	11,89,714
Current Liabilities:		
Creditors for supply of materials	2,50,000	2,83,334
Creditors for expenses (See W.N. (b) above)	1,03,334	1,22,667
Estimated Working Capital requirement (B)	3,53,334	4,06,001
Estimated Working Capital	3,68,000	7,83,713

7) A newly formed company has applied to the commercial bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year:

Estimated level of activity: 4,16,000 completed units of production plus 16,000 units of work-in-progress. Based on the above activity, estimated cost per unit is:

Raw material	**₹20 per unit**
Direct wages	**₹7.50 per unit**
Overheads (exclusive of depreciation)	**₹ 15 per unit**
Total cost	**₹ 75 per unit**
Selling price	**₹100 per unit**

Raw materials in stock: Average 4 weeks consumption, work-in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	**32,000 units**
Credit allowed by suppliers	**Average 4 weeks**
Credit allowed to debtors/receivables	**Average 8 weeks**
Lag in payment of wages	**Average 1 $\frac{1}{2}$ weeks**

Cash at banks (for smooth operation) is expected to be₹ 25,000

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only.

Find out

(i) the net working capital required; (on Cost Basis)

(ii) the maximum permissible bank finance under first and second methods of financing as per Tandom Committee Norms.

Ans:

(i) Estimate of the Requirement of Working Capital

	₹	₹
A. Current Assets:		
Raw material stock (Refer to Working note 3)	6,64,615	
Work in progress stock (Refer to Working note 2)	5,00,000	

Finished goods stock (Refer to Working note 4)	13,60,000	
Debtors (Refer to Working note 5)	25,10,769	
Cash and Bank balance	25,000	50,60,384
B. Current Liabilities:		
Creditors for raw materials (Refer to Working note 6)	7,15,740	
Creditors for wages (Refer to Working note 7)	91,731	8,07,471
Net Working Capital (A-B)		**42,52,913**

(ii) The maximum permissible bank finance as per Tandom Committee Norms

First Method:

75% of the net working capital financed by bank i.e. 75% of ₹ 42,52,913 (Refer to (i) above)

= ₹ 31,89,685

Second Method:

(75% of Current Assets)- Current liabilities (i.e. 75% of ₹50,60,384) - ₹ 8,07,471 (Refer to (i) above)

= ₹37,95,288 – ₹ 8,07,471

= ₹ 28,87,817

Working Notes:

1. Annual cost of production

	₹
Raw material requirements (4,16,000 units × ₹20)	83,20,000
Direct wages (4,16,000 units × ₹ 7.50)	31,20,000
Overheads (exclusive of depreciation)(4,16,000 ×₹15)	62,40,000
	1,76,80,000

2. Work in progress stock

	₹
Raw material requirements (16,000 units × ₹ 20)	3,20,000
Direct wages (50% × 16,000 units × ₹7.50)	60,000
Overheads (50% × 16,000 units × ₹15)	1,20,000
	5,00,000

3. Raw material stock

It is given that raw material in stock is average 4 weeks consumption. Since, the company is newly formed, the raw material requirement for production and work in progress will be issued and consumed during the year.

Hence, the raw material consumption for the year (52 weeks) is as follows:

	₹
For Finished goods	83,20,000
For Work in progress	3,20,000
	86,40,000

Raw material stock $\frac{₹86,40,000}{52 \text{ weeks}} \times 4 \text{ weeks}$ = ₹6,64,615

4. Finished goods stock
   32,000 units @ ₹ 42.50 per unit = ₹ 13,60,000
5. Debtors for sale

Credit allowed to debtors	Average 8 weeks
Credit sales for year (52 weeks) i.e. (4,16,000 units- 32,000 units)	3,84,000 units
Selling price per unit	₹ 100
Credit sales for the year (3,84,000 units × ₹ 42.50)	₹1,63,20,000
Debtors $\frac{₹1,63,20,000}{52 \text{ weeks}} \times 8 \text{ weeks}$	= ₹ 25,10,769

6. Creditors for raw material:

Credit allowed by suppliers	Average 4 weeks
Purchases during the year (52 weeks) i.e. (₹83,20,000 + ₹ 3,20,000 + ₹ 6,64,615) (Refer to Working notes 1,2 and 3 above)	₹93,04,615
Creditors $\frac{₹93.04.615}{52 \text{ weeks}} \times 4 \text{ weeks}$	=₹7,15,740

7. Creditors for wages

Lag in payment of wages	Average $1\frac{1}{2}$ weeks
Direct wages for the year (52 weeks) i.e. (₹31,20,000 + ₹60,000) (Refer to Working notes 1 and 2 above)	=₹31,80,000
Creditors	$\frac{₹31,80,000}{52 \text{ weeks}} \times 1\frac{1}{2} \text{ weeks}$ = ₹91,731

8) The following information has been extracted from the records of a Company:

Product Cost Sheet	**₹/unit**
Raw materials	**45**
Direct labour	**20**
Overheads	**40**
Total	**105**
Profit	**15**
Selling price	**120**

- **Raw materials are in stock on an average of two months.**
- **The materials are in process on an average for 4 weeks. The degree of completion is 50%.**
- **Finished goods stock on an average is for one month.**
- **Time lag in payment of wages and overheads is 1½ weeks.**
- **Time lag in receipt of proceeds from debtors is 2 months.**
- **Credit allowed by suppliers is one month.**

- **20% of the output is sold against cash.**
- **The company expects to keep a Cash balance of ₹2,00,000.**
- **Take 52 weeks per annum.**

The Company is poised for a manufacture of 1,50,000 units in the year. You are required to prepare a statement showing the Working Capital requirements of the Company.

Ans:

Statement showing the Working Capital Requirement

		₹
Current Assets:		
Stock of raw materials		11,25,000
[₹67,50,000 / 12 months) × 2 months		
Work-in-progress		6,05,769
[(₹1,57,50,000 × 4) / 52 months] × 50%		
Finished goods		13,12,500
(₹1,57,50,000 / 12 months)		
Debtors		24,00,000
(₹30,00,000 × 80%)		
(Refer to Working note 2)		
Cash balances		2,00,000
		56,43,256
Current Liabilities:		
Creditors of raw materials		5,62,500
(₹67,50,000 / 12 months)		
Creditors for wages & overheads		2,59,615
$\left(\frac{₹\ 90,00,000}{52\ \text{weeks}} \times 1.5\ \text{weeks}\right)$		
Net Working Capital (C.A– C.L)		48,21,154

Working Notes:	
1, Annual raw materials requirements (₹)	67,50,000
1,50,000 units × ₹45	
Annual direct labour cost (₹)	30,00,000
1,50,000 units × ₹20	
Annual overhead costs (₹)	60,00,000
1,50,000 units × ₹40	
Total Cost (₹)	1,57,50,000
2. Total Sales:	1,80,00,000
(1,50,000 units × ₹120)	
Two months sales	30,00,000
(₹1,80,80,000 / 6 months)	

Leverage Analysis

9) Calculate the operating leverage and financial leverage under situation A, B and C and financial plans I, II and III respectively from the following information relating to the operational and capital structure of XYZ Co. Also find out the combinations of operating and financial leverage which give the highest value.

Installed Capacity	**1200 units**
Actual production and sales	**800 units**
Selling price per unit	**₹15**
Variable cost per unit	**₹10**
Fixed cost Situation A	**₹1000**
Situation B	**₹2000**
Situation C	**₹3000**

Capital Structure	**Financial Plan**		
Equity	**5,000**	**7,500**	**2,500**
Debt	**5,000**	**2,500**	**7,500**
Cost of debt 12%			

Answer

Calculation of Leverages under various Situations and Financial Plans:

	A	B	C
Sales	12000	12000	12000
(-) variable cost	8000	8000	8000
Contribution	4000	4000	4000
(-) fixed cost	1000	2000	3000
EBIT	3000	2000	1000
DOL (Degree of Operating Leverage)	1.33	2	4
(C / EBIT)	1	2	3
Situation A			
EBIT	3000	3000	3000
(-) interest	600	300	900
EBT	2400	2700	2100
DFL (EBIT / EBT)	1.25	1.11	1.43
Situation B			
EBIT	2000	2000	2000
(-) interest	600	300	900

EBT	1400	1700	1100
DFL (EBIT / EBT)	1.43	1.18	1.82
Situation C			
EBIT	1000	1000	1000
(-)Interest	600	300	900
EBT	400	700	100
DFL	2.5	1.43	10

Situation C in plan 3 is 40 times variation gives maximum value.

10) M Ltd. belongs to a risk class for which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹ 100. It expects a net profit of ₹2,50,000 for the year and the Board is considering dividend of ₹ 5 per share. M Ltd. requires to raise ₹5,00,000 for an approved investment expenditure. Show, how does the M-M approach affect the value of M Ltd., if dividends are paid or not paid.

Ans:

(1) When dividend is paid

(a) Price per share at the end of year 1

$100 = \frac{1}{1.10}(₹5 + P_1)$

$110 = ₹5 + P_1$

$P_1 = 105$

(b) Amount required to be raised from issue of new shares

₹5,00,000 – (2,50,000 – 1,25,000)

₹5,00,000 – 1,25,000 = ₹3,75,000

(c) Number of additional shares to be issued

$\frac{3,75,000}{105} = \frac{75,000}{21}$ shares or say 3572 shares

(d) Value of M Ltd.

(Number of shares × Expected Price per share)

i.e., (25,000 + 3,572) × ₹105 = ₹30,00,060

(2) When dividend is not paid

(a) Price per share at the end of year 1

$100 = \frac{p_1}{1.10}$ $P_1 = 110$

(b) Amount required to be raised from issue of new shares
₹5,00,000 – 2,50,000 = 2,50,000

(c) Number of additional shares to be issued
$\frac{2,50,000}{110} = \frac{25,000}{11}$ shares or say 2273 shares.

(d) Value of M Ltd.,
(25,000 + 2273) × ₹110
= ₹30,00,030
Whether dividend is paid or not, the value remains the same.

Cost of Capital

11) Determine the cost of capital for H P Ltd using the book (BV) and market value (MV) weights from the following information:

Equity Shares:	**₹ 1,20,00,000 (₹2,00,00,000, MV)**
Retained earnings:	**₹30,00,000**
Preference Shares:	**₹ 9,00,000 (₹10,40,000, MV)**
Debentures:	**₹ 36,00,000 (₹ 33,75,000, MV)**

Additional information:

(i) Equity: Equity shares are quoted at ₹130 per share and a new issue priced at ₹125 will be fully subscribed; flotation costs will be ₹ 5 per share.

(ii) Dividend: During the previous 5 years, dividends have steadily grown from ₹10.60 to ₹ 14.19. Dividend at the current year-end is expected to be ₹15 per share.

(iii) Preference shares: 15% Irredeemable Preference shares with face value of ₹ 100 would realise ₹ 105 per share.

(iv) Debentures: The company proposes to issue 11 year 15% Debentures but the yield on debentures of similar maturity and risk class is 16%; flotation cost is, 2 %.

(v) Tax: Corporate tax rate is 35%. Ignore dividend tax.

Ans: Specific cost of capital:

$$K_e = \frac{D_1}{Net\ Sale\ Proceeds} \text{ x } 100 + \text{ Growth (g)}$$

$$K_e = \frac{15}{120} \text{ x } 100 + 6\,\% = 18.5\,\%$$

Where

[10.6 x $(1 + g)^5$ = 14.19, g = 6%]

$$K_p = \frac{Dividend\ D_0}{Net\ Sale\ Proceeds} \text{ x } 100$$

$$K_p = \frac{15}{105} \text{ x } 100 = 14.29\,\%$$

In order to earn 16% yield the company has to issue debentures at discount which is calculated as follows:

(100 x 15) / 16 = ₹ 93.75 ➔ issue price

$$K_d = \frac{I\,(1-t) + \frac{RV - NS}{N}}{\frac{RV + NS}{2}} \text{ x } 100$$

$$K_d = \frac{15\,(1-0.35) + \frac{100 - 91.75}{11}}{\frac{100 + 91.75}{2}} \text{ x } 100 = 10.95\,\%\,(\text{or})11\,\%$$

$$K_r = \frac{D_1}{Sale\ Price} + \text{Growth (g)}$$

$$K_r = \frac{15}{125} \text{ X } 100 + 6\,\% = 18\%$$

Calculation of K_O (WACC)

Book value basis:

Source	Rs	Weight	Cost of capital	K_O
Equity	12000000	0.6154	18.50%	11.38
Reserves	3000000	0.1538	18.00%	2.76
Preference	900000	0.0462	14.29%	0.66
Debentures	3600000	0.1846	11.00%	2.03
	19500000			16.84 %

Market value basis:

Source	Rs	Weight	Cost of capital	K_O
Equity	16000000	0.6553	18.50%	12.12
Reserves	4000000	0.1638	18.00%	2.95
Preference	1040000	0.0426	14.29%	0.61
Debentures	3375000	0.1383	11.00%	1.52
	24415000			17.20%

Capital Structure

12) In considering the most desirable capital structure of a company, the following estimates of the cost of debt and equity capital (after tax) have been made at various levels of Debt –equity Mix.

Debt as % of total capital employed	Cost of Debt %	Cost of equity %
0	5.0	12.0
10	5.0	12.0
20	5.0	12.5
30	5.5	13.0
40	6.0	14.0
50	6.5	16.0
60	7.0	20.0

Calculate the optimal Debt-Equity Mix for the company by calculating composite cost of capital.

Ans:

Composite cost of capital is calculated as follows:

Debt as %of capital	0	10	20	30	40	50	60
Cost of Debt %	5.0	5.0	5.0	5.5	6.0	6.5	7.0
Cost of Equity%	12.0	12.0	12.5	13.0	14.0	16.0	20.0
Composite cost of capital	0%*5+ 100%*12.00 12	10%*5 +90%*12 11.30	20%*5 +80%*12.5= 11	30%*5.5 + 70%*13 =10.75	40%*6+ 60%*14 =10.8	50%*6.5 +50%*16 =11.25	60%*7 40%*20 =12.20

13) Project A and B are analysed and you have determined the following parameters. Advise the investor on the choice of a project.

Particulars	Project A	Project B
Investment	₹8cr	₹6cr
Project Life	8years	10 years
Construction period	4 years	4 years
Cost of Capital	15%	18%
NPV @12%	₹3700	₹4566
NPV @18%	₹425	₹425
IRR	45%	32%
Rate of Return	20%	27%
Payback	5 years	7 years
BEP	45%	35%
Profitability Index	1.70	1.30

Ans:

Determination of priority of the project

	A	B
NPV at 12%	II	I
NPV at 18%	Same	Same
IRR	I	II
ARR	II	I
Payback	I	II
PI	I	II

Decision:

(i) As the outlays in the projects are different, NPV is not suitable for evaluation.

(ii) As there is a different life period, ARR is not appropriate for evaluation.

On basis of remaining evaluation methods (IRR, PBP, PI) project A is occupied first priority. Hence, it is advised to choose Project A.

14) Company X is forced to choose between two machines A and B. The two machines are designed differently, but have identical capacity and do exactly the same job. Machine A costs ₹1,50,000 and will last for 3 years. It costs ₹40,000 per year to run. Machine B is an 'economy' model costing only ₹ 1,00,000, but will last only for 2 years, and costs ₹ 60,000 per year to run. These are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore tax. Opportunity cost of capital is 12 per cent. Which machine company X should buy?

Ans:

Statement showing the evaluation of two machines

Machines	A	B
Purchase cost (₹): (i)	1,50,000	1,00,000
Life of machines (years)	3	2
Running cost of machine per year (₹): (ii)	40,000	60,000
Cumulative present value factor for 1-3 years @ 12% (iii)	2.4018	–
Cumulative present value factor for 1-2 years @ 10% (iv)	–	1.6901
Present value of running cost of machines (₹): (v)	96,072	1,01,406
	[(ii) × (iii)]	[(ii) × (iv)]
Cash outflow of machines (₹): (vi) = (i) + (v)	2,46,672	2,01,406
Equivalent present value of annual cash outflow	1,02,453	1,19,168
	[(vi) ÷ (iii)]	[(vi) ÷ (iv)]

Decision: Company X should buy machine A since its equivalent cash outflow is less than machine B.

Part III: Short Questions

15) Write short note on:

a) ADRs

b) Debt Service Coverage Ratio

c) Working Capital Cycle

d) Marginal Cost of Capital

e) Discounted Cash Flow Techniques

15 (a) American Depository Receipt (ADR)

The depository receipt in the US market is called ADR. ADRs are those which are issued and listed in any of the stock exchanges of US. It is an investment in the stock of non- US corporation trading in the US stock exchange.

Characteristics:

1. The ADRs may or may not have voting rights.

2. The ADRs are issued in accordance with the provisions laid by SEC, USA.

3. The ADRs are bearer negotiable instrument and the holder can sell it in the market.

4. The ADRs once sold can be re- issued. The operation of ADR- similar to that of GDR

Advantages

1. The ADRs are an easy cost effective way for individuals to hold and own shares in a foreign country.

2. They save considerable money by reducing administration cost and avoiding foreign taxes on each transaction.

15 (b)

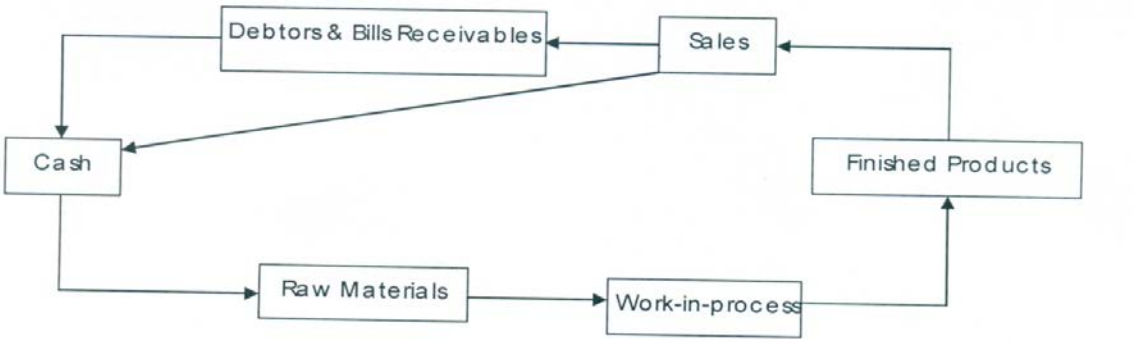
Debt Service Coverage Ratio (DSCR)

This ratio indicates whether the business is earning sufficient profits to pay not only the interest charged, but also whether due of the principal amount. The ratio is calculated as follows:

Debt Service Coverage Ratio = [Profit after Taxes + Depreciation + Interest on Loan]/ [Interest on Loan + Loan repayment in a year]

Significance: The ratio is the key indicator to the lender to assess the extent of ability of the borrower to service the loan in regard to timely payment of interest and repayment of loan installment. A ratio of 2 is considered satisfactory by the financial institutions the greater debt service coverage ratio indicates the better debt servicing capacity of the organization.

15(c) Working Capital Cycle or Operating Cycle are synonymous terms in the context of management of working capital. Any business concern, whether it is of financial nature, trade organisation or a manufacturing organisation needs certain time to net fruits of the efforts. That is, by investment of cash, producing or doing something for some time will fetch profit. But soon after the investment of cash, it cannot get that profit by way of cash again immediately. It takes time to do so. The time required to take from investment of cash in some assets and conversion of it again into cash termed as operating or working capital cycle. Here the cycle refers to the time period. Chart for Operating Cycle or Working Capital Cycle.



15(d) Marginal Cost of Capital

The weighted average cost of capital can be worked out on the basis of marginal cost of capital than the historical costs. The weighted average cost of new or incremental capital is known as the marginal cost of capital. This concept is used in capital budgeting decisions. The marginal cost of capital is derived, when we calculate the weighted average cost of capital using the marginal weights. The marginal cost of capital would rise whenever any component cost increases. The marginal cost of capital should be used as the cut off rate. The average cost of capital should be used to evaluate the impact of the acceptance or rejection of the entire capital expenditure on the value of the firm.

15(e) Discounted Cash Flow Techniques:

The discounted cash flow methods provide a more objective basis for evaluating and selecting an investment project. These methods consider the magnitude and timing of cash flows in each period of a project's life. Discounted Cash Flows methods enable us to isolate the differences in the timing of cash flows of the project by discounting them to know the present value. The present value can be analyses to determine the desirability of the project. These techniques adjust the cash flows over the life of a project for the time value of money.

The popular discounted cash flows techniques are:

(a) Net Present Value

(b) Internal Rate of Return, and

(c) Profitability Index