Paper-8: Cost Accounting & Financial Management

Time Allowed: 3 Hours **Full Marks: 100**

Section A- Cost Accounting
(Answer Question No.1 which is compulsory and any three from the rest in this section)

Working Notes should form part of the answer.

1. (a) A work measurement study was carried out in a firm for 20 hours and the following information was generated.

Units produced	**340**
Idle time	**15%**
Performance rating	**120%**
Allowance time	**10% of standard time**

What is the Standard time for task? [2]

Answer:
Calculation of standard time for task

Total time= 20X60	=1200 minutes
(-) Down time or idle time @ 15%	= 180 minutes
Actual time	=1020 minutes
Normal time= 1020 X 120%	=1224 minutes
(+) Relaxation allowance(10% or 1/10 on standard time i.e. 1/9 on normal time)	= 136 minutes
Standard time for job	=1360 minutes
Standard time for each unit=1360/340	=4 minutes

(b) What is Sunk Cost? [2]

Answer.
Sunk costs are historical costs which are 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.

(c) Time allowed for a job is 45 hours; a worker takes 40 hours to complete the job. Time rate per hour is ₹15. Compute the total earnings of the worker. [2]

Answer.

Total Earnings	=H x R+ 50% [S-H] R
Total Earnings	=40 x ₹15+50% [45-40] × ₹15
Total Earnings	=₹600+ ₹37.5= ₹637.50

(d) A firm requires 16,000 nos. of certain component, which it buys at ₹60 each. The cost of placing an order and following it up is ₹120 and the annual storage charges work out to 10% of

the cost of the item. To get maximum benefit the firm should place order for how many units at a time? [2]

Answer.
Annual demand=16,000 units
Ordering cost=₹ 120
Storage cost=10% of ₹60 =₹ 6

$$EOQ=\sqrt{\frac{2\times Annual demand\times ordering cost}{10\% of ₹60}}$$

$$=\sqrt{\frac{2\times 16,000\times 120}{6}}=800 units$$

(e) Consider the following particulars for a month :
Budgeted fixed production overhead cost - ₹ 1,10,000
Budgeted production - 5,500 units
The fixed overhead cost was under absorbed by ₹ 12,000 and the fixed production overhead expenditure variance was ₹ 2,500 (Adverse).
What is the number of units produced during the month was ? [2]

Answer.
Fixed overhead recovery rate = Fixed overhead cost / Production (units)
= ₹ 1,10,000/ 5,500 units
= ₹ 20 / unit

Budgeted fixed overhead	₹ 1,10,000
Add : Fixed overhead expenditure variance	₹ 2,500
Actual fixed overhead	₹ 1,12,500

Absorbed overhead = Actual fixed overhead – Under absorbed overhead
= ₹ 1,12,500 – 12,000 = ₹ 1,00,500

Actual production = Overhead absorbed / Fixed overhead rate = ₹ 1,00,500 / ₹ 20
= 5,025 units.

(f) If the minimum stock level and average stock level of raw material "A" are 4,000 and 9,000 units respectively, find out its reorder quantity. [2]

Answer.
Average stock level **=** Minimum stock level + ½ Reorder quantity
9,000 units = 4,000 units + ½ Reorder quantity
½ Reorder quantity = 9,000 units – 4,000 units
Reorder level = 5, 000 units / 0.5 = 10,000 units

2. (a) State the various causes of Labour Turnover? [6]

Answer:
The causes of Labour Turnover can be divided into two categories: Avoidable and unavoidable.

(i) Avoidable Causes: These causes include the following:

- Dissatisfaction with the job.
- Dissatisfaction with the working hou₹
- Dissatisfaction with the working environment.
- Relationship with colleagues.
- Dissatisfaction with monetary and non monetary incentives.
- Relationship with superio₹
- Other reasons like lack of facilities like absence of group insurance, good canteens, poor housing amenities, bad management etc.

(ii) Unavoidable causes: These causes include the following:

- Personnel betterment
- Retirement
- Death
- Illness or accident
- Termination
- Marriage
- Pregnancy
- Other reasons like family commitments, attitude, organizational culture, etc.

(b) For a production department of a manufacturing company you are required to:

(i) Prepare a flexible budget of overhead

(ii) Prepare flexible budget of overhead at 70% and 110% of budget volume;

(iii) Calculate a departmental hourly rate of overhead absorption as per (i) and (ii) above.

The budgeted level of activity of the department is 5,000 hours per period and the study of the various items of expenditure reveals the following:

	₹	₹ per hour
Indirect wages		**0.40**
Repairs upto 2,000 hours	**100**	
For each additional 500 hours		
Upto a total of4,000 hours	**35**	
Additional from 4,001 to 5,000 h₹	**60**	
Additional above 5,000 h₹	**70**	
Rent and Rates	**350**	
Power upto 3,600 hrs	**0.25**	
For hours above 3,600	**0.20**	
Consumable supplies		**0.24**
Supervision upto 2,500 hours		**400**
Additional for each extra 500 hrs		
Above 2,500 and upto 4,900 hrs		**100**
Additional above 4,900 hrs		**150**
Depreciation up to 5,000 hrs		**650**
Above 5,000 hrs and upto 6,500 h₹	**820**	
Cleaning upto 4,000 h₹	**60**	
Above 4,000 hrs	**80**	
Heating and Lighting from 2,100 hrs to 3,500 hrs	**120**	
Heating and Lighting from 3,500 hrs to 5,000 hrs	**150**	
Above 5,000 hrs	**175**	

(1½ + 3 + 1½)

Answer:

Fixed and Flexible budget showing overhead cost per hour:

Particulars	**(3,500) 70%**	**(5,000) 100%**	**(5,500) 110%**
Indirect wages (0.4/h₹)	1,400	2,000	2,200
Repairs	205	300	370
Rent & Rates	350	350	350
Power	875	1,180	1,280
Consumable supplies	840	1,200	1,320
Supervision	600	950	950
Depreciation	650	650	820
Cleaning	60	80	80
Heating & Lighting	120	150	175
	5,100	6,860	7,545
OH rate per hour	[5,100/3,500] =1.457	[6,860/5,000] =1.372	[7,545/5,500] =1.371

1. If under absorbed OH is 10% or more of actual OH incurred-Supplementary OH rate is applied. (or)
2. If the amount is considerable, supplementary OH rate applied otherwise we may follow, transferring to P & L A/c or carry forward to next year.

Working Notes:

Repairs	100+(3×35) =205	100+(4×35)+60 =300	100+(4×35)+60+70 =370
Power	(3,500×0.25) =875	(900+280) =1,180	900+280+100 =1,280
Supervision	400+(2×100) =600	400+(4×100)+150 =950	400+(4×100)+150 =950

(c) Write a note on Perpetual Inventory. [4]

Answer:

Perpetual Inventory system means continuous stock taking. Under this system, a continuous record of receipt and issue of materials is maintained by the store department and the information about the stock of materials is always available. Entries in the Bin Card and the Stores Ledger are made after every receipt and issue and the balance is reconciled on regular basis with the physical stock.

The main advantage of this system is that it avoids disruptions in the production caused by periodic stock taking.

Similarly this system helps in having detailed and more reliable check on the stocks. The stock records are more reliable and stock discrepancies are investigated and appropriate action is taken immediately.

3. (a) Calculation of a basic EOQ depends on certain assumptions. "List down these assumptions. [3]

Answer

The computation of economic order quantity is subject to the following assumptions:

(i) Ordering cost (per order) and carrying cost (per unit/annum) are known and constant.

(ii) Anticipated usage (in units) of material for a period is uniform and known.
(iii) Cost per unit of the material (to be purchased) is known and it is constant.

(b) The New Enterprises Ltd. has Production Depts. A, B and C and two Service Depts. D and E. The following figures are extracted from the records of the company.

Rent and Rates	**₹5,000**
General Lighting	**600**
Indirect Wages	**1,500**
Power	**1,500**
Depreciation of Machinery	**10,000**
Sundries	**10,000**

The following further details are available:

	Total	A	B	C	D	E
Floor Space (Sq. ft.)	**10,000**	**2,000**	**2,500**	**3,000**	**2,000**	**500**
Light Points	**60**	**10**	**15**	**20**	**10**	**5**
Direct Wages (₹)	**10,000**	**3,000**	**2,000**	**3,000**	**1,500**	**500**
H.P. of Machines	**150**	**60**	**30**	**50**	**10**	**-**
Value of Machinery (₹)	**2,50,000**	**60,000**	**80,000**	**1,00,000**	**5,000**	**5,000**
Working Hours	**-**	**6,226**	**4,028**	**4,066**	**-**	**-**

The expenses of D and E are allocated as following:

	A	B	C	D	E
D	**20%**	**30%**	**40%**	**-**	**10%**
E	**40%**	**20%**	**30%**	**10%**	**-**

What is the total cost of an article if its raw material cost is ₹ 50, labour cost ₹ 30, and it passes through departments A, B and C for 4, 5 and 3 hours respectively. [8]

Answer:

(i) OVERHEADS PRIMARY DISTRIBUTION SUMMARY

Items	Basis of Charge	Total	Production Deptts.			Service Deptts.	
			A	B	C	D	E
		₹	₹	₹	₹	₹	₹
Direct Wages	Allocation	2,000	-	-	-	1,500	500
Rent and Rates	₹ 0.50 per sq. ft.	5,000	1,000	1,250	1,500	1,000	250
General Lighting	₹ 0.10 per point	600	100	150	200	100	50
Indirect Wages	15% of Direct Wages	1,500	450	300	450	225	75
Power	₹10 per H.P.	1,500	600	300	500	100	-
Depreciation of Machinery	4% of the value of Machinery	10,000	2,400	3,200	4,000	200	200
Sundries	100% of Direct Wages	10,000	3,000	2,000	3,000	1,500	500
Total Departmental Overheads		30,600	7,550	7,200	9,650	4,625	1,575

(ii) **OVERHEADS SECONDARY DISTRIBUTION SUMMARY**
(REPEATED DISTRIBUTION METHOD)

Items	Production Deptts.			Service Deptts.	
	A	B	C	D	E

Total overheads as per (i)	7,550	7,200	9,650	4,625	1,575
Dept. D overheads apportioned	925	1,387	1,850	(4,625)	463
Dept. E overheads apportioned (1,575 + 463)	815	408	611	204	(2,038)
Dept. D overheads apportioned	41	61	82	(204)	20
Dept. E overheads apportioned	8	4	6	2	(20)
Dept. D overheads apportioned	-	1	1	(2)	-
Total	9,339	9,061	12,200		
Working Hours	6,226	4,028	4,066		
Rate per hour	1.50	2.25	3.00		

STATEMENT SHOWING THE TOTAL COST OF THE ARTICLE

Direct Material		₹ 50.00
Direct Labour		30.00
		80.00
Prime Cost		
Overheads:		
Department A : 4 hours @ ₹ 1.50 per hour	6.00	
Department B : 5 hours @ ₹ 2.25 per hour	11.25	
Department C : 3 hours @ ₹ 3.00 per hour	9.00	26.25
		106.25

(c) Calculate the earnings of A and B from the following particulars for a month and allocate the labour cost to each job X, Y and Z:

	A	B
(i) Basic Wages	**₹ 100**	**160**
(ii) Dearness Allowance	**50%**	**50%**
(iii) Contribution to Provident Fund (on basic wages)	**8%**	**8%**
(iv) Contribution to Employees' State Insurance (on basic wages)	**2%**	**2%**
(v) Overtime Hours	**10**	

The Normal working hours for the month are 200. Overtime is paid at double the total of normal wages and dearness allowance. Employer's contribution to State Insurance and Provident Fund are at equal rates and employees' contributions. The two workers were employed on jobs X, Y and Z in the following proportions:

	Jobs		
	X	**Y**	**Z**
Workers A	**40%**	**30%**	**30%**
Worker B	**50%**	**20%**	**30%**

Overtime was done on job Y.

[2+3]

Answer.

Statement Showing Earnings of Workers A and B

Workers:	A	B
	₹	₹
Basic Wages	100	160
Dearness Allowance (50% of Basic Wages)	50	80
Overtime Wages	15	-

(Refer to Working Note 1)		
Gross Wages earned	165	240
Less: - Provident Fund – 8% of Basic wages		
- ESI – 2% of Basic wage	10	16
Net Wages paid	155	224

Statement of Labour Cost:	₹	₹
Gross Wages (excluding overtime)	150	240
Employer's Contribution to P.F. and E.S.I.	10	16
Ordinary wages	160	256
Labour Rate per hour	0.80 (₹ 160/200)	1.28 (₹ 256/200)

Statement Showing allocation of Wages to Jobs

		Jobs		
Total Wages:		X	Y	Z
	₹	₹	₹	₹
Worker A:				
Ordinary Wages: (4 : 3 :3)	160	64	48	48
Overtime	15	–	15	–
Workers B:				
Ordinary Wages: (5: 2 : 3)	256	128	51.20	76.8
	431	192	114.2	124.8

Working Notes:

1. Normal Wages are considered as basic wages

$$\text{Overtime} = \frac{2 \times (\text{Basic wage} + \text{D.A.})}{200} \times 10 \text{ hours}$$

= 2 × (₹ 150/200) × 10 hours = ₹ 15/-.

4. (a) What do you understand by ABC analysis of inventory control ? A factory uses 4,000 varieties of inventory. In terms of inventory holding and inventory usage, the following information is compiled:

No. of varieties of inventory	%	% value of inventory holding (average)	% of inventory usage (in end-product)
3,875	96.875	20	5
110	2.750	30	10
15	0.375	50	85
4,000	100.000	100	100

Classify the items of inventory as per ABC analysis with reasons. [3+2+2+2]

Answer

ABC Analysis: It is a system of selective inventory control whereby the measure of control over an item of inventory varies with its usage value. It exercises discriminatory control over different

items of stores grouped on the basis of the investment involved. Usually the items of material are grouped into three categories viz; A, B and C according to their use value during a period. In other words, the high use value items are controlled more closely than the items of low use value.

(i) 'A' Category of items consists of only a small percentage i.e., about 10% of the total items of material handled by the stores but require heavy investment i.e., about 70% of inventory value, because of their high prices and heavy requirement.

(ii) 'B' Category of items comprises of about 20% of the total items of material handled. by stores. The percentage of investment required is about 20% of the total investment in inventories.

(iii) 'C' category of items do not require much investment. It may be about 10% of total inventory value but they are nearly 70% of the total items handled by stores.

'A' category of items can be controlled effectively by using a regular system which ensures neither over-stocking nor shortage of materials for production: Such a system plans its total material requirements by making budgets. The stocks of materials are controlled by fixing certain levels like maximum level, minimum level and re-order level. A reduction in inventory management costs is achieved by determining economic order quantities after taking into account ordering cost and carrying cost. To avoid shortages and to minimize heavy investment of funds in inventories, the techniques of value analysis, variety reduction, standardisation etc. are used along with aforesaid techniques.

In the case of 'B' category of items, as the sum involved is moderate, therefore the same degree of control as applied in 'A' category of items is not warranted. The orders for the items, belonging to this category may be placed after reviewing their situation periodically. This category of items can be controlled by routine control measures.

For 'C' category of items, there is no need of exercising constant control. Orders for items in this group, may be placed either after six months or once in a year, after ascertaining consumption requirements.

Classification of the items of inventory as per ABC analysis

1. 15 number of varieties of inventory items, should be classified as 'A' category items because of the following reasons:
   - **(i)** Constitute 0.375% of total number of varieties of inventory items handled by stores of factory, which is minimum as per given classification in the table.
   - **(ii)** 50% of total use value of inventory holding (average) which is maximum according to the given table.
   - **(iii)** Highest consumption of about 85% of inventory usage (in end-product).
2. 110 number of varieties of inventory items, should be classified as 'B' category items because of the following reasons:
   - **(i)** Constitute 2.750% of total number of varieties of inventory items handled by stores of factory.
   - **(ii)** Requires moderate investment of about 30% of total use value of inventory holding (average).
   - **(iii)** Moderate consumption of about 10% of inventory usage (in end- product).
3. 3,875 number of varieties of inventory items, should be classified as 'C' category items because of the following reasons:
   - **(i)** Constitute 96.875% of total varieties of inventory items handled by stores of factory.
   - **(ii)** Requires investment of 20% of total use value of inventory holding (average).
   - **(iii)** Minimum consumption i.e. about 5% of inventory usage (in end-product).

(b) Raw materials 'AXE' costing ₹ 150 per kg. and 'BXE' costing ₹ 90 per kg. are mixed in equal proportions for making product 'A'. The loss of material in processing works out to 25% of the product. The production expenses are allocated at 40% of direct material cost. The end product is priced with a margin of 20% over the total cost.
Material 'BXE' is not easily available and substitute raw material 'CXE' has been found for 'BXE' costing ₹ 75 per kg. It is required to keep the proportion of this substitute material in the mixture as low as possible and at the same time maintain the selling price of the end product at existing level and ensure the same quantum of profit as at present.
You are required to compute the ratio of the mix of the raw materials 'AXE' and 'CXE. [7]

Answer
Working Notes:

(i) Computation of material mix ratio:

Let 1 kg. of product A requires 1.25 kg. of input of materials A X E and B X E
Raw materials are mixed in equal proportions.

Then raw material A X E = $\frac{1.25}{2} = .625\text{kg.}$

Then raw material B X E = $\frac{1.25}{2} = .625\text{kg.}$

(ii) Computation of selling price / kg. of product A

	₹
Raw material A X E .625 kg. × 150 = ₹ 93.75	
Raw material B X E .625 kg. × 90 = ₹ 56.25	150.00
Production expenses (40% of material cost)	60.00
Total cost	210.00
Add: profit 20% of total cost	42.00
Selling price	252.00

Computation of proportions of materials A X E and C X E in 'A'
Let material C X E required in product A be m kg.
Then for producing 1 kg of product 'A', material A X E requirement = (1.25 – m) kg.
To maintain same level of profit and selling price as per Working note (ii), it is required that the total cost of material in 1 kg. of product A should not exceed ₹ 150,
i.e., m kg. × ₹ 75 + (1.25 –m) kg. × 150 = ₹ 150
or 75 m + 187.5 – 150 m = 150
or 75 m = 37.5
or m = 0.5 kg.
Raw material A X E requirement in product A = 1.25 – 0.5 = 0.75 kg.
So, proportion of material A X E and C X E = 0.75 : 0.50 i.e. 3 : 2.

5. (a) A Company is undecided as to what kind of wage scheme should be introduced. The following particulars have been compiled in respect of three systems, which are under consideration of the management.

Workers	**A**	**B**	**C**
Actual hours worked in a week	**38**	**40**	**34**
Hourly rate of wages	**₹ 6**	**₹ 5**	**₹ 7.20**
Production in units			
Product P	**21**	**-**	**60**
Product Q	**36**	**-**	**135**
Product R	**46**	**25**	**-**

Standard time allowed per unit of each product is:

	P	Q	R
Minutes	**12**	**18**	**30**

For the purpose of piece rate, each minute is valued at ₹ 0.10

You are required to calculate the wages of each worker under:

(i) Guaranteed hourly rates basis

(ii) Piece work earnings basis, but guaranteed at 75% of basic pay (guaranteed hourly rate) if his earnings are less than 50% of basic pay.

(iii) Premium bonus basis where the worker receives bonus based on Rowan scheme.

[2+3+3]

Answer

(i) Computation of wages of each worker under guaranteed hourly rate basis

Workers	Actual hours worked in a week	Hourly rate of wages ₹	Wages ₹
(a)	(b)	(c)	(d) = (b) × (c)
A	38	6.00	228.00
B	40	5.00	200.00
C	34	7.20	244.80

(ii) Computation of wages of each worker under piece work earnings basis

Workers	Time allowed hours (Refer to W. Note 2)	Time taken hours	Time saved hours	Wage rate/hour ₹	Earnings ₹	Bonus ₹	Total of earning & bonus ₹
A	38.00	38.00	-	6.00	228.00	-	228.00
B	12.50	40.00	-	5.00	200.00	-	200.00
C	52.50	34.00	18.50	7.20	244.80	86.26	331.06

Since each worker has been guaranteed at 75% of basic pay, if his earnings are less than 50% of basic pay, therefore, workers A and C will be paid the wages as computed viz., ₹ 228 and ₹ 315 respectively. The computed wage of worker B is ₹ 75 which is less than 50% of basic pay viz., ₹ 100 therefore he would be paid 75% × ₹ 200 or s. 150.

Working Notes:

1. Piece rate / per unit

Product	Standard time per unit in minutes	Piece rate each minute ₹	Piece rate per unit ₹
(a)	(b)	(c)	(d) = (b) × c
P	12	0.10	1.20
Q	18	0.10	1.80
R	30	0.10	3.00

2. Time allowed to each worker

Worker A = 21 units × 12 minutes + 36 units × 18 minutes + 46 units × 30 minutes
= 2,280 minutes = 38 hours

Worker B = 25 units × 30 minutes = 750 minutes = 12.5 hours

Worker C = 60 units × 12 minutes + 135 units × 18 minutes
= 720 minutes + 2.430 minutes = 3,150 minutes = 52.50 hours

(iv) Computation of wages of each worker under Premium bonus basis (where each worker receives bonus based on Rowan Scheme)

Workers	Time allowed hours (Refer to W. Note 2)	Time taken hours	Time saved hours	Wage rate/hour ₹	Earnings ₹	Bonus ₹	Total of earning & bonus ₹
A	38.00	38.00	-	6.00	228.00	-	228.00
B	12.50	40.00	-	5.00	200.00	-	200.00
C	52.50	34.00	18.50	7.20	244.80	86.26	331.06

(b) SK Enterprise manufactures a special product "ZE". The following particulars were collected for the year 2013:

Annual consumption	**12,000 units (360 days)**
Cost per unit	**₹ 1**
Ordering cost	**₹ 12 per order**
Inventory carrying cost	**24%**
Normal lead time	**15 days**
Safety stock	**30 days consumption**

Required:

(i) Re-order quantity

(ii) Re-order level

(iii) What should be the inventory level (ideally) immediately before the material order is received? (2+1+1)

Answer

(i) How much should be ordered each time i.e., Economic Order Quantity (EOQ)

$$EOQ = \sqrt{\frac{2AB}{CS}}$$

Where A is the annual consumption
B is the ordering cost per order
CS is the carrying cost per unit per annum

$$= \sqrt{\frac{2\times 12{,}000\times 12}{1\times (24/100)}} = \sqrt{12{,}00{,}000}$$

= 1095.4 units or say 1,100 units.

(ii) When should the order be placed i.e., reordering level
Reordering level = *Safety stock +normal lead time consumption

$$\text{Reordering level} = \left[\frac{12000}{360}\times 30\right] + \left[\frac{12{,}000}{360}\times 15\right]$$

= 1,000+500 = 1,500 units.

(iii) What should be the inventory level (ideally) immediately before the material ordered is received i.e. the Safety Stock.

$$\text{*Safety Stock} = \left[\frac{12{,}000}{360}\times 30\right]$$

= 1,000 units.

(c) Explain the treatment of overtime premium in cost accounting. Suggest steps for controlling overtime. [2+2]

Answer

Treatment of Overtime premium is Cost Accounting

In cost accounting the treatment of overtime premium will be as follows:

(i) If the overtime is resorted to at the desire of the customer, then the entire amount of overtime including overtime premium should be charged to the job directly.
(ii) If it is due to a general pressure of work to increase the output, the premium as well as overtime wages may be charged to general overheads.
(iii) If it is due to the negligence or delay of workers of a particular department, it may be charged to the concerned department.
(iv) If it is due to circumstances beyond control, it may be charged to Costing Profit & Loss Account.

Steps for Controlling Overtime:

Important steps for controlling overtime work are as follows:

(i) Entire overtime work should be duly authorized after investigating the reasons for it.
(ii) Overtime cost should be shown against the concerned department. Such a practice should enable proper investigation and planning of production in future.
(iii) If overtime is a regular feature, the necessity for recruiting more men and adding a shift should be considered.
(iv) If overtime is due to lack of plant and machinery or other resources, steps may be taken to install more machines, or to resort to sub-contracting.
(v) If possible an upper limit may be fixed for each category of workers in respect of overtime.

Section B–Financial Management

(Answer Question no.6 which is compulsory and any two from the rest in this section.)

6. (a) GEMINI LTD. has total assets of ₹60 crore and a Debt/equity ratio of 0.5. Its sales are ₹27 crore and it has total fixed cost of ₹7 crore. If the company's EBIT is ₹6 crore, its tax rate is 40% and the interest rate on debt is 12%, the ROE of GEMINI LTD. would be how much? [2]

Answer.

Total Equity+ Total Debt	=₹60 crore
Total equity= (60/1.5)	=₹40 crore
Total Debt= (60-40)	=₹20 crore
Net income= [(EBIT)-1] × (1-t)	=(6-2.40) (1-.40)
	=3.60×0.6
	= ₹2.16 crore.
ROE = (2.16/40) ×100	= 5.40%

(c) The budgeted annual sales of firm are ₹80 lakhs and 25% of the same is cash sales. If the average amount debtors of the firm are 5 lakhs, the average collection period of credit sales will be how many months' ? [2]

Answer.

Cash Sales = 80 lakhs×25%= 20 lakhs
Credit sales = (80-20) lakhs= 60 lakhs
Average Collection Period = Debtors/(Credit Sales/month)
= (5÷60/12)
= 5÷5
=1 month.

(c) A chemical company has net sales of ₹50 million, cash expenses (including Taxes) of ₹35 million and depreciation expenses of ₹5 million. If Debtors decrease over the period by ₹6 million, what will be the cash from operation? [2]

Answer.

Cash from operation = Operation profit + Non cash charges + Decrease in debtors
= ₹ [(50-35-5) +5+6] million = ₹21 million

(d) Consider the following for strong Ltd: [2]

Return on Government Securities : 12%
Share Beta : 1.50
Market Return : 16%
Based on CAPM, find out the cost of equity capital.

Answer.

$$\text{Cost of equity Capital } (K_e) = R_f + \beta(R_m - R_f)$$

= 0.12+1.50 (0.16-0.12)
= 0.18 i.e., 18%

7. (a) From the following details of HPL Ltd. Calculate the Cost of Capital.

Debt	Amount	Nominal Interest
Foreign Loan	US $ 100 million	5%
Local Currency Loan	₹ 2200 million	12%

Expected depreciation of rupee	3% per annum
Current exchange rate	₹ 45 per US $
Bank /F1 guarantee for raising foreign capital	1%

Equity Capital	₹ 3000 million
Unlevered Beta	0.6
Risk-free Rate	6%
Market Premium	8%

The project expected to have an effective tax rate of 30 per cent. [6]

Answer:

HPL Ltd.

	Amount (₹ Million)	Interest (%)
Foreign loan	4,500 (100 x 45)	5+3+1 = 9%
Local currency	2,200	12%
Total	6,700	

Average interest rate (i) = (9 x 4,500 + 12 x 2,200)/6,700 = 9.985%
After tax cost of borrowing (K_d) = I x (1-t) = 9.985 x (1- 0.30) = 6.99%
Debt-equity ratio = 6,700/3,000 = 2.23

Levered beta (β_L) = (β_{UL}) x {E + D (1-t)}/E
= 0.6 x {1 + 2.23 (1-0.30)}/1
= 0.6 x (1 + 1.561)
= 1.537

Cost of equity = $R_f + \beta_L \times (R_m - R_f)$
= 0.06 + 1.537 x 0.08
= 0.18296 i.e. 18.30%

Weighted average Cost of Capital is given by :
WACC = K_e (E/E+D) + K_d(D/E+D)
= 0.1830 x (3000/{3000 + 6700}) + 0.0699 x (6700/(3000 + 6700})
= 0.1830 x 0.31 + 0.0699 x 0.691
= 0.1050 i.e. 10.50%

(b) Complete the Balance Sheet given below with help of the following information:

Gross Profits	**₹ 40,500**
Shareholders' Funds	**₹ 5,75,000**
Gross Profit margin	**15%**
Credit sales to Total Sales	**60%**
Total Assets turnover	**0.3 times**
Inventory turnover	**4 times**
Average collection period (a 360 days year)	**20 days**
Current ratio	**1.35**
Long-term Debt to Equity	**45%**

Balance Sheet

Creditor	**……**	**Cash**	**……**
Long-term debt	**……**	**Debtors**	**……**
Shareholder's funds	**……**	**Inventory**	**……**
		Fixed assets	**……**

[10]

Answer:

Gross Profit	₹ 40,500
Gross Profit Margin	15%

$$\therefore \text{Sales} = \frac{\text{Gross Profits}}{\text{Gross Profit Margin}}$$
$$= ₹\ 40,500 / 0.15$$
$$= ₹\ 2,70,000$$

Credit Sales to Total Sales = 60%
∴ Credit Sales = ₹ 2,70,000 x 0.60
= ₹ 1,62,000

Total Assets Turnover = 0.3 times

$$\therefore \text{Total Assets} = \frac{\text{Sales}}{\text{Total Assets Turnover}}$$
$$= \frac{₹\ 2,70,000}{0.3}$$
$$= ₹\ 9,00,000$$

Sales – Gross Profits = COGS
∴ COGS = ₹ 2,70,000 – 40,500 = ₹ 2,29,500
Inventory turnover = 4 times
Inventory = COGS / Inventory turnover = 229500/4 = ₹ 57375
Average Collection Period = 20 days

$$\therefore \text{Debtors turnover} = \frac{360}{\text{Average Collection Period}}$$
$$= 360 / 20 = 18$$

$$\therefore \text{Debtors} = \frac{\text{Credit Sales}}{\text{Debtors turnover}}$$
$$= 162000 / 18$$
$$= ₹\ 9000$$

Current ratio = 1.35
1.35 = [Debtors + Inventory + Cash] / Creditors
1.35 Creditors = (₹ 9000 + ₹ 57375 + Cash]
1.35 Creditors = ₹ 66375 + Cash]
Long-term Debt to Equity = 45%
Shareholders Funds = ₹ 575000
∴ Long-term Debt = ₹ 5,75,000 x 45%
= ₹ 258750
Creditors (Balance figure) = 9,00,000 – (575000 + 258750)
= ₹ 66250

∴ Cash = (66250 x 1.35) – 66375
= ₹ 23062.50

Balance Sheet (In ₹)

Creditors (Bal. Fig.)	66,250	Cash	23,063
		Debtors	9,000
Long-term debt	2,58,750	Inventory	57,375
Shareholders' funds	5,75,000	Fixed Assets (Bal. Fig.)	8,10,562
	9,00,000		9,00,000

8. (a) The net Sales of W Ltd. is ₹ 45 crores. Earnings before interest and tax of the company as a percentage of net sales is 12%. The capital employed comprises ₹ 15 crores of equity, ₹ 3 crores

of 12% Cumulative Preference Share Capital and 13% Debentures of ₹ 9 crores. Income-tax rate is 30%.

(i) Calculate the Return-on-equity for the company

(ii) Calculate the Operating Leverage of the Company given that combined leverage is 4.5.

[3+2]

Answer

(i) Net Sales : ₹ 45 crores
EBIT ₹ 5.4 crores @ 12% on sales
ROI = EBIT/Capital Employed × 100 = 5.4/(15+3+9) × 100 = 20%

	₹ in crores
EBIT	5.4
Interest on Debt	1.17
EBT	4.23
Less : Tax @ 30%	1.269
EAT	2.961
Less : Preference dividend	0.36
Earnings available for Equity Shareholders	2.601

Return on equity = 2.6 / 15 × 100 = 17.33%

(ii) Degree of Financial Leverage = $\frac{\text{EBIT}}{\text{EBIT - Interest - Preference dividend}}$

= 5.4 /(5.4 – 1.17–.36) = 5.4/ 3.87 = 1.395

Degree of Combined Leverage = DFL × DOL

4.5 = 1.395 × DOL

∴ Degree of operating leverage = 4.5/1.395 = 3.22.

(b) Write short note on Venture Capital Financing. [4]

Answer.

Venture capital financing refers to financing of new high-risk ventures promoted by qualified entrepreneurs who lack experience and funds to give shape to their ideas. A venture capitalist invests in equity or debt securities floated by such entrepreneurs who undertake highly risky ventures with a potential of success.

Common methods of venture capital financing include :

(i) Equity financing : The undertaking's requirements of long-term funds are met by contribution by the venture capitalist but not exceeding 49% of the total equity capital;

(ii) Conditional Loan : Which is repayable in the form of royalty after the venture is able to generate sales;

(iii) Income Note : A hybrid security combining features of both a conventional and conditional loan, where the entrepreneur pays both interest and royalty but at substantially lower rates;

(iv) Participating debenture : The security carries charges in three phases – start phase, no interest upto a particular level of operations; next stage, low interest; thereafter a high rate.

(c) Y Ltd. has ₹ 15,00,000 allocated for capital budgeting purposes. The following proposals and associated profitability indexes have been determined:

Project	Amount ₹	Profitability Index
1	**4,50,000**	**1.22**
2	**2,25,000**	**0.95**
3	**5,25,000**	**1.20**
4	**6,75,000**	**1.18**
5	**3,00,000**	**1.20**
6	**6,00,000**	**1.05**

Which of the above investments should be undertaken? Assume that projects are indivisible and there is no alternative use of the money allocated for capital budgeting.

Answer:

Statement showing ranking of projects on the basis of Profitability Index

Project	Amount	P.I.	Rank
1	450,000	1.22	1
2	225,000	0.95	5
3	525,000	1.20	2
4	675,000	1.18	3
5	300,000	1.20	2
6	600,000	1.05	4

Assuming that projects are indivisible and there is no alternative use of the money allocated for capital budgeting on the basis of P.I., the Y Ltd., is advised to undertake investment in projects 1, 3, and 5.

However, among the alternative projects the allocation should be made to the projects which adds the most to the shareholders wealth. The NPV method, by its definition, will always select such projects.

Statement showing NPV of the projects

Project (i)	Amount (₹) (ii)	P.I. (iii)	Cash inflows of project (₹) (iv) = [(ii) x (iii)]	N.P.V. of Project (₹) (v) = [(iv)-(ii)]
1	450,000	1.22	549,000	99,000
2	225,000	0.95	213750	(-)11250
3	525,000	1.20	630000	105000
4	675,000	1.18	796500	121500
5	300,000	1.20	360000	60,000
6	600,000	1.05	630000	30,000

The allocation of funds to the projects 1,3 and 5 (as selected above on the basis of P.I.) will give N.P.V. of ₹ 264,000 and ₹ 225,000 will remain unspent.

However, the N.P.V. of the projects 3, 4 and 5 is ₹ 286500 which is more than the N.P.V. of projects 1, 3 and 5. Further, by undertaking projects 3, 4 and 5, the total money gets exhausted. Therefore, Y Ltd. is advised to undertake investments in projects 3, 4 and 5.

9. (a) Superior Engineering proposes a project with the following data :

i. Total asset :₹ 450 lakhs (₹ 250 lakhs of Fixed Assets and ₹ 200 lakhs of Current Assets)

ii. **Scheme of financing : ₹ 100 lakhs equity, ₹ 200 lakhs term loan, ₹ 100 lakhs working capital advance and ₹ 50 lakhs trade credito₹**
iii. **Interest rate : Term loan 12% p.a. and working capital advance : 15% p.a.**
iv. **Term loan is repayable in 5 equal installments, commencing from 3rd year of operations. (Assume that installment for each year is paid on the last day of the year).**
v. **Depreciation : 30% on written down value.**
vi. **Production is expected to reach 60% of capacity in the 1st year of operations, 70% in the 2nd year and 80% from the 3rd year onwards.**
vii. **Expected revenue from the project will be ₹ 500 lakhs p.a. on 10% capacity utilization and corresponding Direct Costs are ₹ 200 lakhs. Fixed costs are ₹ 100 lakhs p.a. Working capital advance of ₹ 100 lakhs is on 80% capacity and proportionately reduced in the first two yea₹**
viii. **Tax rate applicable is 50%.**

Assuming that each year's production is sold away in the same year, draw the projected profit & loss account for each year of operation and the operational cash flow. Also calculate the Debt Service Coverage Ratio. [10]

Answer.

Projected Profit & Loss Account

Year of operation	1	2	3	4	5	6	7
Capacity utilization (%)	60	70	80	80	80	80	80
							(₹ In lakhs)
Revenue	300	350	400	400	400	400	400
Direct variable costs	120	140	160	160	160	160	160
Fixed costs	100	100	100	100	100	100	100
Int. on working cap. adv.	11.25	13.13	15.00	15.00	15.00	15.00	15.00
Profit before depreciation & interest on term loan	68.75	96.87	125.00	125.00	125.00	125.00	125.00
Depreciation	75.00	52.50	36.75	25.73	18.01	12.61	8.82
Interest on term loan	24.00	24.00	24.00	19.20	14.40	9.60	4.80
Profit after dep. & int.	(-)30.25	20.37	64.25	80.07	92.59	102.80	111.38
Tax @ 50%	-	10.19	32.13	40.04	46.30	51.40	55.69
PAT	-	10.19	32.13	40.04	46.30	51.40	55.69
Operational cash flow (PAT + Dep. + Int. on term loan)	68.75	86.68	92.87	84.96	78.70	73.60	69.31
Payments							
Int. on term loans	24.00	24.00	24.00	19.20	14.40	9.60	4.80
Repayment of terms loan	-	-	40.00	40.00	40.00	40.00	40.00
Total	24.00	24.00	64.00	59.20	54.40	49.60	44.80
DSCR (Op. cash flow/ Total payments)	2.86	3.61	1.45	1.44	1.45	1.48	1.55

Average DSCR= (Total operation cash flow) / (Total payment against debts)
= (554.87 ÷ 320.00) = 1.73.

(b) The following information relates to nana Ltd.

Earnings of the Company	**₹10, 00,000**
Dividend payout ratio	**60%**
No. of shares outstanding	**2, 00,000**
Rate of Return on Investment	**15%**
Equity Capitalization Rate	**12%**

i) What would be the Market Value per Share as per Walter's Model?

ii) What is the optimum Dividend Payout Ratio according to Walter's Model, and the Market Value of Company's Share at that payout ratio? [2+2+2]

Answer.

$$\text{Value per share} = \frac{DPS}{K_e} + \frac{(EPS - DPS) \times \frac{R}{K_e}}{K_e}$$

Computation of Factors:

Earnings Per Share (EPS)	₹10 lakhs÷ 2 lakhs = ₹5	Cost of Equity (K_e)	**12%**
Dividend Per Share (DPS)	EPS₹5×payout60% =₹3	Return on Investment (R)	**15%**

i) Value per Share $= \frac{₹3}{0.12} + \frac{(₹5 - ₹3) \times \frac{0.15}{0.12}}{0.12} = ₹25 + ₹20.83 = ₹45.83$

ii) Optimum payout Ratio: since the company's earning capacity i.e. ROI (of 15%) is greater than Shareholder's Expectation (of 12%), the shareholder's Wealth would be maximized at "Zero" payout, i.e. Nil Dividend.

iii) Value Per Share at Optimum Payout

$$= \frac{₹0}{0.12} + \frac{(₹5 - ₹0) \times \frac{0.15}{0.12}}{0.12} = ₹0 + 52.08 = ₹52.08$$