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) How are Normal and Abnormal Losses of material during storage treated in Cost Accounts? [2]

Answer.
The difference between the book balance and actual physical stock, may be transferred to "Inventory Adjustment A/c" pending scrutiny to ascertain the reason for the difference.
If the difference is considered as normal, it should be transferred to Overhead Control A/c. Alternatively, price of the material issued to production may be inflated so as to cover the Normal Loss.
If the difference is abnormal, it should be debited to Costing P & L Account.

(b) A company is currently operating at 80% capacity level. The production under normal capacity level is 1,50,000 units. The variable cost per unit is ₹ 14 and the total fixed costs are ₹ 8,00,000. If the company wants to earn a profit of ₹ 4,00,000, then what should be the price of the product per unit ? [2]

Answer.

Total fixed cost	-	₹ 8,00,000
Expected profit	-	₹ 4,00,000
Variable cost at 80% level (80% x 1,50,000 units x ₹ 14)	-	₹ 16,80,000
Total price	-	₹ 28,80,000

Per unit price at 80% level = (₹ 28,80,000 / 1,20,000 units) = ₹ 24.00.

(c) Consider the following data pertaining to the production of a company for a particular month :

Opening stock of raw material	**₹ 11,570**
Closing stock of raw material	**₹ 10,380**
Purchase of raw material during the month	**₹ 1,28,450**
Total manufacturing cost charged to product	**₹ 3,39,165**

Factory overheads are applied at the rate of 45% of direct labour cost. What is the amount of factory overheads applied to production ? [2]

Answer.

Raw material used	= Op. Stock + Purchases – Cl. Stock
	= ₹ 11,570 + ₹ 1,28,450 – ₹ 10,380 = ₹ 1,29,640
Manufacturing cost	= Raw material used + Direct labour + Factory overhead
₹ 3,39,165	= ₹ 1,29,640 + Direct labour + 45% of Direct labour
1.45 Direct labour	= ₹ 2,09,525

Direct labour = ₹ 1,44,500
The amount of factory overhead = 45% of ₹ 1,44,500 = ₹ 65,025.

(d) A worker has a time rate of ₹ 15/hr. He makes 720 units of component (standard time : 5 minutes/ unit) in a week of 48 hours. What is his total wages including Rowan bonus for the week ? [2]

Answer.
Standard time = $\frac{5 \text{ minutes} \times 720 \text{ units}}{60 \text{ minutes}}$ = 60 hours
Time taken = 48 hrs.
Time saved = 12 hrs.
Total earning of a worker under Rowan plan
= (48 hrs. x ₹ 15) + $\left(\frac{12 \text{ hrs.}}{60 \text{ hrs.}} \times 48 \text{ hrs.} \times ₹ 15\right)$
= ₹ 720 + ₹ 144 = ₹ 864

(e) ABC Ltd. is having 400 workers at the beginning of the year and 500 workers at the end of the year. During the year 20 workers were discharged and 15 workers left the organization. During the year the company has recruited 65 workers. Of these, 18 workers were recruited in the vacancies of those leaving, while the rest were engaged for an expansion scheme. What is the labour turnover rate under separation method ? [2]

Answer.
Average number of workers = (400 + 500)/2 = 450
Separation method = $\frac{\text{No. of separations during the period}}{\text{Average number of workers during the period}} \times 100$

= $\frac{20 + 15}{450} \times 100$
= 7.78%

(f) What is group bonus ? [2]

Answer.
Group Bonus refers to the bonus paid for the collective efforts made by a group of workers. Such a scheme is introduced generally when individual efficiency cannot be established/ measured for the payment of bonus. The quantum of bonus is determined on the basis of productivity/ output of the team as a whole. Bonus is shared by the individual workers in specified proportions e.g. on proportions of time based wages.

2. (a) Define Explicit costs. How is it different from implicit costs? [4]

Answer.
Explicit costs: These costs are also known as out of pocket costs. They refer to those costs which involves immediate payment of cash. Salaries, wages, postage and telegram, interest on loan

etc. are some examples of explicit costs because they involve immediate cash payment. These payments are recorded in the books of account and can be easily measured.

Main points of difference: The following are the main points of difference between explicit and implicit costs.

(i) Implicit costs do not involve any immediate cash payment. As such they are also known as imputed costs or economic costs.

(ii) Implicit costs are not recorded in the books of account but yet, they are important for certain types of managerial decisions such as equipment replacement and relative profitability of two alternative courses of action.

(b) A manufacturer of Surat purchased three Chemicals A, B and C from Bombay. The invoice gave the following information:

	₹
Chemical A :	**12,600**
Chemical B:	**19,000**
Chemical C:	**9,500**
Sales Tax	**2,055**
Railway Freight	**1,000**
Total Cost	**44,155**

A shortage of 200 kg in Chemical A, of 280 kg. in Chemical B and of 100 kg. in Chemical C was noticed due to breakages. At Surat, the manufacturer paid Octroi duty @ ₹ 0.10 per kg. He also paid Cartage ₹ 22 for Chemical A, ₹ 63.12 for Chemical B and ₹ 31.80 for Chemical C. Calculate the stock rate that you would suggest for pricing issue of chemicals assuming a provision of 5% towards further deterioration. [8]

Answer

Statement showing the Issue Rate of Chemicals

	Chemicals		
	A	B	C
	₹	₹	₹
Purchase Price	12,600	19,000	9,500
Add: Sales Tax @ 5% of purchase price (Refer to Working Note 2)	630	950	475
Add: Railway Freight in the ratio of 3:5:2 (Refer to Working Note 3)	300	500	200
Add: Octroi @ Re. 0.10 p.per kg. On the quantity of material received (Refer to Working Note 1)	280	472	190
Add: Cartage	22	63.12	31.80
Total Price	13,832	20,985.12	10,396.80

Rate of issue per Kg $= \frac{\text{Total price}}{\text{Qty. available for issue}} = \frac{\text{Rs.13,832}}{\text{2,660kg.}}$ $\frac{\text{Rs.20,985.12}}{\text{4,484Kg.}}$ $\frac{\text{Rs.10,396.80}}{\text{1,805kg.}}$

(Refer to Working Note 1) = ₹5.20 = ₹ 4.68 = ₹ 5.76

Working Notes:

1. Statement showing the quantity of chemicals available for issue

	Chemicals		
	A	B	C
	Kg.	Kg.	Kg.

Quantity purchased	3,000	5,000	2,000
Less: Shortage (Assumed to be normal	200	280	100
Quantity received at the store	2,800	4,720	1,900
Less: Provision for further deterioration 5%	140	236	95
Quantity available for issue	2,660	4,484	1,805

2. Rate of sales Tax = $\frac{\text{Sales Tax}}{\text{Total Purchase price of Chemical}} \times 100 = \frac{\text{Rs.2,055}}{\text{Rs.41,100}} \times 100 = 5\%$

3. Railway Freight: It has been charged on the basis of quantity purchased i.e. A:3000 kg; B: 5000 kg; C: 2000 kg in the ratio of 3:5:2.

(c) 'Under the Rowan Premium Bonus system, a less efficient worker can obtain same bonus as a highly efficient worker.' Discuss with suitable examples. [4]

Answer.

Bonus under Rowan system = $\frac{\text{Time taken}}{\text{Time allowed}} \times \text{time saved} \times \text{rate per hour}$

For example let time allowed for a job = 4 hours and Labour rate = ₹ 5 per hour.

Case I : Less efficient worker

If time taken = 3 hours

Then time saved = 4 – 3 = 1 hour

Bonus = $\frac{3\,\text{hours}}{4\,\text{hours}} \times 1\,\text{hour} \times \text{Rs.}5 = \text{Rs.}3.75$

Case II : Highly efficient worker

If time taken = 1 hour

Then time saved = 4 – 1 = 3 hours

Bonus = $\frac{1\,\text{hour}}{4\,\text{hours}} \times 3\,\text{hours} \times \text{Rs.}5 = \text{Rs.}3.75$

So, it can be concluded that under Rowan System, the less efficient worker and highly efficient worker can get the same bonus.

3. (a) Discuss the treatment of overtime premium in cost accounts. [4]

Answer.

Overtime premium is a part of total wages of overtime period. 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.

(b) Selfhelp Ltd. has gensets and produces its own power. Data for power costs are as follows:-

Horse power Hours	Production deptts.		Service deptts.	
	A	B	X	Y
Needed for capacity production	10,000	20,000	12,000	8,000
Used during the month of May	8,000	13,000	7,000	6,000

During the month of May costs for generating power amounted to ₹ 9,300: of this ₹ 2,500 was considered to be fixed cost. Service Deptt. X renders service to A, B and Y in the ratio 13:6:1, while Y renders service to A and B in the ratio 31:3. Given that the direct labour hours in Deptts. A and B are 1650 hours and 2175 hours respectively, find the Power Cost per labour hour in each of these two Deptts. [6]

Answer.

(a) Statement of overhead Distribution of a Selfhelp Ltd.

Particulars	Basis	Total	Production		Service Deptts.	
			A	B	X	Y
		₹	₹	₹	₹	₹
Fixed Cost	H.P. Hours needed for capacity production (5:10:6:4)	2,500	500	1,000	600	400
Variable Cost	H.P. Hours used (8:13:7:6)	6,800	1,600	2,600	1,400	1,200
		9,300	2,100	3,600	2,000	1,600

Redistribution of Service Departments' Expenses to Production Departments

Particulars	Total	Production Deptts.		Service Deptts.	
		A	B	X	Y
Total overheads (₹)	9,300	2,100	3,600	2,000	1,600
Deptt. X overhead (₹) apportioned to A,B And Y in the ratio (13:6:1)		1,300	600	–2,000	100
Deptt. Y overhead (₹) apportioned to A and B in the ratio (31:3)		1,550	150		–1,700
Total overheads (₹)	—	4,950	4,350	–	–
Labour hours		1,630	2,175		
Power Cost per labour hour		3.00	2.00		

(c) RST Limited has received an offer of quantity discount on its order of materials as under:

Price per tone	Tones number
₹ 9,600	**Less than 50**
₹ 9,360	**50 and less than 100**
₹ 9,120	**100 and less than 200**
₹ 8,880	**200 and less than 300**

₹ 8,640 300 and above

The annual requirement for the material is 500 tonnes. The ordering cost per order is ₹12,500 and the stock holding cost is estimated at 25% of the material cost per annum.

Required

(i) Compute the most economical purchase level.

(ii) Compute EOQ if there are no quantity discounts and the price per tonne is ₹10,500.

[4+2=6]

Answer

(i)

Order size (Q) (Units)	No. of orders A/Q (Units)	Cost of purchase Ax per unit cost	Carrying cost $\frac{A}{Q}\times$₹12500	Carrying cost $\frac{Q}{2}\times C\times 25\%$	Total cost (3+4+5)
(1)	(2)	(3)	(4)	(5)	(6)
10	12.5	48,00,000 (500×9600)	1,56,250	48,000 $\left(\frac{40}{2}\times 9600\times 0.25\right)$	50,04,250
50	10	46,80,000 (500×9360)	1,25,000	58,500 $\left(\frac{50}{2}\times 9360\times 0.25\right)$	48,63,500
100	5	45,60,000 (500×9120)	62,500	1,14,000 $\left(\frac{100}{2}\times 9120\times 0.25\right)$	47,36,500
200	2.5	44,40,000 (500×8880)	31,250 (2.5×12500)	2,22,000 $\left(\frac{200}{2}\times 8880\times 0.25\right)$	46,93,250
300	1.67	43,20,000 (500×8640)	20,875 (1.67×12500)	3,24,000 $\left(\frac{300}{2}\times 8640\times 0.25\right)$	46,64,875

The above table shows that the total cost of 500 units including ordering and carrying cost is minimum (₹ 46,64,875) where the order size is 300 units. Hence the most economical purchase level is 300 units.

(ii) EOQ $= \sqrt{\frac{2AO}{c\times i}} = \sqrt{\frac{2\times 500\times 12500}{10500\times 25\%}} = 69$ tonnes.

4. (a) What is an idle capacity? What are the costs associated with it? How are these treated in product costs? [2+2+2=6]

Answer

Idle Capacity: Idle capacity is that part of the capacity of a plant, machine or equipment which cannot be effectively utilised in production. In other words, it is the difference between the practical or normal capacity and capacity of utilisation based on expected sales. For example, if the practical capacity of production of a machine is to the tune of 10,000 units in a month, but is used only to produce 8,000 units, because of market demand of the product, then in such a case, 2,000 units will be treated as the idle capacity of the machine.

The idle capacity may arise due to lack of product demand, non-availability of raw-material, shortage of skilled labour, absenteeism, shortage of power, fuel or supplies, seasonal nature of product, etc

Idle Capacity Costs: Costs associated with idle capacity are mostly fixed in nature. These include depreciation, repairs and maintenance charges, insurance premium, rent, rates, management and supervisory costs. These costs remain unabsorbed or unrecovered due to under-utilisation of plant and service capacity. Idle capacity cost can be calculated as follows:-

$$\text{Idle capacity cost} = \frac{\text{Aggregate overhead related to plant}}{\text{Normal plant capacity}} \times \text{Idle Capacity}$$

Treatment of Idle capacity cost: Idle capacity costs can be treated in product costing, in the following ways:

(i) If the idle capacity cost is due to unavoidable reasons such as repairs, maintenance, change over of job, etc, a supplementary overhead rate may be used to recover the idle capacity cost. In this case, the costs are charged to the production capacity utilised.

(ii) If the idle capacity cost is due to avoidable reasons such as faulty planning, power failure etc., the cost should be charged to profit and loss account.

(iii) If the idle capacity cost is due to seasonal factors, then, the cost should be charged to the cost of production by inflating overhead rates.

(b) In a unit, 10 men work as a group. When the production for the group exceeds the standard output of 200 pieces per hour, each man is paid an incentive for the excess production in addition to his wages at hourly rates. The incentive is at half the percentage, the excess production over the standard bears to the standard production, Each man is paid an incentive at the rate of this percentage of a wage rate of ₹ 2 per hour. There is no relation between the individual workman's hourly rate and the bonus rate.

In a week, the hours worked are 500 hours and the total production is 1,20,000 pieces.

(a) Compute the total amount of the bonus for the week.

(b) Calculate the total earnings of two workers A and B of the group:-
A worked 44 hours and his basic rate per hour was ₹ 2.20.
B worked 48 hours and his basic rate per hour was ₹ 1.90. **[3+2=5]**

Answer

Actual production during the week	1,20,000 pieces
Standard production during the week of 500 hours, @ 200 pieces per hour	1,00,000 pieces
Excess production over standard	20,000 pieces

Percentage of the excess production over the Standard bears to the standard production $= \frac{20,000}{1,00,000} \times 100 = 20\%$

Incentive is half of 20% i.e. 10%.

The rate of incentive is at 10% over a wage rate of ₹ 2.00 per hour. Thus the rate of incentive per hour is 0.20P.

(a) Total amount of bonus for the week: 500 hours × Re. 0.20 = ₹ 100.

(b) Total Earnings of two workers A & B of the group.

	Amount ₹
A's Wages for 44 hours @ ₹ 2.20 per hour	96.80
Bonus for 44 hours @ Re. 0.20 per hour	8.80
Total Earning of A	105.60

B's Wages for 48 hours @ ₹ 1.90 per hour	91.20
Bonus for 48 hours @ 0.20 per hour	9.60
Total Earning of B	100.80

(c) PQR Tubes Ltd. are the manufacturer of picture tubes for T.V. The following are the details of their operations during 2013-14.

Ordering cost	**₹ 100 per order**
Inventory carrying cost	**20% p.a.**
Cost of tubes	**₹ 500 per tube**
Normal usage	**100 tubes per week**
Minimum usage	**50 tubes per week**
Maximum usage	**200 tube per week**
Lead time to supply	**6 – 8 weeks**

Required

Economic order quantity. If the supplier is willing to supply quarterly 1,500 units at a discount of 5%, is it worth accepting? [2+3=5]

Answer.

Economic order quantity (EOQ) = $\sqrt{\frac{2\,SC_0}{iC_1}}$

Here S is the annual requirement of tubes, q is the order size
C_0 is the ordering cost per order.
iC_1 is the inventory carrying cost p.u. p.a.

$$E.O.Q. = \sqrt{\frac{2 \times (100\text{tubes} \times 52\text{ weeks})\ (\text{Rs.}100\text{ per order})}{20\% \times \text{Rs.}500}}$$

$$E.O.Q = \sqrt{\frac{2 \times 5{,}200\text{ tubes} \times \text{Rs.}100}{\text{Rs.}100}} = 102\text{ tubes (approx.)}$$

$(T.C.)_{q=102\text{ units}}$ = Total purchase cost of 5,200+Total ordering cost + Total carrying cost

$$= 5{,}200\text{ units} \times ₹500 + \frac{5{,}200\text{ units}}{102\text{ units}} \times \text{Rs.}100 + \frac{1}{2} \times 102\text{ units} \times ₹100$$

$$= ₹\,26{,}00{,}000 + ₹\,5{,}098 + ₹\,5{,}100$$

$$= ₹\,26{,}10{,}198$$

Total cost (when the supplier is willing to give a discount of 5% on an order size of 1,500 units) will be:

$$(TC)_{q=1{,}500\text{ units}} = 5{,}200\text{ units} \times ₹\,475 + \frac{5{,}200\text{ units}}{1{,}500\text{ units}} \times ₹\,100 + \frac{1}{2} \times 1{,}500\text{ units} \times 20\% \times ₹475$$

$$= ₹\,24{,}70{,}000 + ₹\,346.66 + ₹\,71{,}250$$

$$= ₹\,25{,}41{,}596.66\text{ approx.}$$

Decision: Since the total cost of inventory when supplier supplies quarterly 1,500 units at a discount of 5% is less than that when the order size is of 102 units. Therefore, it is advisable to accept the offer of 5% discount and save a sum of ₹ 68,601.34 (₹ 26,10,198 – ₹25,41,596.66)

Note: In the case of E.O.Q. the total ordering cost and the total carrying cost are always equal, but in the above case it is not so because of the approximation made in arriving at the figure of E.O.Q.

5. (a) Bonus paid under the Halsey Plan with Bonus at 50% for the time saved equals the bonus paid under the Rowan System. When will this statement hold good? (Your answer should contain the proof). [4]

Answer.
Bonus under Halsey Plan

$= \text{Standard wage rate} \times \frac{50}{100} \times \text{Time saved}$ ..... (i)

Bonus under Rowan Plan

$= \text{Standard wage rate} \times \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken}$ ..... (ii)

Bonus under Halsey Plan will be equal to the
Bonus under Rowan Plan when the following condition holds good

$\text{Standard wage rate} \times \frac{50}{100} \times \text{Time saved}$

$= \text{Standard wage rate} \times \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken}$

or $\frac{1}{2} = \frac{\text{Time taken}}{\text{Time allowed}}$

or Time taken = $\frac{1}{2}$ of Time allowed

Hence, when the time taken is 50% of the time allowed the bonus under Halsey and Rowan Plans is equal.

(b) In a factory, overhead of a particular department are recovered on the basis of ₹ 5 per machine hour. The total expenses incurred and the actual machine hours for the department for the month of August were ₹ 80,000 and 10,000 hours respectively. Of the amount of ₹ 80,000, ₹ 15,000 became payable due to an award of the Labour Court and ₹ 5,000 was in respect of expenses of the previous year booked in the current month (August). Actual production was 40,000 units of which 30,000 units were sold. On analysing the reasons, it was found that 60% of the under absorbed overhead was due to defective planning and the rest was attributed to normal cost increase. How would you treat the under absorbed overhead in the cost accounts? [6]

Answer.
Under-absorbed Overhead Expenses during the month of August:

		₹
Total Expenses incurred in the month of August		80,000
Less: The amount paid according to labour court award (Assumed To be non- recurring)	₹ 15,000	
Expenses of previous year	₹ 5,000	20,000
Net overhead expenses incurred for the month		60,000
Overhead recovered for 10,000 hours @ ₹ 5/- per hour		50,000
Under absorbed overheads		10,000

Treatment of under – absorbed overhead in the Cost Accounts
It is given in the question that 40,000 units were produced out of which 30,000 units were sold. It is also given that 60% of the under-absorbed overhead was due to defective planning and the rest was attributed to normal cost increase.

		₹
1.	60 percent of under absorbed overhead is due to defective planning. This being abnormal, should be debited to Profit and Loss A/c (60% of ₹ 10,000)	6,000
2.	Balance 40 percent of under-absorbed overhead should be distributed over, Finished Goods and Cost of Sales by supplementary rate (40% of ₹ 10,000)	40,000
		10,000

₹ 4,000 may be distributed over Finished Goods and Cost of Sales as follows;

Finished Goods	*₹ 1,000
Cost of Sales	*₹ 3,000

***Working notes**

–	Under absorbed overhead :Rs 4,000	
–	Units produced : 40,000	
–	Rate of Under- absorbed overhead recovery	Re. 0.10 per unit
–	Amount of under–absorbed overheads charged to finished goods (10,000 ×0.10P)	₹ 1,000
–	Amount of under–absorbed overheads charged to Cost of sales (30,000 ×0.10P)	₹ 3,000

(c) The cost accountant of Y Ltd. has computed labour turnover rates for the quarter ended 31st March, 2013 as 10%, 5% and 3% respectively under Flux method, 'Replacement method' and 'Separation method'. If the number of workers replaced during that quarter is 30, find out the number of (1) workers recruited and joined and (2) workers left and discharged. [6]

Answer

Working Note:

Average number of workers on roll:

$$\text{Labour turnover rate (under Replacement method)} = \frac{\text{No. of replacements}}{\text{Average number of workers on roll}} \times 100$$

$$\text{Or } \frac{5}{100} = \frac{30}{\text{Average number of workers on roll}}$$

$$\text{Average number of workers on roll} = \frac{30 \times 100}{5} = 600$$

(1) Number of workers recruited and joined:

$$\text{Labour turnover rate (Flux method)} = \frac{\text{No. of separations (S)} + \text{No. of accessions (A)}}{\text{Av. number of workers on roll}} \times 100$$

(Refer to Working Note)

$$\text{Or } \frac{10}{100} = \frac{18 + A}{600}$$

$$\text{Or } A = \left[\frac{6000}{100} - 18\right] = 42$$

No. of workers recruited and joined 42.

(2) Number of workers left and discharged:

$$\text{Labour turnover rate (Separation method)} = \frac{\text{No. of separations (S)}}{\text{Av. number of workers on roll}} \times 100$$

(Refer to working note)

$$\frac{3}{100} = \frac{S}{600}$$

Or S = 18

Hence, number of workers left and discharged comes to 18.

Section B–Financial Management

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

6. (a) Z Ltd. Is a manufacturing company having asset turnover ratio of 2 and debt- asset ratio of 0.60 for the year ended 31st March, 2013 . If its net profit margin is 5%, what is the Return on Equity (ROE) of the company ? [2]

Answer.

According to Du-Pont Analysis,
ROE= (Net profit /Sales)*((Sales/ Av. Assets)*(Av. Assets/Av. Equity)
Av. Assets/ Av. Equity=1/(1-0.60)=1/0.40=2.50
ROE= 0.05*2*2.5=0.25 i.e 25%.

(b) The average daily sales of a company are ₹ 5 lac. The company normally keeps a cash balance of ₹ 80000.If the weighted operating cycle of the company is 45 days, what will be its working capital ? [2]

Answer.

The working capital requirement is for 45 days of the weighted operating cycle plus normal cash balance = Sales per day * weighted operating cycle+ cash balance requirement = ₹ 5 lac *45 + ₹0.80 lac = ₹ 225.80 lac.

(c) The balance sheet of ABC Ltd. Shows the capital structure as follows :
2,50,000 equity shares of ₹ 10 each; 32,000, 12% preference shares of ₹ 100 each; general reserve of ₹ 14,00,000; securities premium account ₹ 6,00,000; 25,000, 14% fully secured non-convertible debentures of ₹ 100 each.; term loans from financial institutions ₹ 10,00,000.
What is the leverage of the firm ? [2]

Answer.

Fixed income funds = Preference share capital + Debentures + Term loans
= ₹ 32,00,000 + ₹ 25,00,000 + ₹ 10,00,000 = ₹ 67,00,000

Equity funds = Equity share capital + General reserve + Securities premium
= ₹ 25,00,000 + ₹ 14,00,000 + ₹ 6,00,000 = ₹ 45,00,000

Total funds used in the capital structure = ₹ 67,00,000 + ₹ 45,00,000 = ₹ 1,12,00,000

$$\text{Leverage} = \frac{₹\ 67,00,000}{₹\ 1,12,00,000} \times 100 = 59.8\%$$

(d) ABC Ltd. Is selling its products on credit basis and its customers are associated with 5% credit risk. The annual turnover is expected at ₹ 5,00,000 if credit is extended with cost of sales at 75% of sale value. The cost of capital of the company is 15%. What is the net profit of the company ? [2]

Answer.

Profitability of credit sales		(₹)	
Credit sales		5,00,000	
Less : Cost of sales (₹ 5,00,000 x 75/100)		3,75,000	
			1,25,000
Less : Cost of granting credit			
Default risk	(₹ 5,00,000 x 5/100)	25,000	
Opportunity cost	(₹ 5,00,000 x 60/365 x 15/100)	12,330	
Administration cost	(₹ 5,00,000 x 2/100)	10,000	47,330
Net profit			77,670

7. (a) The following is the condensed Balance sheet of NHPC Ltd. at the beginning and end of the year. [12]

Balance Sheets
As at ……..

Particulars	31.12.2012	31.12.2013
Cash	**50,409**	**40,535**
Sundry debtors	**77,180**	**73,150**
Temporary investments	**1,10,500**	**84,000**
Prepaid expenses	**1,210**	**1,155**
Inventories	**92,154**	**1,05,538**
Cash surrender value of Life Insurance Policy	**4,607**	**5,353**
Land	**25,000**	**25,000**
Building, machinery etc.	**1,47,778**	**1,82,782**
Debenture discount	**4,305**	**2,867**
	5,13,143	**5,20,380**
Sundry creditors	**1,03,087**	**95,656**
Outstanding expenses	**12,707**	**21,663**
4% mortgage debentures	**82,000**	**68,500**
Accumulated depreciation	**96,618**	**81,633**
Allowance for inventory loss	**2,000**	**8,500**
Reserve for contingencies	**1,06,731**	**1,34,178**
Surplus in P & L A/c	**10,000**	**10,250**
Share capital	**1,00,000**	**1,00,000**
	5,13,143	**5,20,380**

The following information concerning the transaction are available :

i. **Net profit for 2013 as per Profit and loss account was ₹ 49,097**
ii. **A 10% cash dividend was paid during the year.**
iii. **The premium of Life Insurance Policies were ₹ 2,773 of which ₹ 1,627 was charged to Profit and Loss Account of the year.**
iv. **New machinery was purchased for ₹ 31,365 and machinery costing ₹ 32,625 was sold during the year. Depreciation on machinery sold had accumulated to ₹ 29,105 at the date of sale.**

It was sold as scrap for ₹ 1,500. The remaining increase in Fixed Assets resulted from construction of a Building.

v. The Mortgage Debentures mature at the rate of ₹ 5,000 per year. In addition to the above, the company purchased and retired ₹ 8,500 of Debentures at ₹ 103. Both the premium on retirement and the applicable discount were charged to Profit and Loss Account.

vi. The allowance for Inventory Loss was created by a charge to expenses in each year to provide for obsolete items.

vii. A debit to reserve for contingencies of ₹ 11,400 was made during the year. This was in respect of a past tax liability.

You are required to prepare a statement showing the Sources and Applications of funds for the year 2013. [12]

Answer.

a) Statement of Sources and Applications of Funds
For the year ended 31st December 2013

Sources	₹	Applications	₹
Sale of Machinery	1,500	Purchase of machinery	31,365
Trading profit (adjusted)	75,457	Payment for construction of building	36,264
	76,957	Dividend paid	10,000
Add: Decrease in working capital	28,600	Redemption of debentures	13,755
		Tax liability paid	11,400
		Premium on Life Policy (1,146 + 1,627)	2,773
	1,05,557		1,05,557

Workings :

Statement of Change in Working Capital

	2012 ₹		2013 ₹	
Current Assets :				
Cash		50,409		40,535
Sundry debtors		77,180		73,150
Temporary investments		1,10,500		84,000
Prepaid expenses		1,210		1,155
Inventories		92,154		1,05,538
		3,31,453		3,04,378
Less : Current Liabilities :				
Sundry creditors	1,03,087		95,656	
Out. Expenses	12,707		21,663	
		1,15,794		1,17,319
Working capital		2,15,659		1,87,059
Decrease in working capital		-		28,600
		2,15,659		2,15,659

4% Mortgage Debenture A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, 4% Mortgage debenture holders	13,500	By bal b/d	82,000

To, Bal c/d	68,500		
	82,000		82,000

4% Mortgage Debenture holders' A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Bank A/c.	13,755	By, 4% Mortgage debenture a/c.	13,500
		By, P & L A/c.	255
	13,755		13,755

Accumulated Depreciation A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Building, machinery etc.	29,105	By, Bal b/d	96,618
To, Bal c/d	81,633	By, P & L A/c.	14,120
	1,10,738		1,10,738

Allowance for Inventory Loss A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Bal c/d	8,500	By, Bal b/d	2,000
		By, P & L A/c. (bal. fig.)	6,500
	8,500		8,500

Reserve for Contingencies A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Tax liability (paid)	11,400	By, Bal b/d	1,06,731
To, Bal c/d	1,34,178	By, P & L A/c. (bal. fig.)	38,847
	1,45,578		1,45,578

Life Insurance Policy A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Bal b/d	4,607	By, P & L A/c. (excess over surrender value)	400
To, Bank (premium)	1,146	By, Balance c/d	5,353
	5,753		5,753

Building and Machinery A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Balance b/d	1,47,778	By, Accumulated Dep.	29,105
To, Bank a/c (Purchase)	31,365	By, Bank a/c. (sales)	1,500
To, Bank a/c. (bal. fig.) (Construction cost of building)	36,264	By, P & L a/c. (loss on sale)	2,020
		By, Balance c/d	1,82,782
	2,15,407		2,15,407

Debenture Discount A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Balance b/d	4,305	By, P & L a/c. (bal. fig.)	1,438
		By, Balance c/d	2,867
	4,305		4,305

Profit and Loss A/c.

Dr. Cr.

Particulars	₹	Particulars	₹
To, Dividend	10,000	By, Balance b/d	10,000
To, Life insurance policy	400	By, Trading profit (adjusted bal. fig.)	75,457
To, Debenture discount	1,438		
To, Reserve for contingencies	38,847		
To, Allow. For inventory loss	6,500		
To, 4% Mort. Debentureholders	255		
To, Accumulated depreciation	14,120		
To, Building and Mach. (loss)	2,020		
To, Bank (life insurance premium)	1,627		
To, Balance c/d	10,250		
	85,457		85,457

(b) Do the profitability index and the NPV criterion of evaluating investment proposals lead to the same acceptance – rejection and ranking decisions? In what situations will they give conflicting results? [4]

Answer.

In most of the situations the Net present value method (NPV) and Profitability Index (PI) yield same accept or reject decision. In general terms, under PI method a project is acceptable if profitability index value is greater than I and rejected if it is less than 1. Under NPV method a project is acceptable if Net present value of a project is positive and rejected if it is negative. Clearly a project offering a profitability index greater than 1 must also offer a net present value which is positive. But a conflict may arise between two methods if a choice between mutually exclusive projects has to be made. Consider the following example:

	Project A	Project B
PV of Cash inflows	2,00,000	1,00,000
Initial cash outflows	1,00,000	40,000
Net present value	1,00,000	60,000
P.I.	$\frac{2,00,000}{1,00,000}=2$	$\frac{1,00,000}{40,000}=2.5$

According to NPV method, project A would be preferred, whereas according to profitability index method project B would be preferred.

This is because Net present value gives ranking on the basis of absolute value of rupees. Whereas profitability index gives ranking on the basis of ratio. Although PI method is based on NPV, it is a better evaluation techniques than NPV in a situation of capital rationing.

8. (a) DL Services is in the business of providing home Services like plumbing, sewerage line cleaning etc. There is a proposal before the company to purchase a mechanized sewerage cleaning line for a sum of ₹ 20 lacs. The life of the machine is 10 years. The present system of the company is to use manual labour for the job. You are provided the following information:

Cost of machine	**20 lakhs**
Depreciation	**20% p.a. straight line**
Operating cost	**₹ 5 lacs per annum**
Present system	
Manual labour	**200 persons**
Cost of Manual labour	**₹ 10,000 (ten thousand) per person per annum**

The company has an after tax cost of funds of 10% per annum. The applicable rate of tax inclusive of surcharge and cess is 35%.

Based on the above you are required to:

(i) State whether it is advisable to purchase the machine.

(ii) Compute the savings/additional cost as applicable, if the machine is purchased.

[2+3=5]

Answer

Present System

Cost per annum	
200 persons @ ₹10,000 per annum	20,00,000
Cumulative Annuity factor at 10%	6.1446
Present value of cash outflow over a period of ten years at 10%	122,89,200
Tax benefit at 35% for 10 years	43,01,220
Net cost over ten years	**79,87,980**

If machine is purchased	
Cost of Machine	20,00,000
Depreciation per annum	4,00,000
Annual cost of operation	5,00,000
Present value of operating cost for 10 years at 10%	30,72,300
Tax saving on operating cost at 35% for 10 years	10,75,305
Net operating cost	19,96,995
Annuity factor for 5 years at 10%	3.7908
Tax saving on depreciation at 35%	5,30,712
Summary	
Outflow on machine	20,00,000
Less: Tax saving on depreciation of Machine	-5,30,712
Add: Operating cost over 10 years	19,96,995
Total cost of machine over 10 years	34,66,283
Total saving	45,21,697

Since there is a saving of ₹45.21 lacs it is advisable to purchase the machine.

(b) Write short note on Inflation and financial management. [5]

Answer

Inflation and financial management: Financial management is basically concerned with the proper management of finance which is regarded as the life blood of business enterprise. The direct consequence of inflation has been to distort the significance of operating results and utility of financial statements (based on historical cost) for various managerial accounting and decision making purposes. Even though it is beyond the scope of finance manager to control inflation. He, however, tries to measure the impact of inflation on his business so as to re-orient various financial management policies according to the fast changing circumstances. Some of the prominent areas which are affected by inflation and are required to be re-oriented are as follows:

1. *Financing decisions*: This involves identifying the sources from which the finance manager should raise the quantum of funds required by a company. The debentureholder and preference shareholders are interested in fixed income while equity shareholders are interested in higher profits to earn high dividend. The finance manager is required to estimate the amount of profits he is going to earn in future. While estimating the revenue and costs, he must take into consideration the inflation factor.
2. *Investment decisions*: The capital budgeting decisions will be biased if the impact of inflation is not correctly factored in the analysis. This is because the cash flows of an investment project occur over a long period of time. Therefore, the finance manager should be concerned about the impact of inflation on the project's profitability.
3. *Working Capital decisions*: The finance manager is required to consider the impact of inflation while estimating the requirements of working capital. This is because of the increasing input prices and manufacturing costs, more funds may have to be tied up in inventories and receivables.
4. *Dividend payout policy*: This involves the determination of the percentage of profits earned by the enterprise which is to be paid to the shareholders. While taking this decision, the finance manager has to keep in mind the inflation factor. Therefore, while making this decision he has to see that the capital of the company remain intact even after the payment of dividend. This is because in a inflationary situation the depreciation provided on the basis of historical costs of assets would not provide adequate funds for replacement of fixed assets at the expiry of their useful lives.

(c) Moderate Industries Ltd. is desirous of assessing its working capital requirements for the next year. The finance manager has collected the following information for the purpose.

Estimated cost per unit of finished product

Particulars	**₹**
Raw materials	**90**
Direct labour	**50**
Manufacturing and administrative overhead (excluding depreciation)	**40**
Depreciation	**20**
Selling overheads	**30**
Total cost	**230**

The product is subject to excise duty of 10% (levied on cost of production) and is sold at ₹ 300 per unit.

Additional information :

i. **Budgeted level of activity is 1,20,000 units of output for the next year.**
ii. **Raw material cost consists of the following :**
Pig iron ₹ 65 per unit, Ferro alloys 15 per unit, and Cast iron borings 10 per unit.
iii. **Raw materials are purchased from different suppliers, extending different credit period.**
Pig iron – 2 months, Ferro alloys – ½ month, and cost iron borings – 1month.

iv. Product is in process for a period of ½ month. Production process requires full unit (100%) of pig iron and ferro alloys in the beginning of production' cast iron boring is required only to the extent of 50% in the beginning and the remaining is needed at a uniform rate during the process. Direct labour and other overheads accrue similarly at a uniform rate throughout production process.

v. Past trends indicate that the pig iron is required to be stored for 2 months and other materials for 1 month.

vi. Finished goods are in stock for a period of 1 month.

vii. It is estimated that one-fourth of total sales are on cash basis and the remaining sales are on credit. The past experience of the firm has been to collect the credit sales in 2 months.

viii. Average time-lag in payment of all overheads is 1 month and ½ months in the case of direct labour.

ix. Desired cash balance is to be maintained at ₹ 10 lakhs.

You are required to determine the amount of net working capital of the firm. State your assumptions, if any. [6]

Answer.

Determination of net working capital of Moderate Industries Ltd.

Particulars	₹
Current assets :	
Minimum desired cash balance	10,00,000
Raw materials :	
Pig iron (1,20,000 x ₹ 65 x 2/12)	13,00,000
Ferro alloys (1,20,000 x ₹ 15 x 1/12)	1,50,000
Cast iron borings (1,20,000 x ₹ 10 x 1/12)	1,00,000
Work-in-process (1,20,000 x ₹ 132.5 x 1/24)	6,62,500 [1]
Finished goods (1,20,000 x ₹ 180 x 1/12)	18,00,000
Debtors (1,20,000 x 0.75 x ₹ 230 x 2/12)	34,50,000 [2]
Total	84,62,500
Current liabilities :	
Pig iron (1,20,000 x ₹ 65 x 2/12)	13,00,000
Ferro alloys (1,20,000 x ₹ 15 x 1/24)	75,000
Cast iron borings (1,20,000 x ₹10 x 1/12)	1,00,000
Wages (1,20,000 x ₹ 70 x 1/12)	2,50,000
Total overheads (1,20,000 x ₹ 70 x 1/12)	7,00,000
Total	24,25,000
Net working capital	60,37,500

Working notes :

i. Determination of work-in-process

		₹
Pig iron		65
Ferro alloys		15
Cast iron boring (0.50 x ₹ 10)		5
Other costs :		
Cast iron borings (0.50 x ₹ 5)	2.50	
Direct labour (0.5 x ₹ 50)	25.00	
Manufacturing and administrative overhead (0.50 x ₹ 40)	20.00	47.50
		132.50

ii. Debtors

Raw material	90
Direct labour	50
Manufacturing and administrative overheads	40

Selling overheads	30
Excise duty (0.10 x ₹ 200)	20
	230

9. (a) Avon Electrical Ltd wishes to determine the weighted average cost of capital for evaluating capital budgeting projects. You have been supplied with the following information to calculate the value of K_o for the company.

BALANCE SHEET as on March 31

Liabilities		Assets	
Current liabilities	₹ 9,00,000	Sundry assets	₹39,00,000
Debentures	9,00,000		
Preference shares	4,50,000		
Equity Shares	12,00,000		
Retained earnings	4,50,000		
	₹ 39,00,000		₹39,00,000

Anticipated external financing information:

(i) **20 years, 8% Debentures of ₹2,500 face value, redeemable at 5% premium, sold at par, 2 % flotation costs.**

(ii) **10% Redeemable Preference Shares: Sale price ₹100 per share, 2% flotation costs.**

(iii) **Equity shares: Sale price ₹ 115 per share; flotation costs would be ₹ 5 per share.**

(iv) **The corporate tax rate is 35% and expected equity dividend growth is 5% per year.**

(v) **The expected dividend at the end of the current financial year is ₹ 11 per share. Assume that the company is satisfied with its present capital structure and intends to maintain it.** **[6]**

Answer

Marginal cost of capital / Cost of capital of additional finance:

Step 1: Specific cost of capital:

a)

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

$$K_d = \frac{200\,(1-0.35) + \frac{2625 - 2450}{20}}{\frac{2625 + 2450}{2}} \text{ x } 100 = 5.47\,\%$$

b)

$$K_p = \frac{Preference\ dividend\ (1 + dividend\ tax)}{\frac{RV + NS}{2}} \text{ x } 100$$

$$K_p = \frac{10}{\frac{100 + 98}{2}} \text{ x } 100 = 10.10\,\%$$

c)

$$K_e(constant\ growth\ model) = \frac{D_1}{Net\ Sale\ Proceeds} + \text{Growth (g)}$$

$$= \frac{11}{110} + 0.05 = 0.15\ (\text{or})\ 15\%$$

d)

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

$$K_r = \frac{11}{115} + 0.05 = 0.1456\ (\text{or})14.56\ \%$$

Note: Since flotation cost are not considered for reserves, net sale proceeds = ₹ 115.

Step2: Calculation of overall cost of capital (book value basis):

Source	Rs	Weight	Specific cost of capital (%)	Ko
Debentures	900000	0.30	5.47	1.641
Preference shares	450000	0.15	10.10	1.515
Equity	1200000	0.40	15.00	6.000
Retained earnings	450000	0.15	14.56	2.184
	3000000			11.34 %

(b) Following are the data on a capital project being evaluated by the management of X Ltd.

	Project M ₹
Annual cost saving	**4,00,000**
Useful life	**4 years**
I.R.R.	**15%**
Profitability Index (PI)	**1.064**
NPV	**?**
Cost of capital	**?**
Cost of project	**?**
Payback	**?**
Salvage value	**0**

Find the missing values considering the following table of discount factor only:

Discount factor	15%	14%	13%	12%
1 year	0.869	0.877	0.885	0.893
2 years	0.756	0.769	0.783	0.797
3 years	0.658	0.675	0.693	0.712
4 years	0.572	0.592	0.613	0.636
	2.855	2.913	2.974	3.038

[6]

Answer

Cost of Project M

At 15% I.R.R., the sum total of cash inflows = Cost of the project i.e. Initial cash outlay

Given:

Annual cost saving	₹ 4,00,000
Useful life	4 years
I.R.R.	15%

Now, considering the discount factor table @ 15% cumulative present value of cash inflows

for 4 years is 2.855. Therefore, Total of cash inflows for 4 years for Project M is (₹ 4,00,000 × 2.855) = ₹ 11,42,000
Hence cost of project is = ₹ 11,42,000

Payback period of the Project M

$$\text{Payback period} = \frac{\text{Cost of the project}}{\text{Annual cost saving}} = \frac{\text{Rs.}11,42,000}{4,00,000}$$

= 2.855 or 2 years 11 months approximately

Cost of Capital

If the profitability index (PI) is 1, cash inflows and outflows would be equal. In this case, (PI) is 1.064. Therefore, cash inflows would be more by 0.64 than outflow.

$$\text{Profitability index (PI)} = \frac{\text{Discounted cash inflows}}{\text{Cost of the project}}$$

$$\text{Or } 1.064 = \frac{\text{Discounted cash inflows}}{\text{Rs.}11,42,000}$$

or 1.064 × ₹ 11,42,000 = ₹ 12,15,088.
Hence, Discounted cash inflows = ₹ 12,15,088
Since, Annual cost saving is ₹ 4,00,000. Hence, cumulative discount factor for 4 years

$$= \text{Rs.}\frac{12,15,088}{4,00,000}$$

= 3.037725 or 3.038
Considering the discount factor table at discount rate of 12%, the cumulative discount factor for 4 years is 3.038. Hence, the cost of capital is 12%.

Net present value of the project.

N.P.V. = Total present value of cash inflows – Cost of the project
= ₹ 12,15,088 – ₹ 11,42,000
= ₹ 73,088.

(c) Write the basic propositions and the assumptions of the MM Approach. [4]

Answer.
Basic Propositions:

M -M Hypothesis can be explained in terms of two propositions of Modigliani and Miller. They are:

i) The overall cost of capital (K_o) and the value of the firm are independent of the capital structure. The total market value of the firm is given by capitalizing the expected net operating income by the rate appropriate for that risk class.
ii) The financial risk increases with more debt content in the capital structure. As a result cost of equity (K_e) increases in a manner to offset exactly the low – cost advantage of debt. Hence, overall cost of capital remains the same.

Assumptions of the MM Approach:

1. There is a perfect capital market. Capital markets are perfect when
   i) Investors are free to buy and sell securities,
   ii) They can borrow funds without restriction at the same terms as the firms do,
   iii) They behave rationally,
   iv) They are well informed, and

v) There are no transaction costs.

2. Firms can be classified into homogeneous risk classes. All the firms in the same risk class will have the same degree of financial risk.
3. All investors have the same expectation of a firm's net operating income (EBIT).
4. The dividend payout ratio is 100%, which means there are no retained earnings.
5. There are no corporate taxes. This assumption has been removed later.