Paper – 8: Cost Accounting & Financial Management

Question.1

a) Illustrate Sunk Cost.

Answer :

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) A factory incurred the following expenditure during the year 2011:

		₹
Direct material consumed		**12,00,000**
Manufacturing Wages		**7,00,000**
Manufacturing overhead:		
Fixed	**3,60,000**	
Variable	**2,50,000**	**6,10,000**
		25,10,000

In the year 2012, following changes are expected in production and cost of production.

(i) Production will increase due to recruitment of 60% more workers in the factory.
(ii) Overall efficiency will decline by 10% on account of recruitment of new workers
(iii) There will be an increase of 20% in Fixed overhead and 60% in Variable overhead.
(iv) The cost of direct material will be decreased by 6%.
(v) The company desire to earn a profit of 10% on selling price.

Calculate the cost of production and selling price.

Answer :

Budgeted Cost Sheet for the year 2011

Particulars			Amount(₹)
Direct material consumed		12,00,000	
Add: 44% due to increased output		5,28,000	
		17,28,000	
Less: 6% for decline in price		1,03,680	16,24,320
Direct wages (manufacturing)		7,00,000	
Add: 60% increase		4,20,000	11,20,000
Prime cost			27,44,320
Manufactured Overhead:			
Fixed	3,60,000		
Add: 20% increase	72,000		
		4,32,000	
Variable	2,50,000		
Add: 60% increase	1,50,000		
		4,00,000	8,32,000
Cost of production			35,76,320
Add: 1/9 of Cost or 10% on selling price			3,97,369
Selling price			39,73,689

c) 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.

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

d) State the circumstances in which time rate system of wage payment can be preferred in a factory.

Answer :

In time based wage payment plans, standard time is predetermined and the efficiency of each individual worker is assessed to compensate them for higher efficiency in work as compared to standard time set. These plans can be suitably applied in the following circumstances :

i. Where the output of an individual worker cannot be measured reasonably.
ii. Where the work is required to be closely supervised.
iii. Where the quality of work is more important.
iv. Where output of an individual worker is not in his control.
v. Where increase in output is negligible compares to the incentive.

e) 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 the quarter is 30, find out the number of workers recruited and joined.

Answer :

Average number of workers on roll:

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

$$\text{Or} = \frac{5}{10} = \frac{30}{\text{Average number of workers on roll}}$$

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

Number of workers recruited and joined:

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)

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

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

f) Explain the accounting treatment for rectification costs of defective work ?

Answer :

The costs of rectification or re-work may be treated in the following ways –

1. When defectives are normal and inherent in the process :
   i. Charged to good products – The loss is absorbed by good units. This method is used when 'seconds' have a normal value and defectives rectified into 'seconds' or 'first' are normal.
   ii. Charged to jobs – When defectives are normal and are easily identifiable with specific jobs, the work costs are debited to the job.
   iii. Charged to General overheads – When the defectives caused in one department are reflected only on further processing, the rework costs are charged to general overheads.
   iv. Charged to the department overheads – If the department responsible for defectives can be identified then the rectification costs should be charged to that department.
2. When defectives are abnormal : if defectives are abnormal and are due to causes beyond the control of the firm, the rework cost should be charged to costing Profit and Loss Account.

g) 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, calculate its working capital.

Answer :

The working capital requirement for 45 days is 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.

h) 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%. Calculate the Return-on-equity for the company.

Answer :

Net Sales : ₹ 45 crores

EBIT Rs 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%	

i) Beauty Ltd. has an excess cash of ₹ 16,00,000 which it wants to invest in short-term marketable securities. Expenses relating to investment will be ₹40000.

The securities invested will have an annual yield of 8%. The company seeks your advice as to period of investment so as to earn a pre-tax income of 4%.

Also, find the minimum period for the company to break-even its investment expenditure. Ignore time value of money.

Answer:

Investment must earn pre-tax income of ₹ 16,00,000*0.04 = ₹64,000

Let P be the required period (in months) of investment so as to earn ₹ 64,000.

Therefore, 1600000*P/12*0.08 – 4000 = 64000

Or, 32000P = 312000

Or, P = 9.75

So period of investment is =9.75 months.

The required minimum period to break even the investment expenditure will be : 1600000*P/12*0.08 – 40000 = 0

or, 32000P = 120000

or, P = 3.75

Therefore minimum period of the company to break even its Investment Expenditure=3.75 months.

j) 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%. Calculate the net profit of the company.

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

Section A

Question 2.
(a) Define Cost Accounting and Costing.

Answer :

Cost Accounting may be defined as "*Accounting for costs classification and analysis of expenditure as will enable the total cost of any particular unit of production to be ascertained with reasonable degree of accuracy and at the same time to disclose exactly how such total cost is constituted*". Thus Cost Accounting is classifying, recording an appropriate allocation of expenditure for the determination of the costs of products or services, and for the presentation of suitably arranged data for the purpose of control and guidance of management.

Costing is defined as the technique and process of ascertaining costs.

(b) List out the objectives of Cost Accounting.

Answer :
The following are the main objectives of Cost Accounting :-
(i) To ascertain the Costs under different situations using different techniques and systems of costing
(ii) To determine the selling prices under different circumstances
(iii) To determine and control efficiency by setting standards for Materials, Labour and Overheads
(iv) To determine the value of closing inventory for preparing financial statements of the concern
(v) To provide a basis for operating policies which may be determination of Cost Volume relationship, whether to close or operate at a loss, whether to manufacture or buy from market, whether to continue the existing method of production or to replace it by a more improved method of production....etc

(c) Discuss Management Accounting.

Answer :
Management Accounting involves the presentation of accounting information in such a manner, so as to facilitate the process of decision making. It is very useful to the management in the creation of policies and day to day operations of an undertaking.

Management Accounting is developed using both cost and financial accounting. It help the management in making policies and various decisions. It also deals with the effect and impact of copy of business.

Following are the nature of Management Accounting :
(i) It is a decision making system
(ii) It is futuristic in nature
(iii) It act as a communicating link
(iv) Its information may be monetary or non monetary
(v) It helps in analyzing the reason for valuation in profit as compared to the past record.

Question 3.
(a) "Costs may be classified in a variety of ways according to their nature and the information needs of the management." – Explain.

Answer :

Classification of costs can be made in different ways, such as, -

(i) According to elements viz. material, labour and expenses

(ii) According to nature viz. direct and indirect material, direct and indirect labour, direct and indirect expenses.

(iii) According to behavior viz. fixed cost, variable cost, semi-variable cost.

(iv) According to function viz. production cost, administrative cost, selling and distribution cost, and research and development cost.

(v) According to time viz. historical and pre-determined cost.

(vi) For decision making viz. marginal cost, opportunity cost, relevant cost, replacement cost, abnormal cost, controllable cost, shut down cost, capacity cost etc.

(b) Explain "Cost Centre" and "Cost Unit".

Answer :

Cost Centre is the smallest segment of activity or area for which costs are accumulated. It is defined as a location, person or an item of equipment for which cost may be ascertained and used for the purpose of Cost Control. Cost Centres are of the following two types :

(i) Personal cost centre consists of a person or group of persons, eg. Machine operator, salesman etc.

(ii) Impersonal cost centre consists of a location or item of equipment (or group of these), e.g. factory (location), machine (equipment) etc.

In a manufacturing concern the two types of cost centre on the basis of function are :

(i) Production cost centre : It is a cost centre where raw material is handled for conversion into finished product. Here bth direct and indirect expenses are incurred. Machine shops, welding shops and assembly shops are examples of production cost centres.

(ii) Service cost centre : It is a cost centre which serves as an ancillary unit to a production cost centre. Power house, gas production shop, material service centres, plant maintenance centres are examples of service cost centres.

On the basis of activity, cost centres can be classified in the following manner :

(i) Operation cost centre : It is a cost centre where all machines are performing the same activity or operation, irrespective of their location. This helps in ascertaining the cost related to a particular operation.

(ii) Process cost centres : It is a cost centre where costs are ascertained for a continuous series of operations being carried out at the same place.

Question 4.

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

Answer :

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.

(b) Short note on 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.

Question 5.

(a) List the common principles applicable to all the elements of cost as per GACAP.

Answer :

Common principles applicable to all the elements are as follows :

(i) When an element of cost is accounted at standard cost, variances due to normal reasons are treated as a part of the element wise cost. Variances due to abnormal reasons will not form part of the cost.

(ii) Any subsidy / grant / incentive and any such payment received / receivable with respect to the input cost is reduced from cost for ascertainment of the cost of the cost object to which such amount pertains

(iii) Any abnormal cost where it is material and quantifiable will not form part of the cost.

(iv) Penalties, damages paid to statutory authorities or other third parties will not form part of the total cost.

(v) Cost reported under various elements of cost will not include imputed costs.

(vi) Finance costs incurred in connection with the acquisition of resources such as material, utilities and the like will not form part of the cost of such resources.

(vii) Any credits or recoveries from employees or suppliers or other parties towards the costs incurred by the entity for a resource will be netted against such cost.

(viii) Except otherwise stated, the measurement of costs for cost accounting purposes will follow the same principles as set out in generally accepted accounting principles applicable to the concerned entity.

(b) XYZ Auto Ltd. is in the business of selling cars. It also sells insurance and finance as part of its overall business strategy. The following information is available for the company.

	Physical Units	**Sales Value**
Sales of Cars	**10,000 Cars**	**₹ 30,000 lacs**
Sales of Insurance	**6,000 Policies**	**₹ 1,500 lacs**
Sales of Finance	**8,000 Loans**	**₹ 19,200 lacs**

The Revenue earnings from each line of business before expenses are as follows:

Sale of Cars	**3% of Sales value**
Sale of Insurance	**20% of Sales value**
Sale of Finance	**2% of Sales value**

The expenses of the company are as follows:

Salesman salaries	**₹ 200 lacs**
Rent	**₹ 100 lacs**
Electricity	**₹ 100 lacs**
Advertising	**₹ 200 lacs**
Documentation cost per insurance policy	**₹ 100**
Documentation cost for each loan	**₹ 200**
Direct sales expenses per car	**₹ 5,000**

Indirect costs have to be allocated in the ratio of physical units sold.

Required:

(i) Make a cost sheet for each product allocating the direct and indirect costs and also showing the product wise profit and total profit.

(ii) Calculate the percentage of profit to revenue earned from each line of business.

Answer

Product Cost Sheet

	Total	**Cars**	**Insurance**	**Finance**
Sales units		10,000	6,000	8,000
Sales value (₹ in lakhs)		30,000	1,500	19,200
Revenue earnings		3%	20%	2%
Revenue earned (₹ in lakhs)	1584	900	300	384
Direct costs (₹ in lakhs)	522	500(5000 × 10000)	6(100 × 6000)	16 (200 × 8000)
Indirect costs (allocated in the ratio of physical units sold) 5:3:4				
Salesman salaries (₹ in lakhs)	200			
Rent (₹ in lakhs)	100			
Electricity (₹ in lakhs)	100			
Advertising (₹ in lakhs)	200			
	600	250	150	200
Total costs	**1122**	**750**	**156**	**216**
Profits (Revenue – Total cost)	462	150	144	168
% of Profits to revenue earned	29.17%	16.67%	48%	43.75%

Question 6.

(a) Short note on CAS 5

Answer :

CAS-5: Cost Accounting Standard on Determination of Average Cost of Transportation

The cost accounting principles for tracing/identifying an element of cost, its allocation/apportionment to a product or service are well established. Transportation cost is an important element of cost for procurement of materials for production and for distribution of product for sale. Therefore, Cost Accounting Records should present transportation cost separately from the other cost of inward materials or cost of sales of finished goods. There is a need to standardize the record keeping of expenses relating to transportation and computation of transportation cost.

Objective

(i) To bring uniformity in the application of principles and methods used in the determination of averaged/equalized transportation cost.
(ii) To prescribe the system to be followed for maintenance of records for collection of cost of transportation, its allocation/apportionment to cost centres locations or products.
(iii) To provide transparency in the determination of cost of transportation

Scope:
This standard should be applied for calculation of cost of transportation required under any statute or regulations or for any other purpose. For example, this standard can be used for :
(i) Determination of average transportation cost for claiming the deduction for arriving at the assessable value of excisable goods
(ii) Insurance claim valuation
(iii) Working out claim for freight subsidy under Fertilizer Industry Coordination Committee
(iv) Administered price mechanism of freight cost element
(v) Determination of inward freight costs included or to be included in the cost of purchases attributable to the acquisition.
(vi) Computation of freight included in the value of inventory for accounting on inventory or valuation of stock hypothecated with Banks / Financial Institution ...etc

(b) The books of Ashesh Manufacturing Company present the following data for the month of June, 2015.

Direct labour cost ₹ 17,500 being 175% of works overheads.

Cost of goods sold excluding administrative expenses ₹ 56,000.

Inventory accounts showed the following opening and closing balance:

	June 1	June 30
	₹	₹
Raw materials	8,000	10,600
Works in progress	10,500	14,500
Finished goods	17,600	19,000

Other data are :	₹
Selling expenses	3,500
General and administration expenses	2,500
Sales for the month	75,000

You are required to compute the value of materials purchased.

Answer :
Computation of the value of materials purchased

	₹
Cost of goods sold	56,000
Add: Closing stock of finished goods	19,000

	75,000
Less: Opening stock of finished goods	17,600
Cost of goods manufactured	57,400
Add: Closing stock of works-in-progress	14,500
	71,900
Less: Opening stock of work-in-progress	10,500
Works Cost	61,400
Less: Factory Overhead: $\left(\frac{100}{175} of\ 17{,}500\right)$	10,000
Prime Cost	51,400
Less: Direct Labour	17,500
Raw materials consumed	33,900
Add: Closing stock of raw materials	10,600
Raw materials available	44,500
Less: Opening stock of raw materials	8,000
Value of materials purchased	36,500

Question 7.

(a) Differentiate between Bin Card and Stores Ledger.

Answer :

Both bin cards and stores ledger are perpetual inventory records. None of them is a substitute for the other. These two records may be distinguished from the following points of view:

(i) Bin card is maintained by the store keeper, while the stores ledger is maintained by the cost accounting department.

(ii) Bin card is the stores recording document whereas the stores ledger is an accounting record.

(iii) Bin card contains information with regard to quantities i.e. their receipt, issue and balance while the stores ledger contains both quantitative and value information in respect of their receipts, issue and balance.

(iv) In the bin card entries are made at the time when transaction takes place. But in the stores ledger entries are made only after the transaction has taken place.

(v) Inter departmental transfer of materials appear only in stores ledger.

(vi) Bin cards record each transaction but stores ledger records the same information in a summarized form.

(b) From the following details, prepare a Stores Ledger Account indicating value of materials consumed and closing stock using LIFO method :

Date	Particulars	Units	Rate (₹)
01.03.2015	Opening stock	100	10.75

05.03.2015	**Purchase**	**150**	**10.50**
12.03.2015	**Purchase**	**300**	**10.60**
22.03.2015	**Purchase**	**400**	**10.70**
08.03.2015	**Issue**	**200**	**-**
18.03.2015	**Issue**	**250**	**-**
29.03.2015	**Issue**	**400**	**-**

Answer :

In the books of ………….

Stores Ledger Account (LIFO Method)

Date	Remarks	Receipts				Issues				Balance		
		GRN	Units No.	Rate ₹	Value ₹	SRN	Units No.	Rate ₹	Value ₹	Units No.	Rate ₹	Value ₹
March												
3	Opening	-	-	-	-	-	-	-	-	100	10.75	1,075.00
5		-	150	10.50	1,575.00	-	-	-	-	100	10.75	2,650.00
										150	10.50	
8		-	-	-	-	-	150	10.50	2,112.50			
							50	10.75		50	10.75	537.50
12		-	300	10.60	3,180.00	-	-	-	-	50	10.75	
										300	10.60	3,717.50
18		-	-	-	-	-	250	10.60	2,650.00	50	10.75	
										50	10.60	1,067.50
22		-	400	10.70	4,280	-	-	-	-	50	10.75	
										50	10.60	
										400	10.70	5,347.50
29	Closing	-	-	-	-	-	400	10.70	4,280.00	50	10.75	
										50	10.60	1,067.50

Value of materials consumed = Total value of all the issues = 2,112.50 + 2,650.00 + 4,280.00 = ₹ 9,042.50.

Question 8.

(a) A parcel containing two components was received and the invoice discloses the following :

Material I 1,000 kgs @ ₹ 20 per kg

Material II 1,200 kgs @ ₹ 15 per kg

Insurance ₹ 950

Sales tax ₹ 2280

Freight ₹ 2200

Transit loss of 20 kgs of material I and 12 kgs of material II was noted. No insurance claim could be made. Find the issue rate per kg of each material. Find the revised rates if a provision for obsolescence of 12% is to be made.

Answer :

Statement showing computation of rate per kg of each material

Particulars	Materials I (₹)	Material II (₹)
(i) Quantity purchased (kgs)	1,000	1,200
(ii) Purchase price (₹/kg)	20	15
(iii) Total purchase value (i x ii)	20,000	18,000
(iv) Insurance [in the ratio of iii]	500	450
(v) Sales tax [in the ratio of iii]	1,200	1,080
(vi) Freight [in the ratio of i]	1,000	1,200
(vii) Total cost	22,700	20,730
(viii) Transit loss (kgs)	20	12
(ix) Rate per kg [vii/(i – viii)]	23.16	17.45
(x) Qty available after provision of obsolescence [(i – viii) x 88%]	862.40	1,045.44
(xi) Revised rate per kg [vii/x]	26.32	19.83

Alternatively,

Revised rate per kg = Rate per kg x (1 + Rate of provision for obsolescence)

∴ Revised rate per kg of Material I = ₹ 23.16 x 1.12 = ₹ 25.94

∴ Revised rate per kg of Material II = ₹ 17.45 x 1.12 = ₹ 19.54

(b) Disha Manufacturing Company, Kolkata purchased a material of 20 tonnes from a mining company. The following data is available for the lot of material purchased :

Invoice price of material	**₹ 2,000 per tonne**
Trade discount	**20% on invoice price**
Excise duty	**10% on invoice price**
Sales tax	**10%**
Freight & insurance	**4%**
Other charges for delivery	**₹ 150 per tonne**
Cost of containers	**₹ 20 per box of 1 quintal**
Cost of loading and unloading	**1% of total cost**

Compute total material purchase cost and cost per tonne to Disha Manufacturing Company.

Answer :

Material Purchase Cost in total and per tonne of Disha Manufacturing Company

Particulars	Total cost of 20 tonne (₹)	Cost per Tonne (₹)
Invoice price	40,000	2,000.00
Less : Trade Discount @ 20%	8,000	400.00
	32,000	1,600.00
Add : Excise Duty @ 10% on invoice price	4,000	200.00
	36,000	1,800.00
Add : Sales tax @ 10% on above	3,600	180.00
	39,600	1,980.00
Add : Freight & Insurance @ 4% on above	1,584	79.20
Add : Other charges for delivery @ 150 per tonne	3,000	150.00
Add : Cost of container @ ₹ 20 per box of 1 quintal	4,000	200.00

Cost before loading and unloading	48,184	2,409.20
Add : Cost of loading and unloading [1/99 of above]	486	24.34
Total Cost	48,670	2,433.54

Question 9.

(a) ABC Ltd. Has received an offer of quantity discount on its order of materials as under :

Price per ton (₹)	**Tons**
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 tons. 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 ton is ₹ 10,500.

Answer :

(i) Computation of Most Economic Purchase Level

Order size (tons)	1	40	50	100	200	300
Selling price per ton (₹)	2	9,600	9,360	9,120	8,880	8,640
Annual consumption (tons)	3	500	500	500	500	500
No. of orders	4	12.5	10	5	2.5	1.666
Cost of inventory (2) x (3)		48,00,000	46,80,000	45,60,000	44,40,000	43,20,000
Ordering cost [(4) x ₹ 12,500]		1,56,250	1,25,000	62,500	31,250	20,825
Carrying cost [1/2 x (1) x (2) x 25/100]		48,000	58,500	1,14,000	2,22,000	3,24,000
Total cost		50,04,250	48,63,500	47,36,500	46,93,250	46,64,825

The most economic purchase level is 300 and above in each order, to minimize the inventory costs.

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

$$EOQ = \sqrt{\frac{2 \times 500 \times 12500}{10500 \times 25/100}} = \sqrt{\frac{1,25,00,000}{2,625}} = 69 \text{ tonnes}$$

(b) SK Enterprise manufactures a special product "ZE". The following particulars were collected for the year 2004:

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?

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.

Question 10.

(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:

Products	**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.

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

		Worker A		Worker B		Worker C	
Product	Piece rate per unit (Refer to working note 1)	Units	Wages ₹	Units	Wages ₹	Units	Wages ₹
(a)	(b)	(c)	(d) = (b) × (c)	(e)	(f) = (b) × (e)	(g)	(h) = (b) × (g)
P	1.20	21	25.20	-	-	60	72
Q	1.80	36	64.80	-	-	135	243
R	3.00	46	138.00	25	75	-	-

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 ₹ 150.

Working Notes:

1. Piece rate / per unit

Product	Standard time per	Piece rate each	Piece rate per unit ₹

	unit in minutes	minute ₹	
(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

3. Computation of bonus

$$\text{Bonus} = \frac{\text{Time Saved}}{\text{Standard Time}} \text{ x Time taken x Hourly rate} = \frac{18.50}{52.50} \text{ x } 34 \text{ x } 7.20 = 86.26$$

(iii) 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) The Cost Accountant of Y Ltd. has computed labour turnover rates for the quarter ended 31st March, 2015 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.

Answer:

Working Note:

Average number of workers on roll:

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

$$\text{Or} = \frac{5}{10} = \frac{30}{\text{Average number of workers on roll}}$$

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

(1) Number of workers recruited and joined:

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:

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

(Refer to working note)

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

$$\text{Or } S = 18$$

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

Question 11.

(a) List the items which are included and which are excluded while measuring employee cost.

Answer :

The following items are to be **'included'** for the purpose of measuring employee cost:

(i) Any payment made to an employee either in cash or kind.

(ii) Gross payments including all allowances payable and includes all benefits.

(iii) Bonus, ex-gratia, sharing of surplus, remuneration payable to Managerial personnel including Executive Directors and other officers.

(iv) Any amount of amortization arising out of voluntary retirement, retrenchment, termination, etc.

(v) Variance in employee payments/costs, due to normal reasons (if standard costing system is followed).

(vi) Any perquisites provided to an employee by the employer.

The following items are to be **'excluded'** for the purpose of measuring employee cost:

(i) Remuneration paid to Non-Executive Director.
(ii) Cost of idle time [= Hours spent as idle time x hourly rate].
(iii) Variance in employee payments/costs, due to abnormal reasons (if standard costing system is followed).
(iv) Any abnormal payment to an employee – which are material and quantifiable.
(v) Penalties, damages paid to statutory authorities or third parties.
(vi) Recoveries from employees towards benefits provided – this should be adjusted/reduced from the employee cost.
(vii) Cost related to labour turnover – recruitment cost, training cost and etc.
(viii) Unamortized amount related to discontinued operations.

(b) Gross pay ₹10,30,000 (including cost of idle time hours paid to employee ₹25,000); Accommodation provided to employee free of cost [this accommodation is owned by employer, depreciation of accommodation ₹1,00,000, maintenance charges of the accommodation ₹90,000, municipal tax paid for this accommodation ₹3,000], Employer's Contribution to P.F. ₹1,00,000 (including a penalty of ₹2,000 for violation of PF rules), Employee's Contribution to P.F. ₹75,000. Compute the Employee cost.

Solution:

Computation of Employee Cost

	Particulars	**Amount (₹)**
	Gross Pay (net of cost of idle time) =[10,30,000 (-) 25,000]	10,05,000
Add	Cost of accommodation provided by employer = Depreciation (+) Municipal Tax paid (+) maintenance charges = 1,00,000	1,93,000
Add	Employer's Contribution to PF excluding penalty paid to PF authorities [=	98,000
	Employee Cost	**12,96,000**

Note:

(i) Assumed that the entire accommodation is exclusively used by the employee. Hence, cost of accommodation provided includes all related expenses/costs, since these are identifiable/ traceable to the cost centre.
(ii) Cost of idle time hours is assumed as abnormal. Since it is already included in the gross pay, hence excluded.
(iii) Penalty paid to PF authorities is not a normal cost. Since, it is included in the amount of contribution, it is excluded.

Question 12.

(a) Two workers 'A' and 'B' produce the same product using the same material. Their normal wage rate is also the same. 'A' is paid bonus according to Rowan scheme while 'B' is paid bonus according to Halsey scheme. The time allowed to make the product is 50 hours. 'A' takes 30 hours while 'B' takes 40 hours to complete the product. The factory overhead

rate is ₹ 5 per person-hour actually worked. The factory cost of product manufactured by 'A' is ₹ 3,490 and for product manufactured by 'B' is ₹ 3,600.

Required:

(i) Compute the normal rate of wages.

(ii) Compute the material cost.

(iii) Prepare a statement comparing the factory cost of the product as made by two workers.

Answer

Let x be the cost of material and y be the normal rate of wage/hour

	Worker A	Worker B
	₹	₹
Material cost	x	x
Labour wages	30 y	40 y
Bonus	Rowan system	Halsey system
	$\frac{\text{Time saved}}{\text{Time allowed}} \times \text{hour worked} \times \text{rate}$	Hours saved × 50% × rate
	$= \frac{20}{50} \times 30 \times y = 12y$	$= 10 \times \frac{1}{2} \times y = 5y$
Overheads	30 × 5 = 150	40 × 5 = 200
Factory cost	x + 42y + 150 = 3,490	x + 45y + 200 = 3,600
	∴ x + 42y = 3,340 – (1)	∴ x + 45y = 3,400 – (2)

Solving (1) and (2) we get

X = 2,500 and y = 20

(i) Normal rate of wages is ₹ 20 per hour.

(ii) Cost of materials = ₹ 2,500.

(iii) **Comparative Statement of factory cost**

	Worker A	Worker B
	₹	₹
Material cost	2,500	2,500
Wages	30 × 20 = 600	40 × 20 = 800
Bonus	$\left(\frac{20}{50} \times 30 \times 20\right) = 240$	$\left(10 \times \frac{1}{2} \times 20\right) = 100$
Overheads	30 × 5 = 150	40 × 5 = 200
Factory cost	3,490	3,600

(b) List the causes of Idle Time.

Answer :

The causes leading to idle time may be broadly classified into four categories, viz. :-

(i) *Normal, inherent or unavoidable idle time*: *Time lost* between the gate and place of work, break for tea, time interval between one job and another, time for tool setting, adjustment of machine, etc.

(ii) *Normal idle* time such as waits for jobs, tools, materials or instructions, small power failures, small breakdown of machines and tools, and atmospheric conditions.

(iii) *Abnormal idle time* such as those arising due to breakdown for considerable period, non-availability of raw materials, slack supervision, strikes or lock-outs, fire flood, storm, etc.

(iv) *Concealed idle time* such as manipulation of job breaking, wastage of time due to under-employment, i.e., unnecessary work like cleaning, grass cutting and gardening to employ idle men, and employment of skilled workers on unskilled jobs.

Question 13.

(a) 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) Provident Fund (on basic wages)	**8%**	**8%**
(iv) 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.

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	1.28
	(₹ 160/200)	(₹ 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

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

$$= 2 \times (₹\ 150/200) \times 10 \text{ hours} = ₹\ 15/-.$$

(b) State the treatment of the following items in Costing :
(i) Supervisors salary/ Foreman's salary
(ii) Fringe Benefit

Answer :

(i) Supervisors salary / Foreman's Salary

The foreman is mainly concerned with the supervision of man and machines in the workshop and so his salary is 'works indirect expenses' and must be charged to Works Expenses Account and included in works overhead. It is apportioned on the basis of degree of supervision required on such machine or men.

If he devotes equal time for all the machines his salary should be equally charged off against all of them. In case he devoted more time to a particular machine or to a particular batch of workers, proportionately higher share of his salary should be borne by that particular machine or batch of workers.

(ii) Fringe Benefits

Fringe benefits are those expenses which are spent by an employer against the individual employees for their welfare. Normally such expenses do not form a part of their pay packet, e.g., ESI contribution made by an employer. Such expenses may be recovered separately as a percentage on labour cost or at an hourly rate. Alternatively, those may be treated as overheads and apportioned to cost centres on the basis of wages/salary cost.

Question 14.

(a) 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 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.

Answer :

Statement of overhead Distribution of a Selfhelp Ltd.

Particulars	Basis	Total	Production		Service Deptts.	
			A	B	X	Y
		₹	₹	₹	₹	₹
Fixed Cost	H.P. Hours needed at 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	2,00	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 labour		3.00	2.00		

(b) It should be management's endeavor to increase inventory turnover but to reduce labour turnover. Expand and illustrate the idea contained in this statement.

Answer :

Inventory turnover: It is a ratio of the value of materials consumed during a period to the average value of inventory held during the period. A high inventory turnover indicates fast movement of stock.

Labour turnover: It is defined as an index denoting change in the labour force for an organization during a specified period. Labour turnover in excess of normal rate is termed as high and below it as low turnover.

Effects of high inventory turnover and low labour turnover: High inventory turnover reduces the investment of funds in inventory and thus accounts for the effective use of the concern's financial resources. It also accounts for the increase of profitability of a business concern. As against high labour turnover the low labour turnover is preferred because high labour turnover causes-decrease in production targets; increase in the chances of break down of machines at the shopfloor level; increase in the number of accidents; loss of customers and their brand loyalty due to either non-supply of the finished goods or due to sub-standard production of finished goods; increase in the cost of selection, recruitment and training; increase in the material wastage and tools breakage.

All the above listed effects of high labour turnover accounts for the increase in the cost of production/process/service. This increase in the cost finally accounts for the reduction of concern's profitability. Thus, it is necessary to keep the labour turnover at a low level.

As such, it is correct that management should Endeavour to increase inventory turnover and reduce labour turnover for optimum and best utilization of available resources and reduce the cost of production and thus increase the profitability of the organization.

Question 15.

(a) Distinguish between Allocation, Apportionment and Absorption of Overheads:

Answer :

Allocation: " The allotment of whole items of cost to cost centres or cost units", is known as allocation.

Apportionment: "The allotment to two or more cost centres of a proportions of common items of cost on the estimated basis of benefit received" is known as apportionment.

Absorption of Overheads : It is defined as the process of absorbing all overhead costs allocated or apportioned over particular cost centre or production department by the units produced.

Allocation of cost involves the process of charging total expenditure to cost centres or cost units while the apportionment of overheads involves the process of charging expenditures to cost centres or cost units in the specified proportions.

Absorption of overheads takes place only after the allocation and apportionment of overhead expenses. In other words , the overhead costs are either allocated or apportioned over different cost centres or cost units and afterwards they are absorbed by the output of the same cost centres.

(b) In a manufacturing unit, factory overhead was recovered at a pre- determined rate of ₹ 25 per man – day. The total factory overhead expenses incurred and the man-days actually worked were ₹ 41.50 lakhs and 1.5 lakhs man-days respectively. Out of the 40,000 units produced during a period, 30,000 were sold .

On analysing the reasons, it was found that 60% of the unabsorbed overheads were due to defective planning and the rest were attributable to increase in overhead costs.

How would unabsorbed overheads be treated in Cost Accounts?

Answer

Computation of Unabsorbed Overheads

Man – days worked	1,50,000
	₹
Overhead actually incurred	41,50,000
Less: Overhead absorbed @ ₹ 25/- per man - day	
(₹ 25 × 1,50,000)	37,50,000
Unabsorbed Overheads	4,00,000
Unabsorbed Overheads due to defective planning	2,40,000

(i.e 60% of Rs 4,00,000)	
Balance of Unabsorbed Overheads	1,60,000

Treatment of Unabsorbed Overheads in Cost Accounts

(i) The unabsorbed overheads of ₹ 2,40,000 due to defective planning to be treated as abnormal and therefore be charged to Costing Profit and Loss Accounts.

(ii) The balance unabsorbed overheads of ₹ 1,60,000 be charged to production i.e. 40,000 units at the supplementary overhead absorption rate i.e. ₹ 4/- per unit .
(Refer to Working Note)

	₹
Charge to Costing Profit and Loss Account as part of the cost of units sold (30,000 units @ ₹ 4/-p.u.)	1,20,000
Add: To Closing stock of finished goods (10,000 units @ ₹ 4/- p.u.)	40,000
Total	1,60,000

Working Note:

Supplementary Overhead Absorption Rate $= \frac{\text{Rs. }1,60,000}{\text{Rs.}40,000}$

$=$ ₹ 4/- p.u.

Question 16.

(a) A skilled worker in XYZ Ltd. Is paid a guaranteed wage rate of ₹ 30 per hour. The standard time per unit for a particular product is 4 hours. P, a machineman, has been paid wages under the Rowan Incentive Plan and he had earned an effective hourly rate of ₹ 37.50 on the manufacture of that particular product.

What could have been his total earnings and effective hourly rate, had he been put on Halsey Incentive Scheme (50%)?

Answer :

Working note:

Let T hours be the total time worked in hours by the skilled worker (machineman P); Rs 30/- is the rate per hour; standard time is 4 hours per unit and effective hourly earning rate is ₹ 37.50 then

Earning = Hours worked × Rate per hour $+ \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken} \times \text{Rate per hour}$

(Under Rowan incentive plan)

₹ 37.5 T = T × ₹ 30 $+ \frac{(4 - T)}{4} \times T \times \text{Rs. }30$

₹ 37.5 = ₹ 30 + (4 – T) × ₹ 7.5

Or ₹ 7.5 T = ₹ 22.5

Or T = 3 hours

Total earnings and effective hourly rate of skilled worker (machineman P) under Halsey Incentive Scheme (50%)

Total earnings = Hours worked × Rate per hour + ½ Time saved × Rate per hour

(under 50% Halsey Incentive Scheme)

= 3 hours × ₹ 30 + ½ × 1 hour × ₹ 30= ₹105

Effective hourly rate = $\frac{\text{Total earnings}}{\text{Hours taken}} = \frac{\text{Rs. }105}{3\text{ hours}} = \text{Rs.}35/-$

(b) A company is making a study of the relative profitability of the two products – X and Y. In addition to direct costs, indirect selling and distribution costs to be allocated between the two products are as under:

	₹
Insurance charges for inventory (finished)	**78,000**
Storage costs	**1,40,000**
Packing and forwarding charges	**7,20,000**
Salesmen salaries	**8,50,000**
Invoicing costs	**4,50,000**

Other details are

	Product X	Product Y
Selling price per unit (₹)	**500**	**1,000**
Cost per unit (exclusive of indirect selling and distribution costs) (₹)	**300**	**600**
Annual sales in units	**10,000**	**8,000**
Average inventory (units)	**1,000**	**800**
Number of invoices	**2,500**	**2,000**

One unit of product X requires a storage space twice as much as product Y. The cost to packing and forwarding one unit is the same for both the products. Salesmen are paid salary plus commission @ 5% on sales and equal amount of efforts are put forth on the sales of each of the product.

Required

(i) Set-up a schedule showing the apportionment of the indirect selling and distribution costs between the two products.

(ii) Prepare a statement showing the relative profitability of the two products.

Answer :

(i) Schedule showing the apportionment of the indirect selling and distribution costs between the two products :

			Products	
Items	*Basis of apportionment*	*Total*	*X*	*Y*

		₹	₹	₹
Insurance charges	Average inventory value (1000 × ₹ 500) : (800 × ₹1000)	78,000	30,000	48,000
Storage cost	Average Inventory storage space (1000 × 2) : (800 × 1)	1,40,000	1,00,000	40,000
Packing & Forwarding charges	Annual sales in units (10000) : (8000)	7,20,000	4,00,000	3,20,000
Salesmen salaries	Efforts of Salesmen (1:1)	8,50,000	4,25,000	4,25,000
Salesmen Commission	Annual sales value (5:8)	6,50,000	2,50,000	4,00,000
Invoicing Costs	No. of invoices (2500 : 2000)	4,50,000	2,50,000	2,00,000
		28,88,000	14,55,000	14,33,000

(ii) Statement showing the relative profitability of the two products :

Products	*X* ₹	*Y* ₹
Annual sales value	50,00,000 (10,000 units × ₹ 500)	80,00,000 (8,000 units × ₹ 1000)
Less: Cost of sales	30,00,000 (10,000 units × ₹ 300)	48,00,000 (8,000 units × ₹ 600)
Gross Profit	20,00,000	32,00,000
Less: Indirect selling and Distribution cos	14,55,000	14,33,000
Profit	5,45,000	17,67,000
Profitability as percentage of sales	10.9% $\left(\frac{\text{Rs.}5{,}45{,}000}{\text{Rs.}50{,}00{,}000}\times 100\right)$	22.08% $\left(\frac{\text{Rs.}17{,}67{,}000}{\text{Rs.}80{,}00{,}000}\times 100\right)$

Question 17.

(a) A machine was purchased January 1, 2015, for 5 lakhs. The total cost of all machinery inclusive of the new machine was ₹ 75 lakhs. The following further particulars are available:

Expected life of the machine 10 years.

Scrap value at the end of ten years ₹ 5,000.

Repairs and maintenance for the machine during the year ₹ 2,000 Expected number of working hours of the machine per year, 4,000 hours Insurance premium annually for all the machines ₹ 4,500

Electricity consumption for the machine per hour (@ 75 paise per unit) 25 units.

Area occupied by the machine 100 sq.ft.

Area occupied by other machine 1,500 sq.ft.

Rent per month of the department ₹ 800.

Lighting charges for 20 points for the whole department, out of which three points are for the machine ₹ 120 per month.

Compute the machine hour rate for the new machine on the basis of the data given above.

Answer

Computation of Machine Hour Rate

Standing charges	₹ (p.a.)	₹ (per hour)
Depreciation (See Note 1)	49,500	
Insurance premium (See Note 2)	300	
Repair and Maintenance	2,000	
Rent (See Note 3)	600	
Light Charges (See Note 4)	216	
Total Standing Charges	52,616	
Hours rate for Standing Charges (₹ 52,616 / 4,000 hours)		13,154
Machine Expenses:		
Electricity Consumption: 25 units p.h. @ 0.75p p.u.		18.75
Machine hour rate		31.904

Note:

		₹
(1)	Cost of new machine:	5,00,000
	Less: Scrap Value	5,000.00
	Net Cost of the machines	4,95,000
	Life of the machine 10 years:	

Depreciation = $\frac{\text{Rs.}4{,}95{,}000}{10 \text{ years}}$ = ₹ 49,500

(2)	Total cost of all the machines	75,00,000
	Total Insurance premium paid for all the machines	4,500

Total annual insurance premium of the new Machine = $\frac{\text{Rs.}4{,}500 \times \text{Rs.}5{,}00{,}000}{\text{Rs.}75{,}00{,}000}$

= ₹ 300

(3) Rent paid per annum = ₹ 9,600

Total Area occupied = 1600 Sq.Ft.

Rent for the area occupied by

New machine (100 sq.ft.) = $\frac{\text{Rs.}9{,}600 \times 100 \text{ sq.ft.}}{1{,}600 \text{ sq.ft.}}$

= ₹ 600

(4) Total annual light charges of 20

Points for the whole department is ₹ 1,440.

Light charges for the machine p.a. = $\frac{\text{Rs.}1{,}440 \times 3 \text{ points}}{20 \text{ points}}$ = ₹ 216.

(b) 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.

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 0r 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).

Question 18.

(a) A factory uses a job costing system. The following cost data are available from the books for the year ended 31st March, 2015:

	₹
Direct Material	**9,00,000**

Direct Wages	**7,50,000**
Profit	**6,09,000**
Selling and Distribution Overhead	**5,25,000**
Administrative Overhead	**4,20,000**
Factory Overhead	**4,50,000**

Required

(i) Prepare a Cost Sheet indicating the prime cost, works cost, production cost, cost of sales and sales value.

(ii) In 2015-16, the factory has received an order for a number of jobs. It is estimated that the direct materials is would be ₹ 12,00,000 and direct labour would cost ₹ 7,50,000. What would be the price for these jobs if the factory intends to earn the same rate of profit on sales, assuming that the selling and distribution overhead has gone up by 15%. The factory recovers factory overhead as a percentage of direct wages and administrative and selling and distribution overheads as a percentage of works cost, based on the cost rates prevalent in the previous year.

Answer :

(i) COST SHEET

For the jobs carried out by the concern for the year ending on 31st March, '15

	₹
Direct Material	9,00,000
Direct Wages	7,50,000
PRIME COST	16,50,000
Factory Overhead	4,50,000
WORKS COST	21,00,000
Administrative Overhead	4,20,000
PRODUCTION COST	25,20,000
Selling and Distribution Overhead	5,25,000
COST OF SALES	30,45,000
Profit	6,09,000
SALES VALUE	36,54,000

(ii) COST SHEET

For the Jobs carried out during the year 2015-16

	₹
Direct Material	12,00,000

Direct Labour	7,50,000
PRIME COST	19,50,000
Factory Overhead	4,50,000
(Refer to Working Note-1)	
WORKS COST	24,00,000
Administrative Overhead	4,80,000
(Refer to Working Note-2)	
PRODUCTION COST [1]	28,80,000
Selling and Distribution Overhead	6,90,000
(Refer to Working Note-3)	
COSTS OF SALES	35,70,000
Profit	7,14,000
(Refer to Working Note-4)	
SALES VALUE	42,84,000

Working Notes

1. **Factory Overhead** (to be charged during 2015-16) = Percentage of direct wages

$$= \frac{\text{Factory overhead of 2014–15}}{\text{Direct wages}} \times 100$$

$$= \frac{\text{Rs.}4,50,000}{\text{Rs.}7,50,000} \times 100$$

= 60% of Direct Wages of 2010-11.

= 60% of ₹ 7,50,000

= ₹ 4,50,000.

2. **Administrative Overhead** (to be charged during 2015-16) = Percentage of Works Cost

$$= \frac{Administrative\ overhead\ of\ 2009-10}{Works\ cost\ of\ 2009-10}$$

$$= \frac{\text{Rs.}4,20,000}{\text{Rs.}21,00,000} \times 100$$

= 20% of works cost of 2010-11

[1] *Production Cost here is a misnomer, infact Works Cost itself is the Production Cost.*

= 20% of ₹ 24,00,000

= ₹ 4,80,000

3. **Selling and Distribution Overhead** = Percentage of Works Cost

(to be charged during 2015-1)

Selling and Distribution

$$= \frac{Overhead\ of\ 2009-10}{Works\ cost\ of\ 2009-10} \times 100$$

$$= \frac{\text{Rs. }5{,}25{,}000}{\text{Rs.}21{,}00{,}000} \times 100$$

= 25% of Works Cost of 2010-11

= 25% of ₹ 24,00,000

= ₹ 6,00,000

Total Selling and Distribution Overhead including 15% increase =₹ 6,00,000+15% of ₹ 6,00,000 = ₹ 6,90,000.

4. **Profit (for 2015-16)**

At the rate of profit of 2014-15

$$= \frac{\text{Profit}}{\text{Sales value}} \times 100$$

$$= \frac{\text{Rs.}6{,}09{,}000}{\text{Rs.}36{,}54{,}000} \times 100$$

= 16.67% of Sales Value

= 20% of Cost of Sales

= 20% of ₹ 35,70,000 = ₹ 7,14,000

(b) What do you mean by the term under/over absorption of production overhead? How does it arise? How is it treated in cost account?

Answer :

Production Overheads are usually applied to production on the basis of predetermined rates. The pre-determined rates may be based on estimated costs. The amount of expenses actually incurred and the amount of overhead applied to production will seldom be the same. Some difference is inevitable.

If the actual expenses fall short of the amount applied to production, there is said to be an over absorption of production overheads. If the actual expenses exceeds the amount applied to production, there is a case of under absorption.

The under/over absorption of overheads arise due to the following reasons:

(1) Error in estimating overhead expenses.

(2) Error in estimating the level of production.

(3) Unanticipated changes in methods of production.

(4) Seasonal fluctuations in the overhead expenses from period to period.

Treatment of under/over absorption in Cost Accounts

Under/overabsorbed overheads may be treated in Cost Accounts by adopting the following methods:

(i) Use of supplementary rates : In case, the amount of under or over absorbed over-heads is large the cost of the jobs may be adjusted by means of a supplementary rates The supplementary rate here is determined by dividing the amount of under or over absorbed overhead by the actual base. Under – absorption of overheads is set right by increasing the rate of overhead absorption to the extent of supplementary rate. Whereas in the case of over- absorption of overheads, the rate of overhead absorption is reduced to the extent of supplementary rate.

(ii) **Write off to Costing Profit and Loss Account:** When the amount of under-or-over absorbed overheads is small the simple method is to write it off to the Costing Profit and Loss Account.

(iii) **Absorption in the accounts of subsequent years:** The amount of under or over absorbed overheads may be carried over as a deferred charge of deferred credit to the next accounting year. This may be done by transferring the amount either to a Suspense or Overhead Reserve Account.

Section - B

Question 19.

(a) The wealth maximization objective is superior to the profit maximization objective of a firm.

Answer :

A firm's financial management may often have the following as their objectives:

(i) The maximisation of firm's profit.

(ii) The maximisation of firm's value / wealth.

The maximisation of profit is often considered as an implied objective of a firm. To achieve the aforesaid objective various type of financing decisions may be taken. Options resulting into maximisation of profit may be selected by the firm's decision makers. They even sometime may adopt policies yielding exorbitant profits in short run which may prove to be unhealthy for the growth, survival and overall interests of the firm. The profit of the firm in this case is measured in terms of its total accounting profit available to its shareholders.

The value/wealth of a firm is defined as the market price of the firm's stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of the particular firm is. It takes into account present and prospective future earnings per share,the timing and risk of these earnings, the dividend policy of the firm and many other factors that bear upon the market price of the stock.

The value maximisation objective of a firm is superior to its profit maximisation objective due to following reasons.

1. The value maximisation objective of a firm considers all future cash flows, dividends, earning per share, risk of a decision etc. whereas profit maximisation objective does not consider the effect of EPS, dividend paid or any other returns to shareholders or the wealth of the shareholder.
2. A firm that wishes to maximise the shareholders wealth may pay regular dividends whereas a firm with the objective of profit maximisation may refrain from dividend payment to its shareholders.
3. Shareholders would prefer an increase in the firm's wealth against its generation of increasing flow of profits.
4. The market price of a share reflects the shareholders expected return, considering the long-term prospects of the firm, reflects the differences in timings of the returns, considers risk and recognizes the importance of distribution of returns.

The maximisation of a firm's value as reflected in the market price of a share is viewed as a proper goal of a firm. The profit maximisation can be considered as a part of the wealth maximisation strategy.

(b) D Ltd. has 10 lac equity shares outstanding at the beginning of the accounting year 2014. The current market price of the shares is ₹ 150 each. The Board of Directors of the company has recommended ₹ 8 per share as dividend. The rate of capitalization , appropriate to the risk – class to which the company belongs is 12%.

(i) Based on MM approach, calculate the market price of the share of the company when recommended dividend is (a) declared (b) not declared.

(ii) How many new shares are to be issued by the company at the end of the accounting year on the assumption that the net income for the year is ₹ 2 crores and the investment budget is ₹ 4 crores when (a) the above dividends are distributed and (b) dividends are not declared.

(iii) Show that the market value of the shares at the end of accounting year will remain same whether dividends are distributed or not declared.

Answer:

Under M-M approach,

$P_0 = P_1 + D_1/1+K_e$

Where,

P_0 = Existing market price per share, i.e Rs 150

P_1 = Market price per share at year end.

D_1 = Contemplated dividend per share , i.e ₹ 8

K_e = Capitalisation rate , i.e 12% or 0.12

i) a) Share price when dividend is declared :

150 = P_1 +8/1+ 0.12
or,150 +18 = P_1 +8
or, P_1 =168-8
or, P_1=160

b) Share price when dividend is not declared :

150 = P_1 +0/1+0.12
or, P_1=150+18-0
or, P_1=168

ii) No. of shares to be issued: **₹ in lacs**

Particulars	If dividend is declared	If dividend is not declared
Net Income	200	200
Less: Dividend paid	80	0
Retained earnings	120	200
Investment budget	400	400
Amount to be raised by issue of new shares	280	200
Market price per share	Rs160/-	₹168/-
No. of shares to be issued	175000	119048

iii) Verification of MM Dividend irrelevancy theory:

Particulars	If dividend is declared	If dividend is not declared
Existing shares	10,00,000	10,00,000
New equity shares	1,75,000	1,19,048
Total no. of shares at year end	11,75,000	11,19,048
Market price per share	₹160	₹168
Total market value at end of the year	₹ 1880 lacs	₹1880 lacs

From the above analysis we can observe that the market value of the shares at the end of the year will remain same whether dividends are distributed or not declared.

Question 20.

(a) Balance Sheet of OP Ltd. as on 31st March, 2014 and 2015 are as follows:

Liabilities	Amount 31.3.2014	Amount 31.3.2015	Assets	Amount 31.3.2014	Amount 31.3.2015

	₹	₹		₹	₹
Share capital	15,00,000	15,00,000	Land and Building	11,25,000	10,50,000
General Reserve	3,00,000	337500	Plant and Machinery	13,50,000	13,12,500
Profit and Loss A/c	1,87,500	2,70,000	Investment	3,00,000	2,79,000
10% Debentures	7,50,000	6,00,000	Stock	3,60,000	6,37,500
Bank Loan (long-term)	3,75,000	4,50,000	Debtors	4,50,000	5,98,500
Creditors	3,00,000	4,35,000	Prepaid Expenses	37,500	30,000
Outstanding Expenses	15,000	18,750	Cash and Bank	1,05,000	63,750
Proposed Dividend	2,25,000	2,70,000			
Provision for taxation	75,000	90,000			
	37,27,500	39,71,250		37,27,500	39,71,250

Additional information:

(i) New machinery for ₹ 2,25,000 was purchased but an old machinery costing ₹ 1,08,750 was sold for ₹ 37,500 and accumulated depreciation thereon was ₹ 56,250.

(ii) 10% debentures were redeemed at 20% premium.

(iii) Investment were sold for ₹ 33,750, and its profit was transferred to general reserve.

(iv) Income-tax paid during the year 2014-15 was ₹ 60,000.

(v) An interim dividend of ₹ 90,000 has been paid during the year 2014-15

(vi) Assume the provision for taxation as current liability and proposed dividend as non-current liability.

(vii) Investment are non-trade investment.

You are required to prepare:

(I) Schedule of changes in working capital.

(II) Funds flow statement.

Answer:

(i) Schedule of Changes in Working Capital

Particulars	31st March		Working Capital	
	2014	2015	Increase	Decrease
	₹	₹	₹	₹
A. Current Assets:				

	Stock	360,000	637500	277500	–
	Debtors	450,000	598500	148500	–
	Prepaid Expenses	37500	30000	–	7500
	Cash and Bank	105000	63750	–	41250
	Total (A)	952500	1329750		
B.	**Current Liabilities:**				
	Creditors	300,000	435,000	–	1350000
	Outstanding Expenses	15,000	18750	–	3750
	Provision for Taxation	75,000	90000	–	15000
	Total (B)	390,000	543750		
	Working Capital (A – B)	562500	786000	426000	202500
	Increase in Working Capital				223500
	Total			426000,	426000

(ii) **Funds Flow Statement for the year ending 31st March, 2015**

Sources of Funds	Amount ₹	Application of Funds	Amount ₹
Funds from operations	7,97,250	Redemption of debentures	1,80,000
Bank loan taken	75,000	Purchase of machinery	2,25,000
Sale of Machinery	37,500	Dividend paid	2,25,000
Sale of Investment	33,750	Interim Dividend paid	90,000
		Increase in working capital	2,23,500
	9,43,500		9,43,500

Workings:

1. Funds from operations:

Adjusted Profit and Loss A/c

	₹	₹		₹
To General Reserve		24,750	By Balance b/d	1,87,500
To Depreciation			By Funds from operations	7,97,250

On Land and Building	75,000		(Balancing figure)	
On Plant & Machinery	2,10,000	2,85,000		
To Loss on Sale of Machine		15,000		
To Premium on Redemption of Debentures		30,000		
To Proposed Dividend		2,70,000		
To Interim Dividend		90,000		
To Balance c/d		2,70,000		
		9,84,750		**9,84,750**

2. **Depreciation on Land and Building** = ₹ 11,25,000 – ₹ 10,50,000
= ₹ 75,000
3. **Loss on Sale of Old Machine** = Cost ₹ 1,08,750 – ₹ 56,250 (Cum-Dep.) – ₹ 37500 (Sales value) = ₹ 15,000
4. **Depreciation on Plant and Machinery:**

Plant and Machinery A/c

Dr. Cr.

	₹		₹
To Balance b/d	1350000	By Bank A/c (Sold)	37500
To Bank A/c (Purchases)	225,000	By Profit and Loss A/c (Loss on Sales)	15,000
		By Depreciation (Balancing figure)	210000
		By Balance c/d	1312500
	1575000		1575000

5. **Premium on Redemption of Debentures:**
Amount of Debenture Redeemed = ₹ 7,50,000 – ₹ 6,00,000
= ₹ 1,50,000
Premium = ₹ 1,50,000 × 20/100
= ₹ 30,000

6. **Profit on sale of investment:**

Investment A/c

Dr. Cr.

	₹		₹
To Balance b/d	3,00,000	By Bank A/c (Sales)	33,750

To General Reserve (Profit on Sales)	12,750	By Balance c/d	2,79,000
	3,12,750		3,12,750

7. Amount transferred to General Reserve from Profit and Loss A/c:

General Reserve A/c

Dr. Cr.

	₹		₹
To Balance c/d	3,37,500	By Balance b/d	3,00,000
		By Investment A/c	12,750
		By Profit and Loss A/c	24,750
	3,37,500		3,37,500

(b) Super Grow Manufacturing Co. has two mutual exclusive projects. Projects A requires a cash outlay of ₹ 2,00,000 and requires cash running expenses of ₹ 70,000 per annum. Project B will cost ₹ 3,00,000 and requires cash running expenses of ₹ 40,000 per year. Both projects have an 8 year life. Project A has a salvage value of ₹ 8,000 and project B has ₹ 28,000. The Company's tax rate is 50% and has a 10% required rate of return.
Assuming depreciation on straight line basis, advice the Company on the project to be chosen.

Answer :

Alternative I – Evaluation based on Net Present Cost

Computation of Annual Depreciation and Tax Savings on Depreciation

Particulars	**Project A**	**Project B**
Initial outlay	2,00,000	3,00,000
Less : Salvage Value	8,000	28,000
Depreciable value	1,92,000	2,72,000
Period of use	8 years	8 years
Annual depreciation	24,000	34,000
Tax savings on depreciation [Annual depreciation x Tax rate @ 50%]	12,000	17,000

Computation of Annual Cash Flow

Particulars	**Project A**	**Project B**
Cash operating expenses	70,000	40,000
Less : Tax savings on cash operating expenses @ 50%	35,000	20,000
Net cash operating expenses	35,000	20,000
Less : Tax savings on depreciation	12,000	17,000
Net cash outflow	23,000	3,000

Evaluation

Particulars	Year	Disc. Factor @ 10%	Project A		Project B	
			Cash flow	**DCF**	**Cash flow**	**DCF**
Initial investment	0	1.000	2,00,000	2,00,000	3,00,000	3,00,000
Net operating cash outflows	1-8	5.335	23,000	1,22,705	3,000	16,005
Total present value of cash outflows				3,22,705		3,16,005
Less : Salvage Value	8	0.467	8,000	3,736	28,000	13,076
Net present cost				3,18,969		3,02,929

Conclusion : Project B offers a lower net present cost, and hence should be preferred.

Alternative –II – Evaluation based on incremental cost

Hypothesis – Project B be selected.

Computation of Incremental Outflow

Particulars	₹
Investment for project B	3,00,000
Less : Investment for project A	2,00,000
Incremental investment cost in project B	1,00,000

Computation of Incremental Savings

Particulars	₹	₹
Cash operating cost for project A		70,000
Less : Cash operating cost for Project B		40,000
Savings in operating cost due to selection of Project B		30,000
Less : Tax payable o cost savings		15,000
Net savings in cash operating cost		15,000
Add : Tax savings on additional depreciation		
Depreciation for project B	34,000	
Less : Depreciation for project A	24,000	
Incremental depreciation for project B	10,000	
Tax savings on additional depreciation – ₹ 10,000 x 50%		5,000
Total annual savings by selecting project B		20,000

Evaluation of Hypothesis

Particulars	**Year**	**Disc. Factor @ 10%**	**Cash flow**	**DCF**
Incremental savings per annum	1-8	5.335	20,000	1,06,700
Incremental salvage proceeds [28,000 – 8,000]	8	0.467	20,000	9,340
Total present value of cash outflows				1,16,040
Less : Incremental investment	0	1.000	1,00,000	1,00,000
Net present value				16,040

Conclusion : There is a net saving of ₹ 16,040 in present value terms, by opting for project B instead of project A. Therefore, the hypothesis is correct i.e. Project B should be selected.

Question 21.

(a) **Pawan Ltd. provides you the following information :**

i. **Capital structure as per Balance Sheet as at 1st April, 2014 :**

Particulars	₹
15% Debentures of RS. 100 each	10,00,000
18% Preference shares of RS. 100 each	2,00,000
Equity shares of RS. 10 each	2,00,000
Retained earnings	4,40,000
Total	18,40,000

ii. **Currently quoted prices in stock exchange (as at 31st March , 2015)**
15% Debentures at ₹ 120 per debenture
18% Preference shares at RS. 120 per share
Equity shares at ₹ 78 per share

iii. **EPS and DPS**
EPS for the current year is ₹ 20 per share. Dividend Payout Ratio is 60%. Anticipated growth rate is 4%.

iv. **Corporate tax rate is 40%.**

Required :

i. **Calculate the weighted average cost of capital using (a) Book Value Weights, (b) Market Value Weights.**

ii. **Calculate the cost of new debentures, new preference shares, new equity shares and retained earnings if anticipated external financing opportunities are as follows :**
   a) **12% debentures of ₹ 100 each issued at par and redeemable after 5 years at 5% premium. Flotation cost is 5% of issue price.**
   b) **15% preference shares of ₹ 100 each issued at par and redeemable after 5 years at 5% premium. Flotation cost is 5% of the issue price.**
   c) **Equity shares of ₹ 10 each issued at ₹ 60. Flotation cost being ₹ 5 per share.**

iii. **How much can be spent for capital investment before new equity shares must be issued ?**

iv. **Calculate the weighted average cost of capital using marginal weights if the company requires ₹ 4,00,000 for future investment and intends to maintain the existing optimal capital structure.**

v. **What is the required amount of capital budget if the company wants to expands its total assets by 47.50% ? There are no short term debts.**

vi. **How much of the capital budget must be financed by the external equity to maintain the optimal capital structure in part (v).**

vii. **Calculate the weighted average cost of capital using marginal weights in part (vi) assuming that the company intends to maintain the existing optimal capital structure.**

viii. **Calculate the numbers of new equity shares, debentures and preference shares to be issued in part (vi).**

Answer :

Calculation of retained earnings as at 31.03.2015

Retained earnings as at 01.04.2014	₹ 4,40,000
Add : Current year's retained earning [(20,000 x ₹ 20) x 40%]	₹ 1,60,000
Retained earnings as at 31.03.2015	₹ 6,00,000

(i) (a) Statement showing the weighted average cost of capital
(Using book value weights)

Source of capital	Amount of each source of	Proportion of each source of	After tax cost of each source of	Product

A	capital B (in lakhs)	capital C	capital D	E = C x D
Equity share capital	2.00	0.100	0.200	0.0200
Retained earnings	6.00	0.300	0.200	0.0600
18% preference share capital	2.00	0.100	0.150	0.0150
15% debentures	10.00	0.500	0.075	0.0375
Total	20.00	1.000		0.1325

(i) (b) Statement showing the weighted average cost of capital
(Using market value weights)

Source of capital A	Amount of each source of capital B (in lakhs)	Proportion of each source of capital C	After tax cost of each source of capital D	Product E = C x D
Equity share capital	15.60	0.520	0.200	0.104
18% preference share capital	2.40	0.080	0.150	0.012
15% debentures	12.00	0.400	0.075	0.030
Total	30.00	1.000		0.146

Cost of equity capital (k_e) or retained earnings (k_r)

$$= \frac{D_1}{P_0} + g = \frac{D_0 + (1+g)}{P_0} + g = \frac{12\,(1+0.04)}{78} + 0.04 = 0.16 + 0.04 = 0.20$$

ii. Calculation of the new cost

a) Cost of new debentures (k_d)

$$k_d = \frac{\text{Interest}(1-\text{tax rate}) + [(\text{Redeemable value - Net sale proceeds})/N}{[(\text{Redeemable value} + \text{Net sale proceeds})/2}$$

$$= \frac{12(1-0.4)+[(105-95)/5]}{(105+95)/2} = 0.092 \text{ or } 9.2\%$$

b) Cost of new preference share (k_p)

$$k_p = \frac{\text{Preference dividend} + [\text{Redeemable value - Net sale proceeds})]/N}{[(\text{Redeemable value} + \text{Net sale proceeds})/2]}$$

$$= \frac{15+[(105-95)/5]}{(105+95)/2} = 0.17 \text{ or } 17.00\%$$

c) Cost of new equity shares (k_e)

$$k_e = \frac{D_1}{P_0} + g = \frac{D_0 + (1+g)}{P_0} + g = \frac{12\,(1+0.04)}{(60-5)} + 0.04 = 0.2269 + 0.04 = 0.2669 \text{ or } 26.69\%$$

d) Cost of retained earnings (k_r)

$$k_r = \frac{D_1}{P_0} + g = \frac{D_0 + (1+g)}{P_0} + g = \frac{12\,(1+0.04)}{60} + 0.04 = 0.208 + 0.04 = 0.248 \text{ or } 24.80\%$$

iii. Calculation of investment before issue of equity shares

Retained earning available = Total number of shares x EPS – Dividend paid
= (20,000 x ₹ 20) – (20,000 x ₹ 12)
= ₹ 4,00,000 – ₹ 2,40,000 = ₹ 1,60,000

Total investment = (1,60,000/0.40) = ₹ 4,00,000

Hence, the company can expand its project by Rs, 4,00,000 without issuing new equity shares.

iv. **Calculation of weighted average cost by using marginal weights**

Source of capital A	Amount of each source of capital B (in lakhs)	Proportion of each source of capital C	After tax cost of each source of capital D	Product E = C x D
Retained earnings	1.60	0.400	0.248	0.0992
New 15% preference share capital	0.40	0.100	0.170	0.0170
New 12% debentures	2.00	0.500	0.092	0.0460
Total	4.00	1.000		0.1622

v. **Required amount of capital budget** = 47.5% of ₹ 20 lakhs = ₹ 9.50 lakhs

vi. **External equity to be raised** = Equity portion in new investment – Retained earnings available

= (40% of ₹ 9,50,000) – ₹ 1,60,000 = ₹ 2,20,000

vii. **Statement showing the weighted average cost of capital (using marginal weights)**

Source of capital A	Amount of each source of capital B (in lakhs)	Proportion of each source of capital C	After tax cost of each source of capital D	Product E = C x D
New Equity share capital	2.20	0.232	0.267	0.0619
Retained earnings	1.60	0.168	0.248	0.0417
New 15% preference share capital	0.95	0.100	0.170	0.0170
New 12% debentures	4.75	0.500	0.092	0.0460
Total	9.50	1.000		0.1666

viii. **Calculation of number of new securities**

No. of new equity shares $= \frac{\text{Rs. } 2,20,000}{\text{Rs.} 55} = 4,000$

No. of new preference shares $= \frac{\text{Rs. } 95,000}{\text{Rs.} 95} = 1,000$

No. of new debentures $= \frac{\text{Rs. } 4,75,000}{\text{Rs.} 95} = 5,000$

(b) Discuss stochastic Model of Cash Management.

Answer :

Stochastic Model of Cash Management

This model is developed to avoid the problems associated with EOQ mode. Model developed by Miller and Orr. The basic assumption of this model is that cash balances are irregular. The model prescribed two control limits.

Upper Control Limits (UCL) – When cash balance reaches the upper limits, a transfer of cash to investment account should be made.

Lower Control Limits (LCL)- When cash balance reaches the lower point, a portion of securities from investment account should be liquidated to return the cash balances to its return point.

The Miller and Orr model is the simplest model to determine the optimal behavior in irregular cash flow situation. The model is a control limit model to determine the time and size of transfers between an investment account and cash account. The optimal point (O) of cash balance is determined by

$$O = \sqrt[3]{\frac{3TV}{4I}}$$

Where O-target (Optimal) cash balance; T- Fixed cost associated with security transactions; I-Interest per day on marketable securities; V- Variance of daily net cash flows.

Limitations : Problems in respect of collection of data- cost of time devoted by finance manager- does not take in account short-term borrowings.

1) The first and important problem is in respect of collection of accurate data about transfer costs, holding costs, number of transfers and expected average cash balance.
2) The cost of time devoted by financial managers in dealing with the transfers of cash to Securities and vice-versa.
3) The model does not take into account the short-term borrowings as an alternative to selling of marketable securities when cash balance reaches lower limit.

Question 22.

(a) The selected financial data for A,B and C companies for the year ended March 31,2015 are as follows:

Company	**A**	**B**	**C**
Financial leverage	**3:1**	**4:1**	**2:1**
Interest	**₹200**	**₹300**	**₹1,000**
Operating leverage	**4:1**	**5:1**	**3:1**
Variable cost as a % to sales	**66 2/3%**	**75%**	**50%**
Income tax rate	**45%**	**45%**	**45%**

(i) Prepare Income statement for the year ended 31st March, 2015 for each company.

(ii) Comment on the financial position and capital structure of these companies.

Answer :

Company A:	
Financial Leverage = 3	Operating Leverage = 4

$\frac{EBIT}{EBIT-200}=3$ 3(EBIT-200) = EBIT 3EBIT –EBIT= 600 EBIT= 300	$\frac{Contribution}{EBIT}=4$ $\frac{Sales-V.Cost}{300}=4$ Sales – 66 2/3% sales = 1200 33 1/3% of Sales = 1200 Sales = 1200x 3 = 3600
Company B: $\frac{EBIT}{EBIT-300}=4$ 4(EBIT – 300) = EBIT 3EBIT = 1200 EBIT = 400	$\frac{Sales-V.Cost}{400}=5$ Sales – 75% Sales = 2000 25% Sales = 2000 Sales = 2000x4 =8000
Company C : $\frac{EBIT}{EBIT-1000}=2$ 2(EBIT – 1000) = EBIT EBIT = 2000	$\frac{Sales-V.Cost}{2000}=3$ Sales- 50% on Sales = 6000 50% Sales = 6000 Sales = 12,000

Income Statement of Companies

	A	B	C
Sales	3600	8000	12000
(-) Variable Cost	2400	6000	6000
Contribution	1200	2000	6000
(-) Fixed Cost (Contribution-EBIT)	900	1600	4000
EBIT	300	400	2000
(-) Interest	200	300	1000
	100	100	1000
(-) Tax @ 45%	45	45	450
	55	55	550

Comment on the financial position -_ Company C is better than that of the other companies A and B because of the following reasons:

- Company C has the least financial risk
- Total risk (business and financial) complexion of company is the lowest (DCL: A-12, B-20, C-6)
- Capacity of Company C to meet interest liability is better than that of companies A and C (from EBIT/ Interest ratio)
  [A = 300/200 = 1.5 B = 400/300 = 1.33 C = 2000/1000= 2]

(b) Trinadh Traders Limited currently sells on terms of net 30days. All the sales are on credit basis and average collection period is 35 days. Currently, it sells 5,00,000 units at an average price of ₹50 per unit. The variable cost to sales ratio is 75% and a bad debt to sales ratio is 3%. In order to expand sales, the management of the company is considering changing the credit terms from net 30 to 2/10, net 30.

Due to change in policy, sales are expected to go up by 10%, bad debt loss on additional sales will be 5% and bad debt loss on existing sales will remain unchanged at 3%. 40% of the customers are expected to avail the discount and pay on the tenth day. The average collection period for the new policy (in respect of additional sales) is expected to be 34 days. The company required a return of 20% on its investment in receivables.

You are required to find out the impact of the change in credit policy on the profit of the company. Also advise the management on implementation of new policy. Ignore taxes. Assume 1 year = 360 days.

Answer :

Appraisal of Credit Policy

	Present	**Proposed**
Credit Terms	Net 30	2/10, Net 30
ACP (Average Collection Period)	35 days	34 days
Discount Sales	-	40%
Bad debts	3%	3%+5%
Sales (in units)	5,00,000	5,50,000

Incremental Profit = 50000x50x25% = 6,25,000
Incremental Bad debts = 50000x50x5% = (1,25,000)
Discount = 5,50,000x40%x50x2% = (2,20,000)
Incremental Investment in receivables = 50,000 x 50 x 75% x 34/360
= 1,77,083
Finance Cost = 1,77,083 x 20/100 = (35,417)

Total Benefits =₹6,25,000
Total Cost = 1,25,000 + 2,20,000 + 35,417
=₹3,80,417
Net benefit due to new policy = ₹(6,25,000 – 3,80,417) = ₹2,44,583

Hence, Management is advised to implement the New credit policy.

Question 23.

(a) AMRITAM Ltd. has a total sales of ₹ 3.2 crores and its average collection period is 90 days. The past experience indicates that bad debts losses are 1.5% on sales. The expenditure incurred by the firm in administering its receivable collection efforts is ₹ 5,00,000. A factor is

prepared to buy the firm's receivables by charging 2% commission. The factor will pay advance on receivables to the firm at an interest rate of 18% per annum after withholding 10% as reserve. Assume 360 days in a year. Calculate the effective cost of factoring to the firm.

Answer :

Particulars	₹
Average level of receivables = ₹3.2 crores x $\frac{90}{360}$	80,00,000
Factoring commission = ₹80 lakhs x $\frac{2}{100}$	1,60,000
Factoring reserve = ₹80 lakhs x 10%	8,00,000
Amount available for advance = ₹[80- (1.6 +8)] lakhs	70,40,000
Factor will deduct his interest @ 18%	
= $\frac{₹70.4 \text{lakhs} \times 18 \times 90}{100 \times 360}$ = ₹3,16,800	
∴ Advance to be paid = ₹(70,40,000 – 3,16,800)	67,23,200
Annual cost of factoring to the firm:	
Factoring commission = ₹1,60,000 x $\frac{360}{90}$	6,40,000
Interest charges = ₹3,16,800 x $\frac{360}{90}$	12,67,200
Total	19,07,200
Firm's saving on taking factoring service:	
Cost of credit administration saved	5,00,000
Cost of Bad debts = ₹3.20Cr. x $\frac{1.5}{100}$ avoided	4,80,000
Total	9,80,000

Net cost to the firm = ₹(19,07,200 – 9,80,000) = ₹9,27,200

Effective rate of interest to the firm $= \frac{\text{Net cost}}{\text{Advance to pay}} = \frac{₹9,27,200}{₹67,23,200} \times 100$

= 13.79%

(b) What are the differences between NPV and IRR?

Answer :

Difference between NPV and IRR

A. Causes for Conflict: Higher the NPV, higher will be the IRR. However, NPV and IRR may give conflicting results in the evaluation of different projects, in the following situations –

i) Initial Investment Disparity - i.e. Different Project Sizes,

ii) Project Life Disparity - i.e. Difference in Project Lives,

iii) Outflow Patterns - i.e. when Cash Outflows arise at different points of time during the Project Life, rather than as Initial Investment (Time 0) only.

iv) Cash Flow Disparity - when there is a huge difference between initial CFAT and later years' CFAT. A project with heavy initial CFAT than compared to later years will have higher IRR and vice-versa.

B. Superiority of NPV: In case of conflicting decisions based on NPV and IRR, the NPV method must prevail. Decisions are based on NPV, due to the comparative superiority of NPV, as given from the following points –

i) NPV represents the surplus from the project but IRR represents the point of no surplus-no deficit.

ii) NPV considers Cost of Capital as constant. Under IRR, the Discount Rate is determined by reverse working, by setting NPV = 0.

iii) NPV aids decision-making by itself i.e. projects with positive NPV are accepted. IRR by itself does not aid decision-making. For example, a project with IRR = 18% will be accepted if K_0 < 18%. However, the project will be rejected if K_O = 21% (say > 18%).

iv) NPV method considers the timing differences in Cash Flows at the appropriate discount rate. IRR is greatly affected by the volatility / variance in Cash Flow patterns.

v) IRR presumes that intermediate cash inflows will be reinvested at that rate (IRR), whereas in the case of NPV method, intermediate cash inflows are presumed to be reinvested at the cut-off rate. The latter presumption viz. Reinvestment at the Cut-Off Rate, is more realistic than reinvestment at IRR.

vi) There may be projects with negative IRR/ Multiple IRR etc. if cash outflows arise at different points of time. This leads to difficulty in interpretation. NPV does not pose such interpretation problems.

Question 24.

(a) From the following information, prepare the Balance Sheet.
Net Profit after Interest, Tax and Preference Dividend — ₹ 2,22,000

Tax Rate — 50%
18% Preference Share Capital — ?
15% Debentures—?
Return on Capital Employed — 50%
Return on Shareholder's funds — 60%
Return on Equity Shareholders' Funds — 74%
Current Ratio — 2:1
Net Fixed Assets ₹ 9,00,000.

Answer :

Equity share holders funds = $\frac{2,22,000}{74} x100 = 3,00,000$

Return on share holders funds = $\frac{EAT}{sh.funds}$

$$= \frac{2,22,000 + 0.18x}{(3,00,000 + x)} = 0.6$$

Reference share capital (x) = 1,00,000

EAT = 2,22,000 + 0.18 (1,00,000) = ₹2,40,000
Tax = 50% of EBT or 100% on EAT = ₹2,40,000
EBT = EAT + TAX = 2,40,000 + 2,40,000 = ₹4,80,000

Let debentures be Y
Interest = 0.15y
EBIT = EBT + Int. on L.T. Debt
= 4,80,000 + 0.15Y

Return on capital employed = $\frac{\text{EBIT}}{\text{Cap. employed}} \times 100$

$$0.50 = \frac{4{,}80{,}000 + 0.15Y}{4{,}00{,}000 + Y}$$

15% debentures (Y) = ₹8, 00,000

Capital employed = (3,00,000 + 1,00,000) + 8,00,000 = ₹12,00,000
Working capital = Cap. Employed - Net FA
=12, 00,000 – 9, 00,000
= 3, 00,000 or CA - CL= 3, 00,000....(i)

Current ratio = $\frac{CA}{CL}$ = 2 : 1

Or CA – 2 CL = 0…..(ii)
(i)– (ii) CL = 3, 00,000
CA = 3, 00,000 x 2 = 6,00,000

Total assets = FA + CA = 9, 00,000 + 6, 00,000 = 15, 00,000
EBIT = 4,80,000 + 15% of ₹8,00,000 = ₹6,00,000

Balance Sheet

Liabilities	₹	Assets	₹
EQ. Sh. Holders funds	3,00,000	Fixed assets	9,00,000
Preference share capital	1,00,000	Current assets	6,00,000
15% debentures	8,00,000		
Current liabilities	3,00,000		
Total	15,00,000		15,00,000

(b) The beta co-efficient of a security 'X' is 1.4. The risk free rate of return is 10% and the required rate of return is 14% on the market portfolio. If the dividend expected during the coming year is ₹ 3.50 per share and the growth rate of dividend and earning is 8%, at what price should the security 'X' be sold, based on the CAPM?

Answer :

Expected rate of Return by applying CAPM Formula:

$E(R_i) = R_f + B_i (R_m – R_f)$

= 10% + 1.4 (14% - 10%) = 10% + 5.6% = 15.6%

Price of security X is calculated with the use of dividend growth model formula.

$$R_e = \frac{D_1}{P_0} + g$$

$$0.156 = \frac{3.50}{P_0} + 0.08$$

$$0.156 = \frac{3.50}{P_0} + \frac{0.08}{1}$$

$$0.156 = \frac{3.50 + 0.08P_0}{P_0}$$

$$0.156P_0 = 3.50 + 0.08P_0$$

$$0.156P_0 – 0.08P_0 = 3.50$$

$$0.076P_0 = 3.50$$

$$P_0 = \frac{3.50}{0.076} = ₹46.05$$

Question 25.

(a) PCT Ltd. is in the process of raising ₹ 15 lakhs as additional capital. For this purpose, two mutually exclusive alternative financial plans have been identified. The current level of EBIT is ₹ 51 lakhs which is likely to remain unchanged. The relevant information is as under:

Present capital structure	**9,00,000 Equity shares of ₹ 10 each and 10% Bonds of ₹ 60 lakh**
Current EBIT	**₹ 51,00,000**
Current EPS	**₹ 2.50**
Current market price	**₹ 50 per share**
Tax Rate	**50%**
Financial Plan I	**60,000 Equity shares @ ₹ 25 per share**
Financial Plan II	**12% Debentures of ₹ 15,00,000**

Required:

(i) Calculate the indifference level of EBIT between the two plans.

(ii) Calculate the financial BEP under both the plans.

(iii) Which alternative financial plan is better?

Answer :

(i) Indifference Point:

	Plan -I	**Plan-II**

EBIT	X	X
Less : Interest	6,00,000	7,80,000
EBT	X - 6,00,000	x-7,80,000
Less : Tax 50%	0.5 (x-6,00,000)	0.5 (x-7,80,000)
EAT	0.5x - 3,00,000	0.5x- 3,90,000
No. of Equity Share	9,60,000	9,00,000
EPS	$\frac{0.5x - 3,00,000}{9,60,000}$	$\frac{0.5x - 3,90,000}{9,00,000}$

Equal EPS under plan

$$\frac{0.5x - 3,00,000}{9,60,000} = \frac{0.5x - 3,90,000}{9,00,000}$$

$$9,00,000\ (0.5x - 3,00,000) = 9,60,000\ (0.5x - 3,90,000)$$

$$x = 34,80,000$$

The indifference Level of EBIT = ₹ 34,80,000

(ii) Financial BEP

Plan – I $\frac{0.5x - 3,00,000}{9,60,000} = 0$

x = $\frac{3,00,000}{0.5}$ = ₹ 6,00,000

Plan – II $\frac{0.5x - 3,90,000}{9,00,000} = 0$

x = $\frac{3,90,000}{0.5}$ = ₹ 7, 80,000

(iii) Selection of Financial Plan

EPS (Plan I) $\frac{(51,00,000 - 6,00,000)(1 - 0.5)}{9,60,000\text{shares}}$ = ₹ 2.34 per Share

EPS (Plan II) $\frac{(51,00,000 - 6,00,000 - 1,80,000)(1 - 0.5)}{9,00,000}$ = ₹ 2.4 per Share

Plan II is better.

(b) The initial investment outlay for a capital investment project consists of ₹ 100 lakhs for plant and machinery and ₹ 40 lakhs for working capital. Other details are summarized below :

Output	**1 lakh units of output per year for years 1 to 5**
Selling price	**₹ 120 per unit of output**
Variable cost	**₹ 60 per unit of output**
Fixed overheads (excluding depreciation)	**₹ 15 lakhs per year for years 1 to 5**
Rate of depreciation on plant and	**25% on WDV method**

machinery	
Salvage value of plant and machinery	**Equal to the WDV at the end of year 5**
Applicable tax rate	**40%**
Time horizon	**5 years**
Post-tax cut off rate	**12%**

Indicate the financial viability of the project by calculating the net present value.

Answer :

Initial investment outlay ₹ 140 lakhs

Depreciation schedule (₹ In lakhs)

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Opening plant and machinery	100	75.00	56.25	42.19	31.64
Annual depreciation	25	18.75	14.06	10.55	7.91
Closing plant and machinery	75	56.25	42.19	31.64	23.73

(₹ p.u.)

Selling price	120
Less : variable cost	60
Contribution	60

Total contribution per year = 1 lakh units

(₹ in lakhs)

Total contribution per year	60
Less : Fixed overheads, other than depreciation, per year	15
Profit before depreciation and tax per year (PBDT)	45

Computation of P.V. of Net Cash Inflow :

(₹ In lakhs)

End of year	1	2	3	4	5
PBDT	45	45.00	45.00	45.00	45.00
Less : Depreciation	25	18.75	14.06	10.55	7.91
PBT	20	26.25	30.94	34.45	37.09
Less : Tax @ 40%	8	10.50	12.38	13.78	14.84
PAT	12	15.75	18.56	20.67	22.25
Depreciation	25	18.75	14.06	10.55	7.91
Salvage value of plant and machinery	-	-	-	-	23.73
Decrease in working capital	-	-	-	-	40.00
Net cash inflow	37	34.50	32.62	31.22	93.89
P.V. factor @ 12%	0.893	0.797	0.712	0.636	0.567
P.V. of net cash inflow	33.04	27.50	23.23	19.86	53.24

NPV = P.V. of net cash inflow – Initial investment outlay = 15.87 – 140.00
= ₹ 16.87 lakhs

As the NPV @ 12% is positive, the project is financially viable.

Question 26.

(a) From the following information of A Ltd., calculate (i) Gross Operating Cycle, (ii) Net Operating Cycle, and (iii) No. of operating cycles in a year.

Particulars	₹

Raw material inventory consumed during the year	**60,00,000**
Average stock of raw material	**10,00,000**
Factory cost of goods produced	**1,05,00,000**
Average stock of work-in-progress	**4,37,500**
Cost of goods produced	**1,14,00,000**
Average stock of finished goods	**9,50,000**
Average trade debtors	**11,25,000**
Cost of credit sales	**90,00,000**
Average trade creditors	**5,00,000**
Expenses for the year	**30,00,000**
Average creditors for expenses	**5,00,000**
No. of working days in a year (Assume 360 days)	

Answer :

Raw material storage period = $\frac{\textit{Average}\text{ stock of raw material}}{\textit{Average}\text{ cost of raw material consumption per day}}$

$= \frac{\text{Rs.}10{,}00{,}000}{\text{Rs.}60{,}00{,}000/360}$ = 60 days

Work-in-progress holding period = $\frac{\textit{Average}\text{ stock of work-in-progress}}{\text{Average cost in W.I.P. per day}}$

$= \frac{\text{Rs.}4{,}37{,}500}{\text{Rs.}1{,}05{,}00{,}000/360}$ = 15 days

Finished goods storage period = $\frac{\textit{Average}\text{ stock of finished goods}}{\text{Average cost of goods produced per day}}$

$= \frac{\text{Rs.}9{,}50{,}000}{\text{Rs.}1{,}14{,}00{,}000/360}$ = 30 days

Debtors collection period = $\frac{\textit{Average}\text{ trade debtors}}{\text{Average cost of credit sales per day}}$

$= \frac{\text{Rs.}11{,}25{,}000}{\text{Rs.}90{,}00{,}000/360}$ = 45 days

Creditors' payment period = $\frac{\textit{Average}\text{ trade creditors}}{\text{Average credit purchases per day}}$

$= \frac{\text{Rs.}5{,}00{,}000}{\text{Rs.}60{,}00{,}000/360}$ = 30 days

Average time lag in payment of expenses = $\frac{\textit{Average}\text{ creditors for expenses}}{\text{Average expenses per day}}$

$= \frac{\text{Rs.}5{,}00{,}000}{\text{Rs.}30{,}00{,}000/360}$ = 60 days

Gross operating cycle = 60 + 15 + 30 + 45 = 150 days
Net operating cycle = 60 + 15 + 30 + 45 – 30 – 60 = 60 days
No. of operating cycle in a year

$$= \frac{\text{No. of days in a year}}{\text{Net operating cyle}} = \frac{360 \text{ days}}{60 \text{ days}} = 6 \text{ operating cycles in a year}$$

(b) The following is the balance sheet of M/S Yamuna Enterprise for the year ended 31-12-08;

Balance Sheet as on 31st December, 2008

Liabilities	₹	Assets	₹
Equity share capital	**1,00,000**	**Cash in hand**	**2,000**
12% Preference share capital	**1,00,000**	**Cash in Bank**	**10,000**
16% debentures	**40,000**	**Bills Receivable**	**30,000**
18% Public debts	**20,000**	**Investors**	**20,000**
Bank overdraft	**40,000**	**Debtors**	**70,000**
Creditors	**60,000**	**Stock**	**40,000**
Proposed dividends	**7,000**	**Furniture**	**30,000**
Reserves	**10,000**	**Machinery**	**1,00,000**
Provision for taxation	**1,50,000**	**Land & Building**	**2,20,000**
Profit & Loss account	**20,000**	**Goodwill**	**35,000**
	20,000	**Preliminary expenses**	**10,000**
	5,67,000		**5,67,000**

During the year provision for taxation was ₹20,000. Dividend was proposed at ₹10,000. Profit carried forward from the last year was ₹ 15,000. You are required to calculate:

(i) Short term solvency ratios, and
(ii) Long term solvency ratios.

Answer:
Short term solvency ratios:

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

$$= \frac{1{,}52{,}000}{1{,}37{,}000} = 1.109 \text{ times}$$

The ideal ratio is 2 but in the instant case it is only 1.109, hence it is not satisfactory.

$$\text{Liquid ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}} = \frac{1{,}12{,}000}{1{,}37{,}000} = 0.818$$

The ideal ratio is 1; hence it is not quite satisfactory.

$$\text{Interest Coverage ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

$$= \frac{45{,}000}{10{,}000} = 4.5 \text{ times}$$

	EBIT
Profit retained	5000
(+) proposed dividend	10000
PAT	15000

(+) tax	20000
PBT	35000
(+) interest [6400 + 3600]	10000
EBIT	**45000**

Long term solvency ratios:

$$\text{Debt equity ratio} = \frac{\text{Long term debt}}{\text{Long term fund}}$$

$$= \frac{60{,}000}{3{,}85{,}000} = 0.156$$

Long term debt:

Debentures	40000
Public debt	20000
	60000

Share holder funds:

Particulars	₹
Equity capital	100000
Preference capital	100000
Reserves	150000
P & L a/c	20000
(-) good will	35000
(-) Preliminary exp	10000
	325000

Long term debt/ share holders funds = 60000/ 325000 = 0.18
Both are quite satisfactory.

It seems the company has adopted a conservative policy for raising Finance. Under such policy the equity share holders may not avail the benefit of trading on equity.

Fixed assets ratio = Fixed assets/ long term funds = 350000/385000 = 0.91
The ratio is satisfactory.

Proprietary ratio = share holder funds/ total tangible assets
= [325000 / (567000 – 45000)] = 0.6226
Ratio is ideal. And long term position is quite satisfactory, it is advised to improve short term.

Question 27.

(a) The paid-up capital of a company is ₹ 100 lakh. It has been declaring 20% dividend for the last 5 years.

It has under consideration an expansion programme involving an investment of ₹ 100 lakh and its board of directors desires to raise the dividend to 25%. The expansion programme can be financed by four alternatives – i) 100% equity; ii) 18% institutional loan (debt) and equity 50:50; iii) Equity and debt, 70:30; and iv) 100% debt. Income tax and dividend tax rate are 35% and 10% respectively.

Assuming rate of return as X, analyse the various financing alternatives from the point of view of taxes.

Answer :

Effect of taxes on Financing Alternatives

(₹ In lakhs)

Particulars	**A**	**B**	**C**	**D**
Return on ₹ 100 lakh	100X	100X	100X	100X
Less : Interest (0.18)	-	9	5.4	18
Balance	100X	100X -9	100X – 5.4	100X – 18
Less : Tax (0.35)	35X	35X – 3.16	35X – 1.9	35X – 6.30
Balance	655X	65X – 5.86	65X – 3.52	65X – 11.70
Add : Distributable profit before expansion (0.20 x ₹ 100 lakh)	20	20	20	20
Total profits available for distribution (a)	20 + 65X	14.14 + 65X	16.48 + 65X	8.30 + 65X
Expected rate of dividend (%)	25	25	25	25
Expected dividend [0.25 x (₹ 100 lakh + new capital)]	50	37.50	42.50	25
Dividend tax (0.10)	5	3.76	4.26	2.50
Total of dividend and dividend tax (b)	55	41.26	46.76	27.50
Rate of return (value of X) to pay dividend and dividend tax [value of X if (a) = (b)]%	54*	42	47	30

*20 + 65X = 55 or, X = 35/65 = 54%; other values are also determined like this.

(b) JKL Ltd. has the following book-value capital structure as on March 31, 2013.

	₹
Equity share capital (2,00,000 shares)	**40,00,000**
11.5% preference shares	**10,00,000**
10% debentures	**30,00,000**
	80,00,000

The equity share of the company sells for ₹20. It is expected that the company will pay next year a dividend of ₹ 2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate.

Required:

- **(i) Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.**
- **(ii) Compute the new WACC, if the company raises an additional ₹20 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹2.40 and leave the growth rate unchanged, but the price of equity share will fall to ₹16 per share.**
- **(iii) Comment on the use of weights in the computation of weighted average cost of capital.**

Answer:

(i)

Weighted Average Cost of Capital of the Company
(Based on Existing Capital Structure)

	After tax cost (a)	Weights (Refer to working note 4) (b)	Weighted cost (a) X (b)
Equity share capital cost (Refer to working note 1)	0.15	0.50	0.075
Cost of preference share capital @11.5% (Refer to working note 2)	0.115	0.125	0.014375
Cost of debentures (Refer to working note 3)	0.065	0.375	0.02437
Weighted average cost of capital			11.375%

Working Notes:

1. Cost of equity capital:

$$K_e = \frac{\text{Dividend}}{\text{Current market price of share}} + g$$

$$= \frac{₹2}{₹20} + 5\% = 15\% \text{ or } 0.15$$

2. Cost of preference share capital:

$$= \frac{\text{Annual preference share dividend}}{\text{Net proceeds in the issue of preference share}}$$

$$= \frac{₹1,15,000}{₹10,00,000} = 0.115$$

3. Cost of Debentures:

$$= \frac{1}{\text{Net proceeds}}(\text{Interest} - \text{Tax})$$

$$= \frac{1}{₹30,00,000}(₹3,00,000 - ₹1,05,000)$$

$$= 0.065$$

4. Weights of equity share capital, preference share capital and debentures in total investment of ₹80,00,000:

Weight of equity share capital $= \frac{\text{Total equity share capital}}{\text{Total investments}}$

$$= \frac{₹40,00,000}{₹80,00,000} = 0.50$$

Weight of preference share capital $= \frac{\text{Total preference share amount}}{\text{total investments}}$

$$= \frac{₹10,00,000}{₹80,00,000} = 0.125$$

Weight of debentures $= \frac{\text{Total debentures}}{\text{Total investments}}$

$$= \frac{₹30,00,000}{₹80,00,000} = 0.375$$

(ii) New Weighted Average Cost of Capital of the Company

(Based on new capital structure)

	After tax cost (a)	Weights (Refer to working note 4) (b)	Weighted cost (a) x (b)
Cost of equity share capital (Refer to working note 2)	0.20	0.40	0.080
Cost of preference share	0.115	0.10	0.0115
Cost of debentures @10%	0.065	0.30	0.0195
Cost of debentures @12%	0.078	0.20	0.0156
Weighted average cost of capital			12.66%

Working Notes:

1. Weights of equity share capital, preference share and debentures in total investment of ₹100,00,000

Weight of equity share capital $= \frac{₹40,00,000}{₹1,00,00,000} = 0.4$

Weight of preference share capital $= \frac{₹10,00,000}{₹1,00,00,000} = 0.1$

Weight of debentures @ 10% $= \frac{₹30,00,000}{₹1,00,00,000} = 0.30$

Weight of debentures @12% $= \frac{₹20,00,000}{₹1,00,00,000} = 0.20$

2. Cost of equity capital:

$$K_e = \frac{\text{Dividend}}{\text{Current market price of share}} + g = \frac{₹2.40}{₹16} + 5\% = 20\%$$

(iii) **Comment:** In the computation of weighted average cost of capital weights are preferred to book value. For example, weights representing the capital structure under a corporate financing situation, its cash flows are preferred to earnings and market. Balance sheet is preferred to book value balance sheet.

Question 28.

(a) The management of MNP Company Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveal the following annual information:

	₹
Sales – Domestic at one month's credit	**24,00,000**
Export at three month's credit (sales price 10% below domestic price)	**10,80,000**
Materials used (suppliers extend two months credit)	**9,00,000**
Lag in payment of wages - ½ month	**7,20,000**
Lag in payment of manufacturing expenses (cash) – 1 month	**10,80,000**
Lag in payment of Adm. Expenses – 1 month	**2,40,000**
Sales promotion expenses payable quarterly in advance	**1,50,000**
Income tax payable in four installments of which one falls in the new financial year	**2,25,000**

Rate of gross profit is 20%.
Ignore work-in-progress and depreciation.

The company keeps one month's stock of raw materials and finished goods (each) and believes in keeping ₹ 2,50,000 available to it including the overdraft limit of ₹ 75,000 not yet utilized by the company.
The management is also of the opinion to make 12% margin for contingencies on computed figure.
You are required to prepare the estimated working capital statement for the next year.

Answer :

Preparation of Statement of Working Capital Requirement for MNP Company Ltd.
Estimated Working Capital Statement

(A)	Current Assets in terms of Cash Costs	₹
	Debtors: Domestic Sales $\frac{1}{12}$ x 19,20,000	1,60,000
	Export Sales $\frac{3}{12}$ x 9,60,000	2,40,000
	Prepaid Sales promotion expenses	37,500
	Stock of Raw materials $\frac{1}{12}$ x 9,00,000	75,000
	Stock of finished goods $\frac{1}{12}$ x 28,80,000	2,40,000
	Cash at Bank and in Hand	1,75,000
	Total Current Assets	9,27,500
(B)	Current Liabilities in terms of Cash Costs	₹
	Creditors for:	
	Material $\frac{2}{12}$ x 9,00,000	1,50,000
	Wages $\frac{1}{24}$ x 7,20,000	30,000
	Manufacturing expenses $\frac{1}{12}$ x 10,80,000	90,000
	Administrative expenses $\frac{1}{12}$ x 2,40,000	20,000
	Income Tax Payable	56,250
	Total Current Liabilities	3,46,250
(C)		₹
	Net Current Assets (A-B)	5,81,250
	Add: 12% margin for contingencies	69,750
	Required Working Capital	6,51,000

Working Notes:

Cash cost of sales is calculated as under:	₹	₹
Domestic Sales	24,00,000	
Less: Gross profit @ 20%	4,80,000	19,20,000
Expert Sales	10,80,000	
	1,20,000	9,60,000

₹ $\frac{10,80,000}{90}$ = 12,00,000 @ 10%		28,80,000

(b) In considering the most appropriate capital structure for the Bharat Manufacturers Ltd. (BML), its finance department has made estimate of the interest rate on debt and the cost of equity capital at various levels of debt-equity mix summarized below :

Debt-equity mix (leverage)	Coupon rate (%)	Cost of equity (%)
0	8	12.0
10	8	12.0
20	9	12.5
30	9	13.5
40	10	14.5
50	13	16.0
60	15	20.0
70	18	25.0

The debt is in the form of 10-year redeemable at par ₹1,000 debentures with coupon rates varying with the equity-debt ratio and 5per cent flotation cost. As a matter of policy, BML always keeps 10 per cent of its finances in the form of preference shares carrying 2 per cent extra return compared to the debenture coupon rates. The duration and the floatation costs are similar to debentures.

Required : Assuming (i) 17.5 per cent dividend distribution tax and (ii) corporate tax rate, 35 per cent, determine the optimal capital structure (debt-equity mix) for the BML.

Answer :

Determination of Optimum Capital structure

Degree of leverage	Coupon rate (%) (I)	Preference dividend (%) (D_p)	Cost of equity (K_e)	K_d	K_p	K_o
0	8.0	10.0	12.0	0.0585	0.1256	0.1206
10	8.0	10.0	12.0	0.0585	0.1256	0.1144
20	9.0	11.0	12.5	0.0651	0.1377	0.1143
30	9.0	11.0	13.5	0.0651	0.1377	0.1143
40	10.0	12.0	14.5	0.0718	0.1497	0.1162
50	13.0	15.0	16.0	0.0918	0.1859	0.1285
60	15.0	17.0	20.0	0.1051	0.2100	0.1441
70	18.0	20.0	25.0	0.1251	0.2462	0.1622

Conclusion: The optimum capital structure lies between 20 and 30 per cent of leverage.

Working note:

K_d = [I (1 – t) + Flotation costs/N] ÷ (RV + SV)/2

K_p = [D_p (1 + D_t) + Flotation costs/N] ÷ (RV + SV)/2

Where, I = Interest

D_p = Dividend on preference shares

t = Tax rate
RV = Redemption value
SV = Sale value (face value – flotation cost)
n = Maturity period
D_t = Dividend payment tax

$K_o = (W_d \times K_d) + (W_p \times K_p) + (W_e + K_e)$

It may be noted that 10% debt-equity mix implies 90% shareholders equity (consisting 10% of preference shares and 80% of ordinary shares).

Question 29.

(a) List out the main official foreign sources of finance.

Answer:

Official Main Foreign Sources of Finance:

(i) Foreign Collaboration: In India joint participation of foreign and domestic capital has been quite common in recent years. Foreign collaboration could be either in the form of joint participation between private firms, or between foreign firms and Indian Government, or between foreign governments and Indian Government.

(ii) Bilateral Government Funding Arrangement: Generally, advanced countries provide aid in the form of loans and advances, grants, subsidies to governments of under-developed and developing countries. The aid is provided usually for financing government and public sector projects. Funds are provided at concessional terms in respect of cost (interest), maturity, and repayment schedule.

(iii) NRI Deposits and Investments: Non-resident Indians have always been making a contribution in Indian economy. Government has been making efforts to encourage their deposits and investments. Various schemes have been devised which ensure higher returns; procedures have been simplified to attract investments in primary and secondary market. Tax incentives are given on interest earned and dividends received by NRIs.

(iv) Loans from International Financial Institutions: International Bank for Reconstruction and Development (IBRD), International Monetary Fund (IMF), Asian Development Bank (ADB), and World Bank have been the major source of external finance to India.

(v) External Commercial Borrowing (CEB): Our country has also been obtaining foreign capital in the form of external commercial borrowings from agencies like US EXIM Bank, Japanese EXIM Bank, ECGC of UK, etc.

(b) List out the significance of Cash Management.

Answer:

Significance of Cash Management

- Cash planning: Cash is the most important as well as the least unproductive of all current assets. Though, it is necessary to meet the firm’s obligations, yet idle cash earns nothing. Therefore, it is essential to have a sound cash planning neither excess nor inadequate.
- Management of cash flows: This is another important aspect of cash management. Synchronisation between cash inflows and cash outflows rarely happens. Sometimes, the

cash inflows will be more than outflows because of receipts from debtors, and cash sales in huge amounts. At other times, cash outflows exceed inflows due to payment of taxes, interest and dividends etc. Hence, the cash flows should be managed for better cash management.

- Maintaining optimum cash balance: Every firm should maintain optimum cash balance. The management should also consider the factors determining and influencing the cash balances at various point of time. The cost of excess cash and danger of inadequate cash should be matched to determine the optimum level of cash balances.
- Investment of excess cash: The firm has to invest the excess or idle funds in short term securities or investments to earn profits as idle funds earn nothing. This is one of the important aspects of management of cash.

Question 30.

(a) Company MTL is forced to choose between two machines A and B. The two machines are designed differently, but have identical and do exactly the same job. Machine A costs ₹2,50,000 and will last for 3 years. It costs ₹40,000 per year to run. Machine B is an 'economy' model Costing only ₹2, 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 10 percent. Which machine Company X should Buy?

Answer:

Working Notes:

Compound present value of 3 years @ 10% = 2.486

P.V. of Running cost of Machine A for 3 years = ₹40,000×2.486 = ₹99,440

Compound present value of 2 years @10% =1.735

P.V. of Running cost of Machine B for 2 years =₹60,000 ×1.735

=₹1, 04,100

Statement showing evaluation of Machine A and B

Particulars	**Machine A**	**Machine B**
Cost of purchase Add: PV. Of running cost for 3 years	2,50,000 99,440	2,00,000 1,04,100
P.V. of Cash Outflow	349440	3,04,100
	2.486	1.735
Equivalent Present Value of annual Cash outflows	1,40,563	1,75,274

Analysis: Since the annual Cash outflow of Machine B is highest, Machine A can be purchased.

(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?

Answer:

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

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 $= \dfrac{₹3}{0.12} + \dfrac{(₹5 - ₹3) \times \dfrac{0.15}{0.12}}{0.12} = ₹25 + ₹20.83 = ₹45.83$

(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.

Value per Share at Optimum Payout $= \dfrac{₹0}{0.12} + \dfrac{(₹5 - ₹0) \times \dfrac{0.15}{0.12}}{0.12} = ₹0 + 52.08 = ₹52.08$