PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART – I : COST ACCOUNTING

QUESTIONS

(Marginal Costing – Calculation of Break-even point)

1. (i) You are given the following particulars calculate:
   (a) Break-even point
   (b) Sales to earn a profit of Rs. 20,000
      i. Fixed cost Rs. 1,50,000
      ii. Variable cost Rs. 15 per unit
      iii. Selling price is Rs. 30 per unit

(Marginal Costing – Finding Selling Price)

(ii) If P/V ratio is 60% and the Marginal cost of the product is Rs. 20. What will be the selling price?

(Marginal Costing – Cost Concepts)

(iii) A ltd. Maintains margin of safety of 37.5% with an overall contribution to sales ratio of 40%. Its fixed costs amount to Rs. 5 lakhs.

Calculate the following:

(a) Break-even sales

(b) Total variable cost

(c) New 'margin of safety' if the sales volume is increased by 7 ½ %.

(Application of Marginal Costing & Flexible Budget)

(iv) The ratio of variable cost to sales is 70%. The break-even point occurs at 60% of the capacity sales. Find the capacity sales when fixed costs are Rs. 90,000. Also compute profit at 75% of the capacity sales.

(Labour Turnover)

(v) Sengupta Co. Ltd. Supplies you the following information: -

No. of workers at the beginning of the year	400
No. of workers at the end of the year	500
No. of workers resigned	35

No. of workers discharged	10
No. of replaced workers	40

Find out Labour Turnover Rate under Flux Method.

(Labour – Rowan Plan)

(vi) Calculate the earnings of a worker under Rowan Plan from the following particulars:

a. Hourly rate of wages guaranteed 0.50 paisa per hour.

b. Standard time for producing one dozen articles – 3 hours.

c. Actual time taken by the workers to produce 20 dozen articles – 48 hours.

(Inventory Turnover)

(vii) The following data are available in respect of material X for the year ended 31st March, 2008:

Opening Stock	Rs. 90,000
Purchases during the year	Rs. 2,70,000
Closing stock	Rs. 1,10,000

Calculate:

a. Inventory turnover ratio

b. The number of days for which the average inventory held.

(Inventory – E.O.Q)

(viii) About 50 items are required every day for a machine. A fixed cost of Rs. 50 per order is incurred for placing an order. The inventory carrying cost per item amounts to Rs. 0.02 per day. The lead period is 32 days. Compute:

(a) Economic Order Quantity

(b) Re-order level

(Application of Cost Concept)

(ix) Aries Co. has recorded the following data in the two most recent periods:

Total cost of production	Volume of Production
Rs.	(Units)
14,600	800
19,400	1200

What is the best estimate of the firm's fixed costs per period?

(Contract Costing – Notional Profit)

(x) Compute notional profit and profit to be taken to contracts P & L A/C on a contract (which has been 80% completed) from the following particulars:

	Rs.
Total expenditure to date	1,70,000
Estimated further expenditure to complete the contract (including contingencies)	34,000
Contract price	3,06,000
Work certified	2,00,000
Work not certified	17,000
Cash Received	1,63,200

(Labour – Taylors Plan)

(xi) Using a Taylor's Plan, calculate the earnings of workers from the following information.

Normal rate per hour = Rs. 12

Standard time per piece = 20 minutes

In a 9 – hour day, A produces 26 units and B produces 30 units.

2. (a) Explain the relationship between Financial Accounting, Cost Accounting, Management Accounting and Financial Management.

(b) How Cost Accounting helps to overcome the limitations of Financial Accounting.

(c) 'Cost Accounting has become an essential tool of Management of a business concern'. Explain the statement.

(d) Discuss the factors which should be considered before installing a Costing system in a manufacturing firm.

(e) What are the characteristics of a good Costing System.

(Inventory – E.O.Q)

3. You are given the following data relating to AMC Co. Ltd.:

Cost of placing each order (i.e. Ordering Cost)	Rs. 4.50
Annual demand (i.e. Annual Consumption)	8,000 units
Stock holding cost as a percentage of average	16%
Stock value (i.e. Inventory Carrying charges)	
Price per unit	Rs. 5

Normal lead time	9 days
Safety stock	18 days
Maximum Usage	60 units

From the above, calculate:

(i) What is the quantity that should be ordered each time?

(ii) How many orders should be placed with the supplier during a year?

(iii) What would be the level of stock just before the material which has been ordered is received?

(iv) When should the material be ordered? (under certainty).

4. (a) Distinguish between spoilage and defectives in a manufacturing company. Discuss their treatment in cost accounts and suggest a procedure for their control.

(Inventory – LIFO & FIFO)

(b) The following information is provided by ATLANTA Industries with regard to the operations of raw material stores for the fortnight of April, 2007:

Material ASH:

Stock on 1-4-2007 100 units at Rs. 5 per unit.

Purchases

5-4-07	300	units	at	Rs. 6
8-4-07	500	units	at	Rs. 7
12-4-07	600	units	at	Rs. 8

Issues

6-4-07	250	units
10-4-07	400	units
14-4-07	500	units

Required :

(a) Calculate using FIFO and LIFO methods of pricing issues (you may assume a nil opening and closing balance of stock on the production floor):

(i) the value of raw materials consumed during the period

(ii) the value of stock of raw materials on 15-4-07.

(b) Explain why the figures in (a) and (b) in part A of this question are different under the two methods of pricing of raw material issues used. You need not draw up the Stores Ledgers.

5. (a) Explain the concept of “ABC Analysis” as a technique of Inventory Control.

(Inventory – Various levels)

(b) Himalaya Ltd. distributes wide range of Water purifier systems. One of its best selling items is a standard water purifier. The management of Himalaya Ltd. uses the EOQ decision model to determine optimal number of standard water purifiers to order. Management now wants to determine how much safety stock to hold.

Himalaya Ltd. estimates annual demand (360 working days) to be 36,000 standard water purifiers. Using the EOQ decision model, the company orders 3,600 standard water purifiers at a time. The lead-time for an order is 6 days. The annual carrying cost of one standard purifier is Rs. 450. Management has also estimated the additional stock out costs would be Rs. 900 for shortage of each standard water purifier.

Demand during lead time	Number of times quantity was demanded
540	6
560	12
580	16
600	130
620	20
640	10
660	6
	200

Himalaya Ltd. has analysed the demand during 200 past re-order periods. The records indicate the following patterns:

(i) Determine the level of safety stock for standard water purifier that the Himalaya Ltd. should maintain in order to minimize expected stock out costs and carrying 'costs. Carrying costs should be computed on safety stock, which shall remain in hand at all times during the year. (Consider safety stock levels of 0, 20, 40 and 60 units).

(ii) What would be the Himalaya Ltd.'s new re-order point?

(iii) What factors Himalaya Ltd. should have considered in estimating stock out costs?

6. (a) Distinguish between Idle Time and Idle Facilities. How are they treated in Cost Accounts? Develop a system of control for Idle Time in a factory.

(Labour – Total Wages)

(b) Calculate total monthly remuneration of three workers Ram, Shyam and Mohan from the following data:

(a) Standard production per month per worker 2,000 units. Actual production during the month – Ram 1700 units, Shyam 1500 units and Mohan 1,900 units.

(b) Piece-work rate is Rs. 2 per unit (actual production).

(c) Additional production bonus is Rs. 100 for each percentage of actual production exceeding 80 per cent actual production over standard (example: 79 per cent nil, 80 per cent nil, 81 per cent Rs. 100, 82 per cent Rs. 200, and so on).

(d) Dearness allowance fixed at Rs. 300 per month.

7. (a) Describe the factors which should be taken into consideration before introducing an incentive system.

(Labour – Working hours)

(b) Using the details given below, you are required to calculate the earnings of workers Rio and Rayan and subsequently allocate these earnings to the three Jobs A, B and C.

		Rio	**Rayan**
(a)	Basic Wages	Rs. 100	Rs. 100
(b)	Dearness Allowance	50%	55%
(c)	Provident Fund (on basic wages)	8%	8%
(d)	Employee's State Insurance (on basic wages)	2%	2%
(e)	Overtime	10 hrs.	–
(f)	Idle time and leave	–	16 hrs.

For your calculations, you may assume the following:

- Normal working hours for a month are 200 hours.
- Overtime is paid at double the normal wages plus dearness allowance.
- Employer's contributions to State Insurance and Provident Fund are at equal rate with the employee's contributions.
- The month contains 25 working days and one paid holiday.

The two workers were employed on jobs A, B and C in the following proportions:

Job	A	B	C
Worker A	80	60	60
Worker B	100	40	60

Overtime was done on job Y.

8. (a) Define overtime. What will the treatment of overtime premium in Cost Accounting?

(Labour – Overtime)

(b) In a factory, the basic wage rate is Rs. 10 per hour and overtime rates are as follows:

Before and after normal working hours	:	175% of basic wage rate
Sundays and holidays	:	225% of basic wage rate
During the previous year, the following hours were worked	:	
Normal time	:	1,00,000 hours
Overtime before and after working hours	:	20,000 hours
Overtime on Sundays and holidays	:	5,000 hours
Total	:	1,25,000 hours
The following hours have been worked on job 'Z' :		
Normal	:	1000 hours
Overtime before and after working hrs.	:	100 hours
Sundays and holidays	:	25 hours
Total	:	1125 hours

You are required to calculate the labour cost chargeable to jobs 'Z' and overhead in each of the following instances:

(a) Where overtime is worked regularly throughout the year as a policy due to the labour shortage.

(b) Where overtime is worked irregularly to meet the requirements of production.

(c) Where overtime is worked at the request of the customer to expedite the job.

9. (a) Discuss briefly the Step method and Reciprocal Service method of secondary distribution of overheads.

(Overhead Distribution)

(b) The Satellite Production Company manufacturers components for radio and television satellites using two service departments and two production departments. The inter-departmental relationships and estimated overhead costs are given below:

Percentage of Services Provided to

	Maintenance	Scheduling	Moulding	Assembly
From: Maintenance	-	10%	40%	50%
Scheduling	20%	-	50%	30%
Total Overhead costs (Rs.)	75,000	40,000	37,800	27,600

Required: (i) Using the direct method, show the amount of Scheduling Department costs to be allocated to Assembly Department. (ii) Repeat, (i) using the step method and allocating maintenance first. (iii) repeat (i) using the Reciprocal method (method of simultaneous equations may be used).

(Cost Ledgers – Non-integrated Accounts)

10. As on 31st March, 2007, the following balances existed in a firm's Cost Ledger:

	Dr.	*Cr.*
	Rs.	*Rs.*
Stores Ledger Control A/c	3,01,435	
Work-in-Progress Control A/c	1,22,365	
Finished Stock Ledger Control A/c	2,51,945	
Manufacturing Overhead Control A/c		10,525
Cost Ledger Control A/c		6,65,220
	6,75,745	6,75,745

Following data relates to the next three months:

	Rs.
Finished product (at cost)	2,10,835
Manufacturing overhead incurred	91,510
Raw materials purchased	1,23,000
	Rs.
Factory Wages	50,530
Indirect Labour	21,665
Cost of Sales	1,85,890

Material issued to production	1,27,315
Sales returned at Cost	5,380
Material returned to suppliers	2,900
Manufacturing overhead charged to production	77,200

You are required to pass the Journal Entries (narrations are not required); write up the accounts and schedule the balances, stating what each balance represents.

(Batch Costing)

11. Gemini Ltd. undertakes to supply 10,000 units of a component per month for the months of July, August and September, 2007. Every month a batch order is opened against which materials and labour cost are booked at actuals. Overheads are levied at a rate per labour hour. The selling price is contracted at Rs. 12 per unit.

    From the following data, present the cost and profit per unit of each batch order and the overall position of the order for the 3,000 units:

Month	*Batch Output (Numbers)*	*Material Cost*	*Labour Cost*	*Overheads*	*Total Labour Hours*
		Rs.	*Rs.*	*Rs.*	
July, 2007	12,500	62,500	25,000	1,20,000	40,000
August, 2007	15,000	90,000	30,000	90,000	45,000
Sept., 2007	10,000	50,000	20,000	50,000	50,000

    Labour is paid at the rate of Rs. 2 per hour.

12. Write short notes on:
    (a) Cost of work uncertified
    (b) Retention money
    (c) Profit /loss on incomplete contracts
    (d) Cost plus contract
    (e) Escalation clause.

(Contract Costing)

13. Mittal Contractors obtained a contract to build houses, the contract price being Rs. 6,00,000. Work commenced on 1st January, 2006 and the expenditure incurred during the year was – Plant and tools: Rs. 30,000; Stores and materials: Rs. 1,08,000; Wages Rs. 97,500. Sundry expenses: Rs. 7,950; and establishment charges: Rs. 17,550. Certain materials costing Rs. 18,000 were unsuited to the contract and were sold for Rs. 21,750. A portion of the plant was scrapped and sold for Rs. 3,450.

The value of the plant and tools on the sites on 31st December, 2006 was Rs. 9,300 and the value of stores and materials on hand Rs. 5,100. Cash received on account was Rs. 2,10,000 representing 80% of the work certified. The cost of the work done but not certified was Rs. 32,850 and this was certified for Rs. 37,500.

Mittal decided (i) to estimate what further expenditure would be incurred in completing the contract; (ii) to compute from this estimate and expenditure already incurred, the total profit that would be made on the contract; and (iii) to take to the credit of the profit and loss account for the year 2006 that proportion of the total which correspond to the work certified by 31st December. The estimate was as follows:

(a) That the contract would be completed by 30th September, 2007.

(b) That the wages on the contract in 2007 would amount to Rs. 1,07,250.

(c) That the cost of stores and materials required in addition to those in stock on 31st December, 2006 would be Rs. 1,02,900 and that further expenses relating to contract would amount to Rs. 9,000.

(d) That a further Rs. 37,500 would have to be laid out on plant and tools and that residual value of the plant and tools on 30th September, 2007 would be Rs. 4,500.

(e) That the establishment charges would cost the same per month as in 2006.

(f) That 2½% of the total cost of the contract would be due to defects, temporary maintenance and contingencies.

Prepare contract account for the year ended 31st December, 2006 and show your calculations of the amount credited to the profit and loss account for the year.

(Process Costing)

14. Anu Ltd. manufactures a range of products and the data below refer to one product which goes through one process only. The company operates a thirteen four-weekly reporting system for process and product costs and the data given below relate to Period 2008.

There was no opening work-in-progress stock.

50,000 units of materials input at Rs. 2.94 per unit entered the process.

Further direct materials added	1,38,300
Direct wages incurred	65,550
Production overhead	74,700

Normal loss is 3% of input.

Closing work-in-progress was 8,000 units but these were incomplete, having reached the following percentages of completion for each of the elements of cost listed.

	%
Direct materials added	75
Direct wages	50
Production overhead	25

2700 units were scrapped after a quality control check when the units were at the following degrees of completion.

	%
Direct materials added	66.67% or 66.⅔%
Direct wages	33.⅓ or 33.33%
Production overhead	16⅔% or 16.67%

Units scrapped, regardless of the degree of completion, are sold for Re. 1 each and it is company policy to credit the process account with the scrap value of normal loss units.

You are required to prepare the Period 2008 accounts for the: (i) process account; and (ii) abnormal gain or loss.

(Operating Costing)

15. The data given relates to 'Entertainment Paradise' a mini theatre for the year ending 2007:

No. of Employee	Salaries:		Electricity and oil	11,655
1	Manager	Rs. 800 p.m.	Carbon	7,235
10	Gate-keepers	200 p.m. each	Misc. expenditure	5,425
2	Operators	400 p.m. each	Advertisement	34,710
4	Clerks	250 p.m. each	Admn. Expenses	18,000
			Hire of print	1,40,700

The premises are valued at Rs. 6,00,000 and the estimated life is 15 years. Projector and other equipments cost Rs. 3,20,000 on which 10% depreciation is to be charged.

Daily 3 shows are run throughout the year. The total capacity is 625 seats which is divided into three classes as follows:

Emerald Circle	250 seats
Diamond	250 seats
Coral	125 seats

Ascertain cost per man-show assuming that:

(a) 20% of the seats remain vacant, and

(b) Weightage to be given to the three classes in the ratio 1 : 2 : 3.

Determine the rates for each class if the management expects 30% return on gross proceeds. Ignore entertainment taxes.

(Marginal Costing – Break-even Point)

16. (a) You are given the following data for the coming year for a factory.

Budgeted output	8,00,000 units
Fixed expenses	40,00,000
Variable expenses per unit	Rs. 100
Selling price per unit	Rs. 200

Draw a break-even chart showing the break-even point.

(b) If price is reduced to Rs. 180, what will be the new break-even point?

17. (a) Differentiate between absorption costing and marginal costing.

(Marginal Costing – Application of P/V ratio)

(b) XYZ ltd. has furnished the following data for the two years:

	2006 – 07	2007 – 08
Sales	Rs. 8,00,000	?
P/V Ratio	50%	37.5%
Margin of Safety		
(Sales as a % of Total sales)	40%	21.875%

There has been substantial savings in the fixed cost in the year 2007-08 due to the restructuring process. The company could maintain its sales quantity level of 2006-07 in 2007-08 by reducing selling price.

You are required to calculate the following:

i. Sales for 2007-08 in rupees

ii. Fixed cost for 2007-08

iii. Break even sales for 2007-08 in rupees

(Budgetary Control – Flexible Budget)

18. Alpha manufacturers can produce 4,000 units of a certain product at 100% capacity. The following information is obtained form the books of account:

	August 2007	September 2007
Units produced	2400	3200
Repair and maintenance	470	530
Power	1700	1900
Shop Labour	600	800
Consumable stores	1200	1600
Salaries	1000	1000
Inspection	180	220
Depreciation	1400	1400

The rate of production per hour is 10 units. Direct material per unit is Rs. 1 and direct wages per hour is Rs. 4. You are required to – (i) compute the cost of production at 100%, 90% and 70% capacity showing the available, fixed and semi-fixed items under the flexible budget; and (ii) find out the overhead absorption rate per unit at 90% capacity.

(Budgetary Control – Production Budget)

19. The following information has been made available from the records of XYZ ltd for the six months of 2007 (and the sales of January 2008) in respect of Product X:

(i) The units to be sold in different months are:

July 2007	1100	November 2007	2,500
August 2007	1100	December 2007	2,300
September 2007	1700	January 2008	2,000
October 2007	1900		

(ii) There will be no work in progress at the end of any month.

(iii) Finished units equal to half the sales of the next month will be in stock at the end of every month (including June 2007).

(iv) Budgeted production and production cost for the year ending 31st December, 2007 are:

Production	22000
Direct materials per unit	Rs. 10
Direct wages per unit	Rs. 4

Total factory overhead apportioned to production Rs. 88000

You are required to prepare:

Production Budget for the six months of 2007.

(Standard Costing – Material and Labour Variances)

20. The following standards have been set to manufacture a product:

Direct materials:	*Rs.*
2.5 units of X at Rs. 4 per unit	8.00
3 units of Y at Rs. 3 per unit	9.00
15 units of Z at Re. 1 per unit	15.00
	32.00
Direct labour 3 hours @ Rs. 8 per hour	24.00
Total standard prime cost	56.00

The company manufactured and sold 6,000 units of the product during the year 2006.

Direct material costs were as follows:

12,500 units of X at Rs. 4.40 per unit.

18,000 units of Y at Rs. 2.80 per unit.

88,500 units of Z at Rs. 1.20 per unit.

The company worked 17,500 direct labour hours during the year 2006. For 2,500 of these hours the company paid at Rs. 12 per hour while for the remaining hours the wages were paid at the standard rate.

Compute material price, usage variances, labour rate, and efficiency variances.

(Standard Costing – Material Variances)

21. Sohan Manufacturing Co. Ltd., furnished the following information:

Standard

Material for 70 kg finished products: 100 kg

Price of materials: Rs. 1 per kg.

Actual

Output: 2,10,000 kg

Material used: 2,80,000 kg

Cost of material: Rs. 2,52,000

Calculate

a. Material Usage Variance

b. Material Price Variance

c. Material Cost Variance

22. (a) What is 'Defective Work'? How it is accounted for in cost accounts?

(b) Distinguish between 'Committed Fixed Costs' and 'Discretionary Fixed Costs'.

(c) How will you treat the research and development costs in connection with

(i) Job undertaken on behalf of a customer; and

(ii) Improvement in existing products ?

SUGGESTED ANSWERS/HINTS

1. (i) (a) B.E.P. = Fixed Cost / Contribution per unit

= 1,50,000 / 15 = 10,000 Units

(b) Sales to earn a Profit of Rs.20,000 = $\frac{(\text{Fixed cost} + \text{Desired Profit}) \times \text{Selling Price}}{\text{Contribution per unit}}$

Sales = (1,50,000 + 20,000)/15 x 30

= (1,70,000/15) x 30

= Rs. 3,40,000

(ii) Variable Cost = 100 – P/V Ratio

= 100 – 60 = 40

If Variable cost is 40, then selling price = 100

If Variable cost is 20, then selling price = (100/40) x 20 = Rs. 50

(iii) (a) Break-even Sales x P/V Ratio = Fixed Cost

Break-even Sales x 40% = Rs. 5,00,000

Break-even Sales = Rs. 12,50,000

(b) Total Sales = Break-even Sales + Margin of Safety

S = Rs. 12,50,000 + 0.375S

S – 0.375S = Rs. 12,50,000

S = Rs. 20,00,000

Contribution to Sales Ratio = 40%

Therefore, Variable cost to Sales Ratio = 60%

Variable cost = 60% of sales

= 60% of 20,00,000

Variable cost = 12,00,000

(c) If sales value is increased by 7½ %

New Sales value = Rs. 20,00,000 x 1.075

= Rs. 21,50,000

New Margin of Safety = New Sales value – BES

= Rs. 21,50,000 – Rs. 12,50,000

= Rs. 9,00,000

(iv) Variable cost to sales = 70%

Contribution to sales = 30%

Or P/V Ratio = 30%

Break-even Sales x P/V Ratio = Fixed Cost

Break-even Sales x 0.30 = Rs. 90,000

Or Break-even Sales = Rs. 3,00,000

It is given that break-even occurs at 60% capacity.

Capacity sales = Rs. 3,00,000 / 0.60

= Rs. 5,00,000

Computation of profit of 75% Capacity

75% of capacity sales (i.e. Rs. 5,00,000 x 0.75)	= Rs. 3,75,000
Less: Variable cost (i.e. Rs. 3,75,000 x 0.70)	= Rs. 2,62,500
	= Rs. 1,12,500
Less: Fixed Cost	= Rs. 90,000
Profit	= Rs. 22,500

(v) Calculation of average no. of workers during the period:-

Average no. of workers =

(No. of workers in the beginning of the period + No. of workers at the end of the period)/2

= (400 + 500)/2

= 450

Labour Turnover Rate =

(No. of workers left during the period + No. of workers replaced during the period) / (Average no. of workers during the period) x 100

= (45 + 40)/450 x 100 = 18.8%

(vi) A. Wage rate per hour = 0.50

B. Standard time allowed = 3 hours per dozen

C. Actual production = 20 dozens

D. Standard time allowed for 20 dozens [B x C] = 3 hours x 20 dozens = 60 hours

E. Actual time taken to produce 20 dozens = 48 hours

F. Time saved [D – E] = 60 – 48 = 12 hours

Earnings = Normal Wages x Bonus

Under Rowan Plan

(Actual Time Taken x Time Rate) + [Time saved x (Time taken/Time allowed) x time rate]

= (48 hours x 0.50) + [12 x (48/60) x 0.50]

= 24 + 4.80

= Rs. 28.80

(vii) (a) Inventory Turnover Ratio = Raw Material Consumed / Average Inventory

= 2,50,000/1,00,000

= 2.5 Times

(b) No. of days for which Average inventory is held =

Days in a year/ITR = 360/2.5 = 144 Days

Working Notes:

1. Raw material consumed = Opening Stock + Purchases – Closing Stock

= 90,000 + 2,70,000 – 1,10,000

= Rs. 2,50,000

2. Average Inventory = (Opening Stock + Closing Stock) / 2

= (90,000 + 1,10,000) / 2

= Rs. 1,00,000

(viii) (a) EOQ = $\sqrt{}$2 x A x O / C

= $\sqrt{}$[2(50 x 365)] x 50 / (0.02 x 365)

= $\sqrt{}$250000

= 500 units

(b) Re–order level = Maximum Consumption x Maximum Delivery Period
= 50 x 32
= 1600 units

(ix) Variable Cost per unit = Change in Total Cost / Change in Production
= (Rs. 19,400 – Rs. 14,600)/(1200 units – 800 units)
= 4800/400
= Rs. 12 per unit

Total variable cost for 1200 units = 1200 units x Rs. 12 = Rs. 14,400

Total fixed cost = Total cost – Total Variable Cost
= 19400 – 14400
= Rs. 5000

(x) Computation of Notional Profit

Value of Work Certified		2,00,000
Less: Cost of work certified		
Cost of Contract	1,70,000	
Less: Cost of work uncertified	- 17,000	1,53,000
Notional Profit		47,000

Profit to be taken to contract P&L A/C (when 80% of contract is completed)
2/3 x Notional Profit x (Cash Received/Work Certified)
= 2/3 x 47,000 x (1,63,200 / 2,00,000)
= Rs. 25,568

(xi) Standard Production per hour = 60 minutes/20 minutes
= 3 units

Standard production per day = 3 units x 9 hours
= 27 units

Piece rate = Rs. 12 / 3 units = Rs. 4 per unit

Lower price rate = Rs. 4 x 83%
= Rs. 3.32

Higher Piece Rate = Rs. 4 x 175%
= Rs. 7

Efficiency of worker A = (26 units/ 27 units) x 100

= 96.30%

It is less than 100% and thus will be paid at lower piece rate of Rs. 3.32 per unit.

Wages of A = 26 units x Rs. 3.32

= Rs. 86.32

Efficiency of worker B = 30 units/27 units

= 111.11%

It is more than 100% hence will be paid at the higher piece rate of Rs. 7 per unit.

Wages of B = 30 units x 7 = Rs. 210

2. (a) Relationship between Cost Accounting, Financial Accounting, Management Accounting and Financial Management

Cost Accounting is a branch of accounting, which has been developed because of the limitations of Financial Accounting from the point of view of management control and internal reporting. Financial accounting performs admirably, the function of portraying a true and fair overall picture of the results or activities carried on by an enterprise during a period and its financial position at the end of the year. Also, on the basis of financial accounting, effective control can be exercised on the property and assets of the enterprise to ensure that they are not misused. To that extent financial accounting helps to assess the overall progress of a concern, its strength and weaknesses by providing the figures relating to several previous years. Data provided by Cost and Financial Accounting is further used for the management of all processes associated with the efficient acquisition and deployment of short, medium and long term financial resources. Such a process of management is known as Financial Management. The objective of Financial Management is to maximise the wealth of shareholders by taking effective Investment, Financing and Dividend decisions. Investment decisions relate to the effective deployment of scarce resources in terms of funds while the Financing decisions are concerned with acquiring optimum finance for attaining financial objectives. The last and very important 'Dividend decision' relates to the determination of the amount and frequency of cash which can be paid out of profits to shareholders. On the other hand, Management Accounting refers to managerial processes and technologies that are focused on adding value to organisations by attaining the effective use of resources, in dynamic and competitive contexts. Hence, Management Accounting is a distinctive form of resource management which facilitates management's 'decision making' by producing information for managers within an organisation.

(b) Limitations of Financial Accounting: There are various limitations of financial accounting from the point of view of management. These stem from the fact that management must have information properly analysed and continuously flowing to it. Management cannot be satisfied with a broad picture, and that too available at

the end of a period. The limitations of financial accounts together with procedures that overcome the limitations are given below :

Limitations	Procedures that overcome limitations
A. Forecasting and Planning	
Management requires information so that it can make effective plans for the coming year and the period after that. In other words, information about the future is required. Financial Accounts provide this information.	The technique of budgeting has been evolved. Starting with the assessment of the limiting factors that may be operating, careful estimates can be prepared of all the activities that will be undertaken and then, these can be translated in terms of money. (An analysis of cost into fixed and variable is most useful in this respect). These "estimates", properly coordinated, become budgets and plans of action.
B. Decision making	
Management requires information daily for making decision of any type. Financial Accounts normally are not able to provide information for this purpose. Information is required to answer the under mentioned questions amongst others :	It is the complete analysis of cost incurred that can help management in making the type of decisions mentioned. The analysis has to be two-fold :
(i) What should be the product under normal circumstances and under special circumstances?	(i) The total cost of each job, product, process etc. is to be ascertained; and
(ii) Should a part be produced in the factory itself or bought from the market?	(ii) The cost must be further analysed as fixed and variable.
(iii) Should the production of a product be given up?	(iii) In other words, management should have information to see what the effect on the revenues and cost (both) will be, if a proposed course of action is taken. This is the marginal costing technique and most problems can be handled with the aid of this technique.
(iv) What should be the priority	

accorded to a product ?

(v) Should investment be made in a new project ?

(vi) How much should be produced to earn a certain profit, given the selling price?

C. Control and assessment

Management requires information to assess the performance of various persons and departments and to see that costs do not exceed a reasonable limit for a given quantum of work of the requisite quality. Financial accounts cannot provide information for this purpose. Apart from the general information mentioned above, management requires to know :

The techniques of budgeting and standard costing enable management to perform this function which is one of most important one. In this case also the main activity is analysis and comparison. If standard costing is not adopted, simple comparison of figures over the periods for each element of cost in terms of quantity if possible is of great help.

(i) the profitability of each product ; and

(ii) the extent of unnecessary material, labour, facilities etc.

Profitability of each of the product can be easily established by comparing its selling price with the contribution it makes i.e., the difference between the selling price and its variable cost.

It can be seen from the above that the chief limitation of financial accounting is lack of analysis of information and absence of measuring rods. Cost accounting with the aid of budgeting, standard costing and marginal costing has filled the need in this respect.

(c) Importance of Cost Accounting to the management of a business concerns:

Management of business concerns expects from Cost Accounting a detailed cost information in respect of its operations to equip their executives with relevant information required for planning, scheduling, controlling and decision making. To be more specific, management expects from cost accounting - information and reports to help them in the discharge of the following functions :

(a) *Control of material cost:* Cost of material usually constitute a substantial portion of the total cost of a product. Therefore, it is necessary to control it as far as possible. Such a control may be exercised by (*i*) Ensuring uninterrupted supply of material and spares for production. (*ii*) By avoiding excessive locking up of funds/capital in stocks of materials and stores. (*iii*) Also by the use of techniques like value analysis, standardisation etc. to control material cost.

(b) *Control of labour cost:* It can be controlled if workers complete their work

within the standard time limit. Reduction of labour turnover and idle time too help us, to control labour cost.

(c) *Control of overheads:* Overheads consists of indirect expenses which are incurred in the factory, office and sales department ; they are part of production and sales cost. Such expenses may be controlled by keeping a strict check over them.

(d) *Measuring efficiency:* For measuring efficiency, Cost Accounting department should provide information about standards and actual performance of the concerned activity.

(e) *Budgeting:* Now–a–days detailed estimates in terms of quantities and amounts are drawn up before the start of each activity. This is done to ensure that a practicable course of action can be chalked out and the actual performance corresponds with the estimated or budgeted performance. The preparation of the budget is the function of Costing Department.

(f) *Price determination:* Cost accounts should provide information, which enables the management to fix remunerative selling prices for various items of products and services in different circumstances.

(g) *Curtailment of loss during the off-season:* Cost Accounting can also provide information, which may enable reduction of overhead, by utilising idle capacity during the off-season or by lengthening the season.

(h) *Expansion:* Cost Accounts may provide estimates of production of various levels on the basis of which the management may be able to formulate its approach to expansion.

(i) *Arriving at decisions:* Most of the decisions in a business undertaking involve correct statements of the likely effect on profits. Cost Accounts are of vital help in this respect. In fact, without proper cost accounting, decision would be like taking a jump in the dark, such as when production of a product is stopped.

(d) Essential factors for installing a cost accounting system:

As in the case of every other form of activity, it should be considered whether it would be profitable to have a cost accounting system. The benefits from such a system must exceed the amount to be spent on it. This would depend upon many factors including the nature of the business and the quality of the management. Management, which is prone to making decisions on the basis of pre-conceived notions without taking into account the information and data placed before it, cannot derive much benefit from a costing system. On the other hand management, which is in the habit of studying information thoroughly before making decisions, would require cost accounting system. Before setting up a system of cost accounting the under mentioned factors should be studied:

(i) The objective of costing system, for example whether it is being introduced for fixing prices or for insisting a system of cost control.

(ii) The areas of operation of business wherein the managements' action will be most beneficial. For instance, in a concern, which is anxious to expand its operations, increase in production would require maximum attention. On the other hand for a concern, which is not able, to sell the whole of its production the selling effort would require greater attention. The system of costing in each case should be designed to highlight, in significant areas, factors considered important for improving the efficiency of operations in that area.

(iii) The general organisation of the business, with a view of finding out the manner in which the system of cost control could be introduced without altering or extending the organisation appreciably.

(iv) The technical aspects of the concern and the attitude and behaviour that will be successful in winning sympathetic assistance or support of the supervisory staff and workmen.

(v) The manner in which different variable expenses would be affected with expansion or cessation of different operations.

(vi) The manner in which Cost and Financial accounts could be inter-locked into a single integral accounting system and in which results of separate sets of accounts, cost and financial, could be reconciled by means of control accounts.

(vii) The maximum amount of information that would be sufficient and how the same should be secured without too much clerical labour, especially the possibility of collection of data on a separate printed form designed for each process; also the possibility of instruction as regards filling up of the forms in writing to ensure that these would be faithfully carried out.

(viii) How the accuracy of the data collected can be verified? Who should be made responsible for making such verification in regard to each operation and the form of certificate that he should give to indicate the verification that he has carried out?

(ix) The manner in which the benefits of introducing Cost Accounting could be explained to various persons in the concern, specially those in charge of production department and awareness created for the necessity of promptitude, frequency and regularity in collection of costing data.

(e) Essentials of a good Cost Accounting System: The essential features, which a good Cost Accounting System should possess, are as follows:

(i) Cost Accounting System should be tailor-made, practical, simple and capable of meeting the requirements of a business concern.

(ii) The data to be used by the Cost Accounting System should be accurate; otherwise it may distort the output of the system.

(iii) Necessary cooperation and participation of executives from various departments of the concern is essential for developing a good system of Cost Accounting.

(iv) The Cost of installing and operating the system should justify the results.

(v) The system of costing should not sacrifice the utility by introducing meticulous and unnecessary details.

(vi) A carefully phased programme should be prepared by using network analysis for the introduction of the system.

(vii) Management should have a faith in the Costing System and should also provide a helping hand for its development and success.

3. (i) Economic Order Quantity is the quantity that should be ordered each time:

$$\Theta\ EOQ = \sqrt{\frac{2cd}{ip}}$$

Where,

c = Cost of placing each order

d = Annual demand

i = Stock holding cost as a percentage of average stock value

p = Price per unit

$$\sqrt{\frac{2 \times 4.5 \times 8,000}{\frac{16}{100} \times 5}}$$

$$\sqrt{\frac{72,000}{.16 \times 5}} = \sqrt{90,000}$$

= 300 units.

(ii) Θ Number of Orders to be placed in a year $= \dfrac{\text{Annual Demand}}{EOQ}$

$$= \frac{8,000}{300} = 27 \text{ orders.}$$

(iii) Safety stock is the level of stock immediately before the material ordered is received

Θ Safety Stock = Average Usage $\times$ Period for which safety stock is kept

$$\frac{8,000}{360 \text{ days}} \times 18 \text{ days} = 400 \text{ units}$$

(iv) When stock reaches the reorder level, material should be ordered.

Θ Reorder Level = Maximum Usage $\times$ Maximum Lead Time

= 60 $\times$ 9 days

= 540 units.

The above gives us reorder level under certainty, since the above formula assumes that average usage and led time are constant.

4. (a) Spoilage can be defined as the materials which are badly damaged in the course of manufacturing operations to the extent that they cannot be rectified economically and hence taken out of process, to be disposed of in some manner without further processing. Spoilage may be either normal or abnormal.

Defective products are such semi-finished or finished products produced by a manufacturing unit, which are not in conformity with laid-down standard or dimensional specifications. Defectives produced can be re-worked or reconditioned by the application of additional materials, labour and/or processing and brought to the point of either standard or sub-standard product. The costs incurred for reconditioning are known as the "Costs of re-operations of the defectives". Defective production may be the result of various causes such as sub-standard materials, bad-workmanship, carelessness in planning, laxity in inspection etc.

The difference between spoilage and defectives is that while spoilage cannot be repaired or reconditioned, defectives can be rectified and transformed, either back to standard production or to seconds.

Treatment of spoilage and defectives in Cost Accounting: Under Cost Accounts normal spoilage costs (i.e., which is inherent in the operation) are included in cost either by charging the loss due to spoilage to the production order or charging it to production overhead so that it is spread over all products. Any value realised from the sale of spoilage is credited to production order or production overhead account, as the case may be. The cost of abnormal spoilage (i.e. arising out of causes not inherent in manufacturing process) are charged to the Costing Profit and Loss Account. When spoiled work is the result of rigid specifications the cost of spoiled work is absorbed by good production while the cost of disposal is charged to production overheads.

The problem of accounting for defective work is the problem of accounting of the costs of rectification or rework.

The possible ways of treatment are as below:

(i) Defectives that are considered inherent in the process and are identified as normal can be recovered by using the following methods:

  (a) *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.

  (b) *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.

(c) *Charged to the departments overheads:* If the department responsible for defectives can be identified then the rectification costs should be charged to that department.

(d) *Charged to Costing Profit and Loss Account:* If defectives are abnormal and are due to causes beyond the control of organisation; the rework cost should be charged to Costing Profit and Loss Accounts.

(ii) Where defectives are easily identifiable with specific jobs the re-work costs are debited to the job.

Procedure for the control of Spoilage and Defectives: To control spoilage, allowance for a normal spoilage should be fixed up and actual spoilage should be compared with standard set. A systematic procedure of reporting would help control over spoilage. A spoilage report (as below) would highlight the normal and abnormal spoilage, the department responsible, the causes of spoilage and the corrective action taken if any.

Spoilage Report

Units/Deptt. No..... Date.....

Production Order No.....

Units Produced	*Units spoiled*	*Normal spoilage*		*Abnormal spoilage*		*Cost of abnormal spoilage Rs.*	*Reason for spoilage*	*Action taken*
		Qty.	*%*	*Qty.*	*%*			

Control of defectives may cover the following two areas :

(a) Control over defectives produced

(b) Control over reworking costs.

For exercising effective control over defectives produced and the cost of reworking, standards for normal percentage of defectives and reworking costs should be established.

Actual performance should be compared with the standards set. Defective Work Report (as shown below:) should be fed back to the respective centres of control.

Defective Work Report

Dept. ..... Date: .....

Causes of defects .....

Nature of defects .....

Job/ Process No.	*Defective*		*Detail of work to be done*	*Re-work Costs*				*Unit cost of Re-working Rs.*	*Net good output after re-working*
	Normal	*Abnormal*		*Materials Rs.*	*Labour Rs.*	*OV Rs.*	*Total Ts.*		

(b) (a) Value of Material ASH consumed during the period

(i) 1-4-06 to 15-4-07 by using FIFO method

Date	*Description Units*	*Qty.*	*Rate*	*Amount*
		Rs.	*Rs.*	
1-4-07	Opening balance	100	5	500
5-4-07	Purchased	300	6	1,800
6-4-07	Issued	100	5	
		150	6	1,400
8-4-07	Purchased	500	7	3,500
10-4-07	Issued	150	6	
		250	7	2,650
12-4-07	Purchased	600	8	4,800
14-4-07	Issued	250	7	
		250	8	3,750
15-4-07	Balance	350	8	2,800

Total value of material ASH consumed during the period under FIFO method comes to (Rs. 1,400 + Rs. 2,650 + Rs. 3,750) Rs. 7,800 and balance on 15-4-07 is of Rs. 2,800.

Value of Material ASH consumed during the period

1-4-06 to 15-4-06 by using LIFO method

Date	*Description*	*Qty.* *Units*	*Rate* *Rs.*	*Amount* *Rs.*
1-4-07	Opening balance	100	5	500
5-4-07	Purchased	300	6	1,800
6-4-07	Issued	250	6	1,500
8-4-07	Purchased	500	7	3,500
10-4-07	Issued	400	7	2,800
12-4-07	Purchased	600	8	4,800
14-4-07	Issued	500	8	4,000
15-4-07	Balance	350	—	2,300*

Total value of material ASH issued under LIFO method comes to (Rs. 1,500 + Rs. 2,800 + Rs. 4,000) Rs. 8,300.

*The balance 350 units on 15-4-07 of Rs. 2,300, relates to opening balance on 1-4-07 and purchases made on 5-4-07, 8-4-07 and 12-4-07. (100 units @ Rs. 5, 50 units @ Rs. 6, 100 units @ Rs. 7 and 100 units @ Rs. 8).

(ii) As shown in (*a*) above, the value of stock of materials on 15-4-07:

Under FIFO method Rs. 2,800

Under LIFO method Rs. 2,300

(b) Total value of material ASH issued to production under FIFO and LIFO methods comes to Rs. 7,800 and Rs. 8,300 respectively. The value of closing stock of material ASH on 15-4-07 under FIFO and LIFO methods comes to Rs. 2,800 and Rs. 2,300 respectively.

The reasons for the difference of Rs. 500 (Rs. 8,300 – Rs. 7,800) as shown by the following table in the value of material ASH, issued to production under FIFO and LIFO are as follows:

Date	*Quantity Issued (Units)*	*Value FIFO Rs.*	*Total Rs.*	*Value LIFO Rs.*	*Total Rs.*
6-4-07	250	1,400		1,500	
10-4-07	400	2,650		2,800	
14-4-07	500	3,750	7,800	4,000	8,300

1. On 6-4-07, 250 units were issued to production. Under FIFO their value comes to Rs. 1,400 (100 units × Rs. 5 + 150 units × Rs. 6) and under LIFO Rs. 1,500 (250 × Rs. 6). Hence, Rs. 100 was more charged to production under LIFO.
2. On 10-4-07, 400 units were issued to production. Under FIFO their value comes to Rs. 2,650 (150 × Rs. 6 + 250 × Rs. 7) and under LIFO Rs. 2,800 (400 × Rs. 7). Hence, Rs. 150 was more charged to production under LIFO.
3. On 14-4-07, 500 units were issued to production. Under FIFO their value comes to Rs. 3,750 (250 × Rs. 7 + 250 × Rs. 8) and under LIFO Rs. 4,000 (500 × Rs. 8). Hence, Rs. 250 was more charged to production under LIFO.

Thus the total excess amount charged to production under LIFO comes to Rs. 500.

The reasons for the difference of Rs. 500 (Rs. 2,800 – Rs. 2,300) in the value of 350 units of Closing Stock of material ASH under FIFO and LIFO are as follows :

1. In the case of FIFO, all the 350 units of the closing stock belongs to the purchase of material made on 12-4-07, whereas under LIFO these units were from opening balance and purchases made on 5-4-07, 8-4-07 and 12-4-07.
2. Due to different purchase price paid by the concern on different days of purchase, the value of closing stock differed under FIFO and LIFO. Under FIFO 350 units of closing stock were valued @ Rs. 8 p.u. Whereas under LIFO first 100 units were valued @ Rs. 5 p.u., next 50 units @ Rs. 6 p.u., next 100 units @ Rs. 7 p.u. and last 100 units @ Rs. 8 p.u.

Thus under FIFO, the value of closing stock increased by Rs. 500.

5. (a) 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 either their high prices or 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 does 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 etc. 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, standardization 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 order for the items, belonging to this category may be placed after reviewing their situation periodically. This category of items can be controlled by routine control measures.

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

(b) (i) Determination of the level of safety stock to minimize expected stock out costs and carrying costs

Average daily usage

$$= \frac{\text{Annual demand}}{\text{No. of working days}}$$

$$= \frac{36{,}000 \text{ units}}{360 \text{ days}} = 100 \text{ units per day}$$

Re-order point = Average daily usage × Lead time

= 100 units per day × 6 days = 600 units

Possible safety stock level = Possible demand − Reorder point

Probability of demand during lead-time is

Demand during lead time	*No. of time quantity was demanded*	*Probability*
540	6	0.03
560	12	0.06
580	16	0.08
600	130	0.65
620	20	0.10
640	10	0.05
660	6	0.03
	200	1.00

Safety Stock level (units) (1)	*Demand realizations resulting in Stock-outs* (2)	*Stock-out in units* *(3)=(2) – 600 – (1)* (3)	*Prob. of stock-out* (4)	*Relevant stock-out cost* *(5)=(3)× 900* *(Rs.)* (5)	*No. of orders per year* (6)	*Expected stock-out* *(7)= (4)×(5) × (6)* (Rs.)	*Relevant carrying cost* *(8) = (1) × Rs.450* (Rs.)	*Total Relevant costs* *(9)=(7)+(8)* (Rs.)
0	620	20	0.10	18,000	10	18,000		
	640	40	0.05	36,000	10	18,000		
	660	60	0.03	54,000	10	16,200		
		–	–	–	–	52,200	0	52,200
20	640	20	0.05	18,000	10	9,000		
	660	40	0.03	36,000	10	10,800		
						19,800	9,000	28,800
40	660	20	0.03	18,000	10	5,400	18,000	23,400
60	Nil	Nil	–	–	–	0	27,000	27,000

Decision:

Safety stock of 40 units would minimize Himalaya Ltd.'s total expected stock-out and carrying cost.

(ii) **New Re-order Point** = ROL + Safety Stock

= 600 units + 40 units

= 640 units

(iii) Factors to consider in estimating stock-out cost

- expediting an order from supplier (additional. ordering cost plus any associated transportation cost).

Loss of sales due to stock out (opportunity cost in terms of lost contribution margin on the sales not made due to item not being in stock plus any contribution margin lost on future sales due to customer will be caused by the stock out.)

6. (a) Idle time: It refers to the labour time paid for but not utilised on production. Idle time thus represents the time for which wages are paid but no output is obtained. This is the period during which the workers remain idle. It arises due to various reasons. According to reasons, idle time can be classified into normal idle time and abnormal idle time. Normal idle time is the time which cannot be avoided or reduced in the normal course of business. For example, some labour time is bound to be lost due to the time taken by workers to cover the distance between the factory gate and the department or the actual work place where they are working. Some time also elapses between the finishing of one job and the starting of another job. Since a worker cannot work continuously for the whole day, sometime is required during which he attends to this personal needs, such as taking lunch or rest to avoid normal fatigue. It is thus obvious that normal idle time is unavoidable. Abnormal idle time may arise because of inefficiency, mischief and misfortune such as breakdown of machines for a long period, power failure, non-availability of materials, etc. generally, it is avoidable and controllable. However, abnormal idle time arising on account of strike, lockouts, floods, etc. may be uncontrollable. By proper care and caution abnormal idle time can be reduced or eliminated to a very great extent.

Idle facilities: The terms facilities has a wider connotation. It may include production capacity as well. Facilities may be provided by the fixed assets such as building space, plant/equipment capacity etc., or by various service functions such as material services, production services, personnel services etc., if a firm is not able to make full use of all these facilities then the firm may be said to have idle facilities. Thus, idle facilities refer to that part of total production facilities available which remain unutilized due to any reason such as non-availability of raw-material, etc. Idle facilities differ from idle time. A firm may have idle facilities even when it works full time; e.g., when facilities have been provided on too large a scale.

Treatment of idle time in Cost Accounting: Treatment of idle time in coast accounting depends upon its nature. The cost of normal idle time is charged to the cost of production. This may be done by inflating the labour rate or the normal idle time may be transferred to factory overhead for absorption through factory overhead absorption rate. In relative terms, the cost of normal idle time is generally nominal. As against normal idle time cost, the cost of abnormal idle time sometime may be quite substantial. Since these costs are beyond the control of the management and being abnormal in nature, they do not form part of cost of production. Therefore, payment for them is not included in cost of production and is transferred to costing profit and loss account.

Treatment of idle facilities in Cost Accounting: Normal idle facilities cost which arises due to unavoidable reasons, should be included in the works overhead. On the other hand, abnormal idle facilities cost which arises due to plants or machines/facilities remaining idle on account of trade depression or for want of work etc., should be written off to costing profit and loss account.

System of controlling idle time: The system of idle time control aims at controlling the time for which a worker has been paid but has not been utilised for productive purposes. Such a loss of time is know as idle time. The control of idle time requires the use of a proper system of recording the idle time, ascertaining its reasons for occurrence and initiating suitable administrative action to stop its reoccurrence.

To record the duration of idle time and to ascertain the reasons of its occurrence, the format given as below may be used. This format not only records the time paid for but also the standard time which a worker should take to produce a unit of output. The time actually paid on comparison with standard time may reveal the element of idle time, if any. After this the reasons for the occurrence of idle time should be ascertained and stated in the suitable column of the format. In this way a statement of labour time utilization is usually prepared. Such a statement is quite useful to the officers who are concerned with the control of idle time. In fact it serve as a sound basis for their actions to control idle time. Such a statement clearly points out to persons responsible for the control of idle time the reasons for the occurrence of idle time.

Finally, the concerned officer may suggest the remedial measures to minimize the occurrence of idle time in future.

(b) Statement of Earning

Worker	Actual output	% standard	Piece-rate earning	Production bonus	Total earning
(a)	(b)	$(c)=\frac{(b)}{2,000}\times 100$	(d) = (b) × Rs. 2	(e) = {(c) − 80} × Rs.100	(f) = (d) + (e) plus Rs. 300 DA
	Units		Rs.	Rs.	Rs.
Ram	1,700	85%	3,400	500	4,200
Shyam	1,500	75%	3,000	–	3,300
Mohan	1,900	95%	3,800	1,500	5,600

Shyam's performance being less than 80% no production bonus can be given to him.

7. (a) An incentive system should encourage workers to give there best. It should increase productivity and be simple to understand. Following are the important factors, which may be considered before introducing an incentive system:

(i) Nature of product

(ii) Quantitative measurement

(iii) Should cover all categories of workers.

(iv) The incentive system should be acceptable by all the labour trade unions

(v) Easy computation

(vi) No restriction on earrings

(vii) Minimum wages should be guaranteed.

(b) Computation of wages payable

		Worker Rio	**Worker Rayan**
	Rs.	*Rs.*	*Rs.*
Basic Wages		100	100
Dearness Allowance		50	55
(1) Overtime 10 hours @ Rs. 1.50		15	
Gross Wages		165	155
Less: Deductions			
Employees' contribution to provident Fund (8% on basic wages)	(8)		
Employees' contribution to E.S.I.	(2)	(10)	(10)
(2% on basic wages)			
Net wages Payable		155	145

Allocation of Labour Cost to Jobs

	Worker Rio	*Worker Rayan*
	Rs.	*Rs.*
Gross Wages (excluding overtime wages	150	155
Employer's contribution to P.F. and E.S.I.	10	10
	160	165
Normal working hours per month	200 hrs	200 hrs
Labour cost per hour	$\frac{160}{200}$ = Re.0.80	$\frac{165}{200}$ = 0.825

		Total	**Job A**	**Job B**	**Job C**
		Rs.	*Rs.*	*Rs.*	*Rs.*
Worker Rio	Ordinary wages	160.00	64.00	48.00	48.00
	Overtime wages	15.00		15.00	
Worker Rayan	Ordinary wages	165.00	82.50	33.00	49.50
		340.00	146.50	96.00	97.50

Working Notes:

	Calculation of overtime wages
	Rs.
Basic wages per month	100
Dearness allowance	50
	150
Normal working hours per month	200 hours

Normal rate per hour = $\frac{\text{Rs.}150}{200} = \text{Re.}0.75$

Therefore, overtime rate is Rs 1.50 because overtime is paid at double the normal rate. Overtime wages for 10 hours @ Rs 1.50 = Rs 15.

8. (a) Overtime: Work done beyond normal working hours is known as 'overtime work'. Overtime has to be paid in India at double the rate of wages including dearness allowance and the value of food concession, according to the Factories Act, 1948. This Act as stated earlier also lays down that a worker is entitled to overtime when he works for more than 9 hours on any day or more than 48 hours in a week.

Treatment of overtime premium in Cost Accounting : Under Cost Accounting the overtime premium is treated as follows :

(1) If overtime is resorted to at the desire of the customer, then overtime premium may be charged to the job directly.

(2) If overtime is required to cope with general production programmes or for meeting urgent orders, the overtime premium should be treated as overhead cost of the particular department or cost centre which works overtime.

(3) If overtime is worked in a department due to the fault of another department, the overtime premium should be charged to the latter department.

(4) Overtime worked on account of abnormal conditions such as flood, earthquake etc., should not be charged to cost, but to Costing Profit and Loss Account.

(b) Workings:

Computation of average inflated wage rate (including overtime premium) :

Basic wage rate	: Rs. 10 per hour	
Overtime wage rate before and after working hours	: Rs. 10 × 175%	= Rs. 17.50 per hour
Overtime wage rate for Sundays and holidays	: Rs. 10 × 225%	= Rs. 22.50 per hour
Annual wages for the previous year for normal time wages	: 1,00,000 hrs. × Rs. 10	= Rs. 10,00,000

For overtime before and after working hours	: 20,000 hrs. × Rs. 17.50	= Rs. 3,50,000
Wages for overtime on Sundays and holidays	: 5,000 hrs. × Rs. 22.50	= Rs. 1,12,500
Total wages for 1,25,000 hrs.		= Rs. 14,62,500
Average inflated wage rate	Rs.14,62,500 / 1,25,000 hours	= Rs. 11.70 per hour.

(a) ***Where overtime is worked regularly as a policy due to labour shortage***, the overtime premium is treated as a part of labour cost and job is charged at an inflated wage rate.

Hence,

Labour cost chargeable to job Z = Total hours × Inflated wage rate

= 1,125 hrs. × Rs. 11.70 = Rs. 13,162.50

(b) ***Where overtime is worked irregularly to meet the requirements of production***, basic wage rate is charged to the job and overtime premium is charged to factory overheads as under :

Labour cost chargeable to

Job Z : 1,125 hours @ Rs. 10 per hour	=	Rs. 11,250.00
Factory overhead : 100 hrs. × Rs. (17.50 – 10)	=	Rs. 750.00
25 hrs. × Rs. (22.50 – 10)	=	Rs. 312.50
Total factory overhead		Rs. 1,062.50

(c) ***Where overtime is worked at the request of the customer***, overtime premium is also charged to the job as under :

			Rs.
Job Z labour cost	1,125 hrs. @ Rs. 10	=	11,250.00
Overtime premium	100 hrs. @ Rs. (17.50 – 10)	=	750.00
	25 hrs. @ Rs. (22.50 – 10)	=	312.50
Total			12,312.50

9. (a) Step method: This method gives cognizance to the service rendered by service department to another service department, thus sequence of apportionments has to be selected. The sequence here begins with the department that renders service to the maximum number of other service department. After this, the cost of service department serving the next largest number of department is apportioned.

Reciprocal service method: This method recognizes the fact that where there are two or more service department, they may render service to each other and,

therefore, these inter department services are to be given due weightage while re-distributing the expense of service department. The methods available for dealing with reciprocal equation method are:

- Simultaneous equation method
- Repeated distribution method
- Trial and error method

(b) Direct Method: Scheduling department costs to be allocated to Assembly department is 30% of Rs. 40,000 = Rs. 12000

- Step Method: (allocating maintenance cost first)

(Rs.)

Particulars	Service Departments		Production Departments	
	Maintenance	Scheduling	Moulding	Assembly
Total overhead costs	75,000	40,000	37,800	27,600
Maintenance	(–)75,000	7,500	30,000	37,500
Scheduling	9,500	(–) 47,500	23,750	14,250
Maintenance	(–)9,500	950	3,800	4,750
Scheduling	190	(–)950	475	285
Maintenance	(–) 190	19	76	95
Scheduling	4	(–) 19	9	6
Maintenance	(–) 4	–	2	2
Total overheads	–	–	95,912	84,488

Reciprocal Method

Let 'M' be the overheads of maintenance Dept. and

'S' be the overheads of Scheduling Dept.

M = 75,000 + 0.2 S .....(1)

S = 40,000 + 0.1 M .....(2)

[By substituting equation on (2) in equation on (1)]

M = 75,000 + 0.2 (40,000 + 0.1 m)]

M = 75,000 + 8000 + 0.2 M

M – 0.02 = 75,000 + 8,000

M = 83,000 / 0.98

M = 84,694

S = 40,000 + (0.1 x 8,4694)

= 40,000 + 8,469

= 48,469

Allocation of overheads using reciprocal method

Particulars	*Service Departments*		*Production Departments*	
	Maintenance	*Scheduling*	*Moulding*	*Assembly*
Total overhead costs	75,000	40,000	37,800	27,600
	(–) 84,694	8,469	33,878	42,348
Maintenance	9,693	(–)48,469	24,234	14,540
Scheduling			95,912	84,488
Total				

10. Journal entries are as follows:

			Dr.	*Cr.*
			Rs.	*Rs.*
1.	Finished stock ledger Control A/c	Dr.	2,10,835	
	To Work-in-Progress Control A/c			2,10,835
2.	Manufacturing Overhead Control A/c	Dr.	91,510	
	To Cost Ledger Control A/c			91,510
3.	Stores Ledger Control A/c	Dr.	1,23,000	
	To Cost Ledger Control A/c			1,23,000
4.	(i) Wage Control A/c	Dr.	72,195	
	To Cost Ledger Control A/c			72,195
	(ii) Work-in-progress Control A/c	Dr.	50,530	
	To Wage Control A/c			50,530
	(iii) Manufacturing Overhead Control A/c	Dr.	21,665	
	To Wage Control A/c			21,665
5.	Cost of Sales A/c	Dr.	1,85,890	
	To Finished Stock Ledger A/c			1,85,890
6.	Work-in-Progress Control A/c	Dr.	1,27,315	
	To Stores Ledger Control A/c			1,27,315
7.	Finished Stock Ledger Control A/c	Dr.	5,380	
	To Cost of Sales A/c			5,380

8.	Cost Ledger Control A/c	Dr.	2,900	
	To Stores Ledger Control A/c			2,900
9.	Work-in-Progress Control A/c	Dr.	77,200	
	To Manufacturing Overhead Control A/c			77,200

COST LEDGER

Cost Ledger Control Account

		Rs.			*Rs.*
To	Stores Ledger Control A/c (return)	2,900	By	Balance b/d	6,65,220
To	Balance c/d	9,49,025	By	Manufacturing Overhead Control A/c	91,510
			By	Stores Ledger Control A/c	1,23,000
			By	Wage Control A/c	72,195
		9,51,925			9,51,925

Stores Ledger Control Account

		Rs.			*Rs.*
To	Balance b/d	3,01,435	By	Work-in-Progress Control A/c	1,27,315
To	Cost Ledger Control A/c	1,23,000	By	Cost Ledger Control A/c	2,900
			By	Balance c/d	2,94,220
		4,24,435			4,24,435

Work-in-Progress Control Account

		Rs.			*Rs.*
To	Balance b/d	1,22,365	By	Finished Stock Ledger Control A/c	2,10,835
To	Wage Control A/c	50,530	By	Balance c/d	1,66,575
To	Stores Ledger Control A/c	1,27,315			
To	Manufacturing Overhead Control A/c	77,200			
		3,77,410			3,77,410

Finished Stock Ledger Control Account

		Rs.			*Rs.*
To	Balance b/d	2,51,945	By	Cost of Sales A/c	1,85,890
To	Work-in-Progress Control A/c	2,10,835	By	Balance c/d	2,82,270
To	Cost of Sales A/c (return at cost)	5,380			
		4,68,160			4,68,160

Manufacturing Overhead Control Account

		Rs.			*Rs.*
To	Cost Ledger Control A/c	91,510	By	Balance b/d	10,525
To	Wage Control A/c	21,665	By	Work-in-Progress Control A/c	77,200
			By	Balance c/d (under recovered)	25,450
		1,13,175			1,13,175

Wage Control Account

		Rs.			*Rs.*
To	Cost Ledger Control A/c	72,195	By	Work-in-Progress Control A/c	50,530
			By	Manufacturing Overhead Control A/c	21,665
		72,195			72,195

Cost of Sales Account

		Rs.			*Rs.*
To	Finished Stock Ledger Control A/c	1,85,890	By	Finished Stock Ledger Control A/c (Return)	5,380
			By	Balance c/d	1,80,510
		1,85,890			1,85,890

Trial Balance

	Dr.	Cr.
	Rs.	*Rs.*
Stores Ledger Control A/c	2,94,220	
Work-in-Progress Control A/c	1,66,575	

Finished Stock Ledger Control A/c	2,82,270	
Manufacturing Overhead Control A/c	25,450	
Cost of Sales A/c	1,80,510	
Cost Ledger Control A/c	_____	9,49,025
	9,49,025	9,49,025

11. Statement showing the Cost and Profit per unit for each batch

		July	Aug.	Sept.	Total
(i)	Batch output (numbers)	12,500	15,000	10,000	37,500
(ii)	Total sales realization from (i) above @ Rs. 12	1,50,000	1,80,000	1,20,000	4,50,000
(iii)	Costs:				
	Material	62,500	90,000	50,000	2,02,500
	Labour	25,000	30,000	20,000	75,000
	Overheads (see working note)	37,500	30,000	30,000	97,500
	Total cost	1,25,000	1,50,000	1,00,000	3,75,000
(iv)	Profit (ii) – (iii)	25,000	30,000	20,000	75,000
(v)	Profit per unit (iv ÷ i)	2	2	2	
(vi)	Cost per unit (iii ÷ i)	10	10	10	

Profitability for 3,000 units

Sales value	(3,000 × Rs. 12)	Rs. 36,000
Less: Costs	(3,000 × Rs. 10)	Rs. 30,000
Profit		Rs. 6,000

Working Note: The batch labour cost for the month is given. The labour is paid @ Rs. 2 per hour. Thus, by dividing the batch labour cost with hourly rate, batch labour hours can be found out:

(a)	Batch labour hours	25,000 ÷ 2 = 12,500 hours	30,000 ÷ 2 = 15,000 hours	20,000 ÷ 2 = 10,000 hours
(b)	Overhead per hour (Total overheads ÷ Total labour hours)	1,20,000 ÷ 40,000 = Rs. 3	90,000 ÷ 45,000 = Rs. 2	1,50,000 ÷ 50,000 = Rs. 3
	Overhead for the batch (a × b)	Rs. 37,500	Rs. 30,000	Rs. 30,000

12. (a) Cost of work uncertified: It represents the cost of the work which has been carried out by the contractor but has not been certified by the contractee's architect. It is always shown at cost price. The cost of uncertified work may be ascertained as follows:

		Rs.
Total cost to date		—
Less: Cost of work certified	—	
Material in hand	—	
Plant at site	—	—
Cost of work uncertified		—

(b) Retention money: A contractor does not receive full payment of the work certified by the surveyor. Contractee retains some amount (say 10% to 20%) to be paid, after sometime, when it is ensured that there is no fault in the work carried out by contractor. If any deficiency or defect is noticed in the work, it is to be rectified by the contractor before the release of the retention money. Retention money provides a safeguard against the risk of loss due to faulty workmanship.

(c) Profit/loss on incomplete contracts: To determine the profit to be taken to Profit and Loss Account, in the case of incomplete contracts, the following four situations may arise:

(i) *Completion of contract is less than 25 per cent*: In this case no profit should be taken to profit and loss account.

(ii) *Completion of contract is upto 25 per cent or more than 25 per cent but less than 50 per cent*: In this case one-third of the notional profit, reduced in the ratio of cash received to work certified, should be transferred to the Profit and Loss Account. Mathematically:

$$\frac{1}{3} \times \text{Notional Profit} \times \frac{\text{Cash received}}{\text{Work received}}$$

(iii) *Completion of contract is upto 50 per cent or more than 50 per cent but less than 90 per cent*: In this case, two-third of the notional profit, reduced by proportion of cash received to work certified, is transferred to the Profit and Loss Account. Mathematically :

$$\frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash received}}{\text{Work received}}$$

(iv) *Completion of contract is upto 90 per cent or more than 90 per cent* i.e. *it is nearing completion*: In this case the profit to be taken to Profit and Loss Account is determined by determining the estimated Profit and using any one of the following formulas :

(a) $\text{Estimated Profit} \times \frac{\text{Work certified}}{\text{Contract price}}$

(b) $\text{Estimated Profit} \times \frac{\text{Work certified}}{\text{Contract price}} \times \frac{\text{Cash received}}{\text{Work certified}}$

OR

$\text{Estimated Profit} \times \frac{\text{Cash received}}{\text{Contract price}}$

(c) $\text{Estimated Profit} \times \frac{\text{Cost of work to date}}{\text{Estimated total cost}}$

(d) $\text{Estimated Profit} \times \frac{\text{Cost of work to date}}{\text{Estimated total cost}} \times \frac{\text{Cash received}}{\text{Work certified}}$

(e) $\text{Notional Profit} \times \frac{\text{Work certified}}{\text{Contract price}}$

(This formula may be preferably used in the absence of estimated profit figure).

It is preferable to use formula (b) in the absence of specific instructions.

(d) Cost plus Contract: Under Cost plus Contract, the contract price is ascertained by adding a percentage of profit to the total cost of the work. Such type of contracts are entered into when it is not possible to estimate the Contract Cost with reasonable accuracy due to unstable condition of material, labour services, etc.

Cost plus contracts have the following advantages and disadvantages:

Advantages:

(i) The Contractor is assured of a fixed percentage of profit. There is no risk of incurring any loss on the contract.

(ii) It is useful specially when the work to be done is not definitely fixed at the time of making the estimate.

(iii) Contractee can ensure himself about 'the cost of the contract', as he is empowered to examine the books and documents of the contractor to ascertain the veracity of the cost of the contract.

Disadvantages - The contractor may not have any inducement to avoid wastages and effect economy in production to reduce cost.

(e) Escalation Clause: If during the period of execution of a contract, the prices of materials, or labour etc., rise beyond a certain limit, the contract price will be increased by an agreed amount. Inclusion of such a clause in a contract deed is called an "Escalation Clause".

13. Working Notes:

(1) Calculation of Plant and tools used (1.1.2006 to 31.12.2006)

	Rs.
Plant and tools introduced on 1.1.2006	30,000
Less: Plant and tools sold during the year	3,450
	26,550
Less: Plant in hand on 31.12.2006	9,300
Plant and tools used during the year (1.1.2006 to 31.12.2006)	17,250

(2) Calculation of materials used (1.1.2006 to 31.12.2006)

	Rs.
Material introduced on 1.1.2006	1,08,000
Less: Cost of Materials sold during the year	18,000
	90,000
Less: Materials in hand on 31.12.2006	5,100
Materials used during the year (1.1.2006 to 31.12.2006)	84,900

(3) Calculation of Plant and tools used (1.1.2007 to 30.9.2007)

	Rs.
Plant and tools in hand on 1.1.2007	9,300
Add: Further Plant and tools introduced in 2007	37,500
	46,800
Less: Plant and tools residual on hand on 30.9.2007	4,500
Plant and tools used (1.1.2007 to 30.9.2007)	42,300

Calculation of materials used (1.1.2007 to 30.9.2007)

	Rs.
Material in hand on 1.1.2007	5,100
Materials introduced after 1.1.2007	1,02,900
Materials used during (1.1.2007 to 30.9.2007)	1,08,000

Calculation of Profit

Expenses during (1.1.2006 to 31.12.2006)	*Rs.*
Materials used	84,900
Plant and tools used	17,250
Wages	97,500

Sundry expenses	7,950
Establishment charges	17,550
Total (A)	2,25,150
Estimated expenses during 1.1.2007 to 30.9.2007	
Materials used	1,08,000
Plant and tools used	42,300
Wages	1,07,250
Further Contract expenses	9,000
Establishment charges (Rs. 17,550 × 9/12)	13,162.50
Total (B)	2,79,712.50
(A) + (B)	5,04,862.50
Total Expenditure	
Add: Provision for contingencies (Rs. 5,04,862.50 × 2.5/100)	12,621.56
Total estimated cost of Contract	5,17,484.05
Estimated Profit	82,515.94
Contract Price	6,00,000

Profit to be transferred to Profit and Loss A/c

$$= \text{Estimated Profit} \times \frac{\text{Work certified}}{\text{Contract Price}} = \text{Rs. } 82{,}515.94 \times \frac{\text{Rs. } 2{,}62{,}500}{6{,}00{,}000} = \text{Rs. } 36{,}100.7$$

Contract Account for the year ending 31st December, 2006

Particulars		*Rs.*	*Particulars*		*Rs.*
To	Plant & Tools	30,000	By	Cash (Materials sold)	21,750
To	Stores and Materials	1,08,000	By	Cash (Plant sold)	3,450
To	Wages	97,500	By	Plant and tools in hand	9,300
To	Sundry expenses	7,950	By	Stores and Materials	5,100
To	Establishment charges	17,550	By	Work-in-progress	
To	Profit and Loss A/c			Work certified	2,62,500
	(Profit on material sold)	3,750		$\left(\text{Rs. } 2{,}10{,}000 \times \frac{100}{80}\right)$	
To	Notional Profit c/d			Work certified	32,850
		70,200			
		3,34,950			3,34,950

To	Profit and Loss A/c (Transfer)	36,100.7	By	Notional Profit b/d		70,200
To	Work-in-Progress A/c (Reserve)	34,099.3				
		70,200				70,200
1.1.2007			1.1.2007			
To	Plant and tools	9,300	By	Work-in-Progress		34,100
To	Stores and Materials	5,100				
To	Work-in-Progress					
	Work certified	2,62,500				
	Work uncertified					
		32,850				

14. Process Account

Particulars		*Units*	*Amount*	*Particulars*		*Units*	*Amount*
			Rs.				*Rs.*
To	Units introduced	50,000	1,47,000	By	Normal loss @ Re. 1	1,500	1,500
To	Direct material		1,38,300	By	Abnormal loss*	1,200	6,960
To	Direct wages		65,550	By	Finished production*	39,300	3,65,490
To	Production overhead			By	Closing WIP*	8,000	51,600
			74,700				
		50,000	4,25,550			50,000	4,25,550

Abnormal Loss Account

Particulars		*Amount*	*Particulars*		*Amount*
		Rs.			Rs.
To	Process A/c	6,960	By	Scrap (120 × Re. 1)	1,200
			By	Profit and Loss A/c	5,760
		6,960			6,960

**See working notes.*

Working Notes:

This is a peculiar question of normal / abnormal loss involving use of equivalent concept. For valuation of abnormal loss, finished production and WIP, first of all equivalent units for them will have to be found out as under:

Statement showing equivalent units

Particulars		Input Materials		Direct wages		P. overheads	
		%	Units	%	Units	%	Units
Abnormal loss	1,200	66.67	800	33.33	400	16.67	200
Finished units	39,300	100.00	39,300	100.00	39,300	100.00	39,300
Clg. WIP	8,000	75.00	6,000	50.00	4,000	25.00	2,000
Total	48,500		46,100		43,700		41,500

Statement of Cost per Equivalent unit for each element

Particulars		*Cost*	*Equivalent Unit*	*Cost per unit*
		Rs.	*Rs.*	*Rs.*
Input material	1,47,000			
Less: Scrap realization	1,500	1,45,500	48,500	3.00
Materials added		1,38,300	46,100	3.00
Direct wages		65,550	43,700	1.50
Production overhead		74,700	41,500	1.80

Statement showing cost of Abnormal Loss, finished production and WIP

Particulars	Cost per unit	Equivalent units	Total cost
Abnormal Loss			
Input	1,200	3.00	3,600
Material added	800	3.00	2,400
Direct wages	400	1.50	600
Production overheads	200	1.80	360
			6,960
Finished Production			
Input	39,300	3.00	1,17,900
Material added	39,300	3.00	1,17,900
Direct wages	39,300	1.50	58,950
Production overheads	39,300	1.80	70,740
			3,65,490
Clg. WIP			
Input	8,000	3.00	24,000

Material added	6,000	3.00	18,000
Direct wages	4,000	1.50	6,000
Production overheads	2,000	1.80	3,600
			51,600

15. Operating Cost Sheet

		Rs.
Fixed Cost:		
	Salaries 800 × 12	9,600
	Gate-keepers 10 × 200 × 12	24,000
	Operators 2 × 400 × 12	9,600
	Clerks 4 × 250 × 12	12,000
	Administration Expenses	18,000
Depreciation:		
	Premises Rs. 6,00,000 ÷ 15	40,000
	Projector and Equipment 3,20,000 × 0.10	32,000
	Total Fixed Cost	1,45,200
Variable Costs:		
	Electricity and oil	11,655
	Carbon	7,235
	Miscellaneous expenses	5,425
	Advertisements	34,710
	Hire of print	1,40,700
	Total variable costs	1,99,725
	Total cost	3,44,925
Add:	30% return on gross proceeds or 3/7 of cost	1,47,825
	Gross Proceed	4,92,750
	Total man-shows (refer to calculation below)	9,85,500
	Cost per man-show	Rs. 0.50

Rate for each class:

Emerald circle cost per man-show × weightage i.e. 0.50 × 1 = Re. 0.50

Diamond circle cost per man-show × weightage i.e. 0.50 × 2 = Re. 1.00

Coral circle cost per man-show × weightage i.e. 0.50 × 3 = Rs. 1.50

Computation of man-shows with weightage (i.e. express all seats in terms of Janata):

Emerald Circle 250×1 =	250 seats
Diamond Circle 250×2 =	500 seats
Coral Circle 125×3 =	375 seats
	1,125 seats
No. of shows: 3	
$\therefore$ Total weighted seats = $1,125 \times 3$ =	3,375 seats
Less: 20% vacant seats	675
	2,700
Man-shows per annum = $2,700 \times 365$ =	9,85,500

Notes: 1. Management expects 30% return on gross proceeds.

Gross Proceeds	100
Return 30%	30
Cost	70

It means relation of return to cost = 3/7.

2. In this question, it is necessary to understand weightage concept. Whenever weightage is given, express the items having higher weightage in terms of item having lowest weightage so that all items can be expressed equally.

Total Costs	10,19,680	14,08,080	17,96,480
Profit (Sales – Variable Cost) – Fixed Cost	2,60,320	5,11,920	7,63,520

16. (a) Contribution = S – V = Rs. 200 – Rs. 100 = Rs. 100 per unit.

$$\text{B.E. Point} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} = \frac{40,00,000}{\text{Rs.}100} = 4,00,000 \text{ units}$$

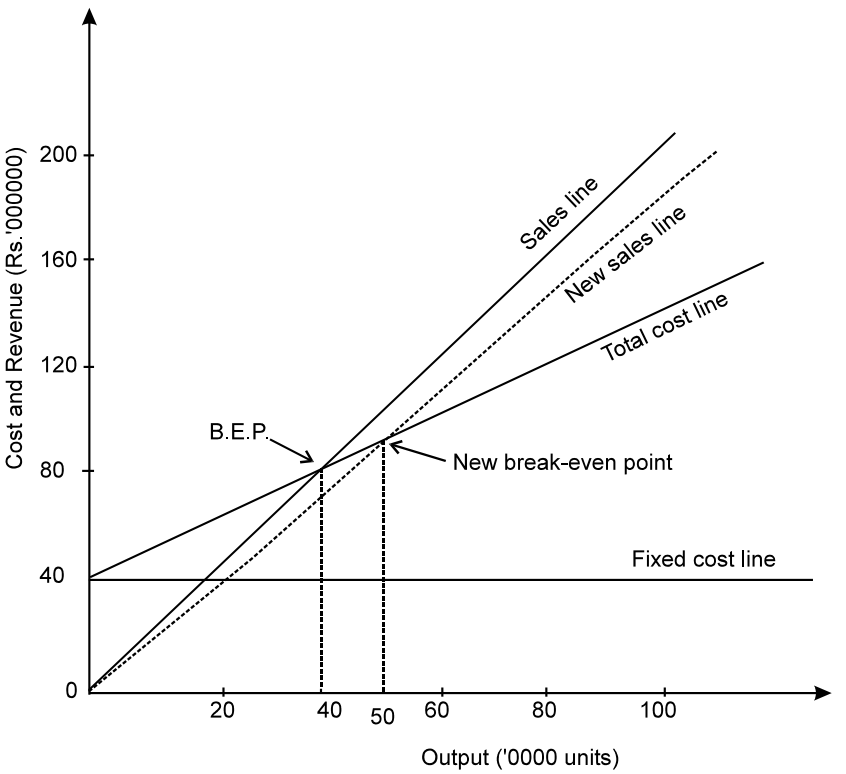
(b) When selling price is reduced

New selling price = Rs. 180

New Contribution = Rs. 180 – Rs. 100 = Rs. 80 per unit.

$$\text{New B.E. Point} = \frac{\text{Rs.}\,40,00,000}{\text{Rs.}\,80} = 5,00,000 \text{ units.}$$

The break-even chart is shown below:



Break-even chart

17. (a) Distinction between marginal and absorption costing:

The main points of distinction between marginal costing and absorption costing are as below:

	Marginal costing	Absorption costing
1.	Only variable costs are considered for product costing and inventory valuation.	Both fixed and variable costs are considered for product costing and inventory valuation.
2.	Fixed costs are regarded as period costs. The Profitability of different products is judged by their P/V ratio.	Fixed costs are charged to the cost of production. Each product bears a reasonable share of fixed cost and thus the profitability of a product is influenced by the apportionment of fixed costs.
3.	Cost data presented highlight the total contribution of each product.	Cost data are presented in conventional pattern. Net profit of each product is determined after subtracting fixed cost along with their variable costs.

4.	The difference in the magnitude of opening stock and closing stock does not affect the unit cost of production.	The difference in the magnitude of opening stock and closing stock affects the unit cost of production due to the impact of related fixed cost.

(b) It is given in the question that sales quantity in the two years remains the same. The question also does not mention about change in variable cost. Therefore, variable cost in two years will remain the same.

Variable cost in 2006–07 or 2007–08

Total contribution in 2006–07: S x P/V Ratio = C

Or Rs. 8,00,000 x 50% = Contribution

= Rs. 4,00,000

Sales – Variable cost of sale = Contribution

Rs. 8,00,000 – Variable cost of sale = Rs. 4,00,000

Variable cost of sale in two years = Rs. 4,00,000

(i) Sales for 2007–08

S x P/V Ratio = Contribution

Or Contribution in 2007-08 = 0.3755

and S – V = Contribution

Or S – Rs. 4,00,000 = 0.375 S (Variable cost does not change)

Or 0.625 S = Rs. 4,00,000 or S = Rs. 6,40,000

(ii) Margin of Safety as % of sales = 21.875%

Break-even Sales = 100- 21.875 = 78.125%

Break-even Sales x P/V Ratio = Fixed cost

(78.125% of Rs. 6,40,000) x 37.5% = Fixed cost

Or Fixed cost = Rs. 1,87,500

(iii) Break-even sales in 2007–08

= 6,40,000 x 0.78125

= Rs. 5,00,000

18. Working Notes:

1. Fixed overheads

	Rs.
Depreciation	1400
Salaries	1000
Total	2400

2. Variable cost per unit

   Shop Labour @ Rs. 0.25 per unit Consumable Stores @ Rs. 0.50 per unit

3. Semi Variable costs segregated into fixed and variable components

   i. Variable cost per unit = Change in cost / Change in volume

   ii. Fixed cost = Total cost – (No. of units × Variable cost per unit)

   Power

   Variable cost = (Rs. 1900 – Rs. 1700) / (3200 – 2400)
   = (Rs. 200) / 800
   = Rs. 0.25 per unit

   Fixed cost = 1700 – (2400Unit × 0.25)
   = 1700 – 600
   = 1100

   Repair and Maintenance

   Variable component = (Rs. 530 – Rs. 470) / (3200 – 2400)
   = (Rs. 60) / 800
   = Rs. 0.075 per unit

   Fixed cost = 470 – (2400 × 0.075)
   = 470 – 180 = 290

   Inspection

   Variable cost = (220- 180) / (3200 – 2400)
   = (Rs. 40) / 800
   = Rs. 0.05 per unit

   Fixed cost = Rs. 180 – (2400 × 0.05)
   = Rs. 180 – 120 = Rs. 60

Flexible Budget for Cost of Production				(Rs.)
Capacity level	70%	90%	100%	
Units produced	2800	3600	4000	
Production hours	280	360	400	
Direct material (@ Rs. 1 p.u.)	2800	3600	4000	
Direct wages (@ Rs. 4 per hour)	1120	1440	1600	
Prime cost Total (i)	3920	5040	5600	

Variable overheads				
Shop Labour	(@ Rs. 0.25 p.u.)	700	900	1000
Consumable Stores	(@ Rs. 0.50 p.u.)	1400	1800	2000
Power	(@ Rs. 0.25 p.u.)	700	900	1000
Repairs and Maintenance	(@ Rs. 0.075 p.u.)	210	270	300
Inspection	(@ Rs. 0.05 p.u.)	140	180	200
	Total (ii)	3150	4050	4500
Fixed Overheads				
Depreciation		1400	1400	1400
Salaries		1000	1000	1000
Power		1100	1100	1100
Repairs and maintenance		290	290	290
Inspection		60	60	60
	Total (iii)	3850	3850	3850
Total cost of production (i) + (ii) +(iii)		10920	12940	13950
Cost of Production per unit		3.9	3.59	3.49

Total overheads at 90% capacity	(Rs.)
Variable overheads	4050
Fixed overheads	3850
Total overheads	7900

i. Overhead absorption rate per unit = Rs. 7900/3600 = Rs. 2.19 per unit

ii. Overhead absorption rate per production hour = Rs. 7900/360 hrs.
= Rs. 21.94 per production hour

19.

Production Budget
For the six months ending Dec. 2002

	July units	August units	Sept. units	Oct. units	Nov. units	Dec. units	Total units
Estimated sales	1100	1100	1700	1900	2500	2300	
Add: Closing Stock	550	850	950	1250	1150	1000	
	1650	1950	2650	3150	3650	3300	
Less: Opening Stock	550	550	850	950	1250	1150	
Production	1100	1400	1800	2200	2400	2150	11050

20. Standard Quantity of materials for Actual Output:

X	6,000 × 2.5	15,000 units
Y	6,000 × 3	18,000 units
Z	6,000 × 15	90,000 units

Standard hours for Actual Output:

6,000 × 3	18,000 hours

Material Price Variance:

(Standard Price – Actual Price) × Actual Quantity

		Rs.	
X	(Rs. 4.00 – Rs. 4.40) × 12,500	5,000	A
Y	(Rs. 3.00 – Rs. 2.80) × 18,000	3,600	F
Z	(Re. 1.00 – Rs. 1.20) × 88,500	17,700	A
		19,100	A

Material Usage Variance:

(Standard Usage – Actual Usage) × Standard Price

		Rs.	
X	(15,000 – 12,500) × Rs. 4.00	10,000	F
Y	(18,000 – 18,000) × Rs. 3.00	Nil	
Z	(90,000 – 88,500) × Re. 1.00	1,500	F
		11,500	F

Labour Rate Variance:

(Standard Rate – Actual Rate) × Actual hours

	Rs.	
(Rs. 8.00 – Rs. 12.00) × 2,500	10,000	A
(Rs. 8.00 – Rs. 8.00) × 15,000	**Nil**	
	10,000	A

Labour Efficiency Variance:

(Standard hours – Actual hours) × Standard Rate

	Rs.	
(18,000 – 17,500) × Rs. 8.00	4,000	F

21. 1. Standard quantity

For 70 kg standard output

Standard quantity of material = 100 kg

2,10,000 kg. of finished products

= (2,10,000 x 100)/70

= 3,00,000 kgs.

2. Actual Price per kg. = Rs. 2,52,000 × 10 / 2,80,000

= Rs. 0.90

(a) Material Usage Variance (MUV) = (Standard Quantity – Actual Quantity) Standard Price

= (SQ – AQ) SP

= (3,00,000 – 2,80,000) Rs. 1

= 20,000 x Rs. 1

= Rs. 20,000 (Fav)

(b) Material Price Variance = (Standard Price – Actual Price) Actual Quantity

= (SP – AP) AQ

= (Rs.1 – Rs. 0.90) x 2,80,000

= Rs. 0.10 x 2,80,000

= Rs. 28,000 (Fav)

(c) Material Cost Variance (MCV) = (Standard Price x Standard Quantity for Actual Output) – (Actual Price x Actual Quantity)

= (Rs. 1 x 3,00,000) – (Rs. 0.90 x 280000)

= Rs. 3,00,000 – Rs. 2,52,000

= Rs. 48,000 (Fav)

Verification:

MCV = MPV + MUV

Rs. 48,000 (Fav) = Rs. 28,000 (Fav) + Rs. 20,000 (Fav)

22. (a) Defective Work' is the work output which does not meet out the prescribed laid down standard specifications. Such a situation may arise due to various causes, such as use of sub-standard materials, bad workmanship, carelessness in planning, laxity in inspection, etc. Defectives can be reworked or reconditioned by the application of additional material, labour and/or processing and may be brought to the point of either standard work/products or sub-standard products. Reworked units of defectives may be sold through regular channels as first or seconds as the case may be.

Cost Accounting treatment: It intact is concerned with the accounting for costs of their rectification and their nature as - normal or abnormal. The possible ways of treatment are as below:

1. When defectives are normal and it is not beneficial to try to identify them job wise, the following methods are generally used:
   (a) *Charged to good products*: The cost of rectification of normal defectives is charged to good units. This method is used when defectives rectified are normal.
   (b) *Charged to general overheads*: Where the department responsible for defective cannot be correctly identified, because defectives caused in one department are reflected only on further processing, the rework costs are charged to general overheads.
   (c) *Charged to departmental overheads*: If the department responsible for defectives can be correctly identified, the rectification costs should be charged to that department.
2. Where normal defectives are easily identifiable with specific jobs, the rework costs are debited to the jobs.
3. When defectives are abnormal and are due to causes within the control of the organisation, the rework cost should be charged to the costing profit and loss account.

(b) Committed fixed costs**,** are those fixed costs that arise from the possession of: (i) a plant, building and equipment (e.g. depreciation, rent, taxes, insurance premium etc.) or (ii) a functioning organisation (i.e. salaries of staff). These costs remain unaffected by any short-run actions. These costs are affected primarily by long-run sales forecasts that, in turn indicates the long-run capacity targets. Hence careful long range planning, rather than day-to-day monitoring, is the key to managing committed costs.

Discretionary fixed costs**,** (sometimes called managed costs or programmed costs). These costs have two important features:

(i) they arise from periodic (usually yearly) decisions regarding the maximum outlay to be incurred, and

(ii) they are not tied to a clear cause-and-effect relationship between inputs and

outputs. Examples of discretionary fixed costs includes - advertising, public relations, executive training, teaching, research, health care etc. These costs are controllable.

(c) (i) Cost of R & D project undertaken on behalf of a specific customer should not be treated as manufacturing overhead. It should be regarded as a separate profit centre. All expenses to meet such costs should be debited to "Outside R & D Project Account". Receipts against such requests are to be credited against this account.

(ii) Where research and development of products are undertaken on continuous basis the expenditure is treated as product costs. The cost of incomplete research project should be carried out continuously in order to retain company's place in the industry, the expenditure should be treated as general overhead. Some companies prefer to charge such costs of continuous research, to the Profit & Loss Account.

PART – II : FINANCIAL MANAGEMENT

QUESTIONS

(Replacement Cycles)

1. Truefi Plc is a company which employs a large number of software engineers each of which is supplied with a company car. Each engineer travels approximately 40,000 miles per annum visiting customers. Company wishes to continue its present policy of always buying new cars for the engineers but wonders whether the present policy of replacing the cars every three years is optimal. It believes that keeping the cars longer than three years would result in unacceptable unreliability and wishes to consider whether a replacement period of either one year or two years would be better than the present three-year period. The company's fleet of cars is due for replacement in the near future.

   The cost of a new car, at current prices, is Rs. 5,500. Resale values of used cars, which have traveled similar mileages to those of Stan's firm, are Rs. 3,500 for a one-year-old car, Rs. 2,100 for a two-year-old car and Rs. 900 for a three-year-old car, all at current prices. Running costs at current prices, excluding depreciation, are as follows:

	Road fund licence and insurance	Fuel, maintenance repairs, etc.
	Rs.	Rs.
During first year of car's life	300	3,000
During second year of car's life	300	3,500
During third year of car's life	300	4,300

   Truefi uses a discount rate of 10% when making such decisions.

   Running costs and resale proceeds are paid or received on the last day of the year to which they relate. New cars acquired for use from the start of year 1 are purchased on the last day of the previous year.

   Requirement:

   Prepare calculations for Truefi Plc showing whether he should replace the cars of engineers every one, two or three years.

   Note. Ignore taxation.

(Capital Structure)

2. (a) A company is considering a project with the following after-tax cashflows:

t	0	1	2	3
X_t	Rs. –1,50,000	Rs. 60,000	Rs. 60,000	Rs. 60,000

If the project is all-equity financed it has a required rate of return of 15%. To finance the project the firm issues a 4 years bond with face value of Rs. 1,00,000 and an interest rate of 5%. Remaining investments are financed by the firm's current operations. The corporate tax rate is 30%.

Determine the NPV of the project.

(b) A company issues a one year, zero coupon bond with face value of Rs. 25 million. The bond has an interest rate of 8%. The company is paying tax with 28%. Determine the value of the debt tax shield.

(Cash Management)

3. Ryan Coates owns a chain of seven clothes shops in the Mumbai. Takings at each shop are remitted once a week on Thursday evening to the head office, and are then banked at the start of business on Friday morning. The annual turnover is Rs. 19,50,000 at a constant daily rate and bank charge 11% for overdraft.

Assuming that Sunday as a holiday for bank i.e., Saturday taking could be banked only on the Monday. You are required to compute the Bank overdraft cost due to this delay.

(Working Capital Policy)

4. An engineering company is considering its working capital investment for the next year. Estimated fixed assets and current liabilities for the next year are respectively Rs. 2.60 crores and Rs. 2.34 crores. Sales and profit before interest and taxes (PBIT) depend on current assets investment – particularly inventories and book debts. The company is examining the following alternative working capital policies:

Working Capital Policy	*Investment in Current Assets (Rs. in crores)*	*Estimated Sales (Rs. in crores)*	*EBIT (Rs. in crores)*
Conservative	4.50	12.30	1.23
Moderate	3.90	11.50	1.15
Aggressive	2.60	10.00	1.00

Assuming that firm has chosen the moderate working capital policy (that is, investment of Rs. 3.90 crores in current assets). The company is now examining the use of long-term and short-term borrowing for financing its assets. The company will use Rs. 2.50 crores of equity funds. The corporate tax rate is 35 per cent. The company is considering the following debt alternatives:

Financing Policy	*Short-term Debt (Rs. in crores)*	*Long-term Debt (Rs. in crores)*
Conservative	0.54	1.12
Moderate	1.00	0.66
Aggressive	1.50	0.16

The average effective interest rate on short-term debt is 12 per cent while on long-term debt it is 16 per cent. Determine the following for each of the financing policies: (a) rate of return on shareholders' equity, (b) net working capital position, and (c) current ratio.

Also, evaluate the return-risk trade offs of these policies.

Expected return and risk are lowest under the conservative policy and highest under the aggressive policy. It implies that if the company wants more return it will have to incur more risk via its financing policy.

(Working Capital Ratios)

5. Calculate liquidity and working capital ratios from the following accounts of a manufacturer of products for the construction industry, and comment on the ratios.

	2008	*2007*
	Rs. '000	*Rs. '000*
Turnover	2,065.00	1,788.70
Cost of sales	1,478.60	1,304.00
Gross profit	586.40	484.70
Current Assets		
Stocks	119.00	109.00
Debtors (note 1)	400.90	347.40
Short-term investments	4.20	18.80
Cash at bank and in hand	48.20	48.00
	572.30	523.20
Creditors: amounts falling due within one year		
Loans and overdrafts	49.10	35.30
Provision for taxation	62.00	46.70
Dividend Payable	19.20	14.30
Creditors (note 2)	370.70	324.00
	501.00	420.30
Net current assets	71.30	102.90

Notes	*2008*	*2007*
	Rs. '000	*Rs. '000*
1. Trade debtors	329.80	285.40
2. Trade creditors	236.20	210.80

Note: Industry average : Current Ratio 1.5 and Quick Ratio is 1.0

(Cash budget)

6. You are presented with the following budgeted data for your organisation for the period November 2007 to June 2008. It has been extracted from functional budgets that have already been prepared.

	Nov 07	Dec 07	Jan 08	Feb 08	Mar 08	Apr 08	May 08	June 08
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Sales	80,000	1,00,000	1,10,000	1,30,000	1,40,000	1,50,000	1,60,000	1,80,000
Purchases	40,000	60,000	80,000	90,000	1,10,000	1,30,000	1,40,000	1,50,000
Wages	10,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000
Overheads	10,000	10,000	15,000	15,000	15,000	20,000	20,000	20,000
Dividends declared		20,000						40,000
Capital expenditure			30,000			40,000		

You are also provided with the following data:

Additional Information:

(a) Sales are 40% cash, 60% credit. Credit sales are paid two months after the month of sales.

(b) Purchases are paid in the month following the purchase.

(c) 75% of wages are paid in the current month and 25% in the following month.

(d) Overheads are paid in the month after they are incurred.

(e) Dividends are paid three months after they are declared.

(f) Capital expenditure is paid two months after it is incurred.

(g) The opening cash balance is Rs.15,000.

The managing director is pleased with the above figures as they show sales will have increased by more than 100% in the period under review. In order to achieve this he has arranged a bank overdraft with a ceiling of Rs. 50,000 to accommodate the increased stock levels and wage bill for overtime worked.

Required:

(a) Prepare a cash budget for the six month period January to June 2008.

(b) Comment upon your results in the light of your managing director's comments and give suggestions.

(Capital Budgeting)

7. Symphony Ltd. an existing company, are looking for a new project to manufacture pocket video games involving a capital expenditure of Rs. 60 lakhs and working capital of Rs. 15 lakhs. The capacity of the plant is for an annual production of 12 lakhs units and capacity utilization during the 6-years working life of the project is expected to be as indicated below:

Year	Capacity Utilisation %
1	33⅓%
2	66⅔%
3	90%
4-6	100%

The average price per unit of the product is expected to be Rs. 20 netting a contribution of 40%. Annual fixed costs, excluding depreciation, are estimated to be Rs. 48 lakhs per annum from the third year onwards; for first and second year it would be Rs. 24 lakhs and Rs. 36 lakhs respectively. The average rate of depreciation for tax purposes is 33⅓% on the capital assets. No other tax reliefs are anticipated. The rate of income-tax may be taken at 50%.

At the end of the third year, an additional investment of Rs. 10 lakhs would be required for working capital.

The company, without taking into account the effects of financial leverage, has targeted for a rate of return of 15%.

You are required to indicate whether the proposal is viable, giving your working notes and analysis.

The present value factors at 15% Discount rate, year-wise, are extracted below:

0.869, 0.756, 0.657, 0.571, 0.497, 0.432.

Terminal value for the fixed assets may be taken at 10% and for the current assets at 100%. Calculation may be rounded off to lakhs of rupees.

(Total Investment in Debtors)

8. Russi Beard Ltd. is considering a change of credit policy which will result in slowing down in the average collection period from one to two months. The relaxation in credit standards is expected to produce an increase in sales in each year amounting to 25% of the current sales volume.

	Rs.
Sales price per unit	10.00
Profit per unit (before interest)	1.50
Current sales revenue per annum	2.4 million

The required rate of return on investment is 20%.

Assume that the 25% increase in sales would result in additional stocks of Rs. 1,00,000 and additional creditors of Rs. 20,000. Advise the company on whether or not it should extend the credit period offered to customers, in the following circumstances.

(a) If all customers take the longer credit of two months.

(b) If existing customers do not change their payment habits, and only the new customers takes a full two month's credit.

(Gearing Ratio and Cost of Capital)

9. You have recently been contacted by a friend who is planning to make an investment in ABC Public Ltd. He has provided some accounting information and has a number of questions about the accounts.

The summarized balance sheet of ABC Public Ltd. as on 31st March, 2008 was as follows:

	Rs. in lakhs	*Rs. in lakhs*
Fixed assets		15,350
Current assets	5,900	
Creditors falling due within one year	(2,600)	
Net current assets		3,300
9% debentures		(8,000)
		10,650
Ordinary share capital (Rs. 25 per share)		2,000
7% preference shares (Rs. 100 per share)		1,000
Share premium account		1,100
Profit and Loss Account		6,550
		10,650

The current price of the ordinary shares is Rs. 135 ex-dividend. The dividend of Rs. 10 is payable during the next few days. The expected rate of growth of the dividend is 9% per annum. The current price of the preference shares is Rs. 77 and the dividend has recently been paid. The debenture interest has also been paid recently and the debentures are currently trading at Rs. 8,000 per Rs. 10,000 nominal. Assume that ABC Public Ltd. issued the debentures one year ago to finance a new investment. Corporation tax is at the rate of 30%.

(a) You would like to know how financially stable ABC is. You know from the newspapers that gearing is important so you would like to calculate how highly geared the company is. Would gearing be affected by using the market value of finance rather than the book value? If it would, then how.

(b) Calculate its cost of appraisal (its weighted average cost of capital).

(Right Issue)

10. (a) KBC Ltd. has a paid-up ordinary share capital of Rs. 15,00,000 represented by 60,000 shares of Rs. 25 each. It has no loan capital. Earnings after tax in the most recent year were Rs. 12,00,000. The P/E ratio of the company is 12.

The company is planning to make a large new investment which will cost Rs. 50,40,000, and is considering raising the necessary finance through a rights issue at Rs. 192.

Required:

(i) Calculate the current market price of KBC Ltd.'s ordinary shares.

(ii) Calculate the theoretical ex-rights price, and state what factors in practice might invalidate your calculation.

(b) As an alternative to a rights issue, KBC Ltd. might raise the Rs. 50,40,000 required by means of an issue of Convertible Debentures at par, with a coupon rate of 6%. The Debenture would be redeemable in seven years' time. Prior to redemption, the loan stock may be converted at a rate of 35 equity shares per Rs. 10000 Debentures.

Required:

Calculate the conversion premium at the date of issue implicit in the data given.

(Marketable Securities)

11. RT(P) Ltd. has forecast the following cash movements for the next six months.

	Rs.
Cash available now	20,00,000
Inflow in two months	40,00,000
Outflow in four months	20,00,000
Outflow in six months	40,00,000

Assume that all movements of cash take place on the last day of each two-month period.

The structure of short-term interest rates is as follows:

Current		Expected in 2 months		Expected in 4 months	
Maturity period	Annual yield	Maturity period	Annual yield	Maturity period	Annual yield
	%		%		%
2 months	7.3	2 months	8.0	2 months	8.3
4 months	7.4	4 months	8.1	4 months	8.4
6 months	7.5	6 months	8.2	6 months	8.3

The company invests surplus cash balances in marketable securities. Company policy is to hold such securities to maturity once they are purchased. Every purchase transaction of marketable securities costs Rs. 100.

Calculate which securities should be purchased to maximize income.

(Export Financing)

12. PQR Ltd. has been having some difficulty with the collection of debts from export customers. At present the company makes no special arrangements for export sales.

As a result the company is considering either employing the services of a non-recourse export factoring company, or insuring its exports against non-payment through an insurer. The two alternatives also provide possible ways of financing sales.

An export factor will, if required, provide immediate finance of 80% of export credit sales at an interest rate of 2% above bank base rate (the base rate is 8%). The service fee for debt collection is 3% of credit sales. If the factor is used, administrative savings of Rs. 35,000 a year should be possible.

A comprehensive insurance policy costs 35 paise per Rs. 100 insured and covers 90% of the risk of non-payment for exports. The insurer will probably allow PQR Ltd. to assign its rights to a bank, in return for which the bank will provide an advance of 70% of the sales value of insured debts, at a cost of 1.5% above base rate.

PQR's annual exports total Rs. 10,00,000. Export sales are on open account terms of 60 days credit, but on average payments have been 30 days late. Approximately 0.5%, by value, of credit sales result in bad debt which have to be written off. The company is able to borrow on overdraft from its bank, unsecured, at 2.5% above base rate. Assume a 360 days a year.

Recommend which combination of export administration and financing PQR Ltd. should use.

(Working Capital Requirement)

13. The sales of London Fumes (P) Ltd. for 2007 were Rs. 3,00,000. Sales for 2008 are expected to rise by 25%. You are to advise on the additional financing required to support the higher level of sales. The summary balance sheet of the company as at 31st March, 2007 is as follows:

	Rs.	Rs.
Fixed assets (net)		1,20,000
Current assets		
Stock	42,000	
Debtors	38,000	
Cash	12,000	

	92,000	
Current liabilities		
Creditors	(22,000)	
Working capital		70,000
		1,90,000
Debentures		(40,000)
Net assets		1,50,000
Financed by:		
Ordinary shares		1,00,000
Retained earnings		50,000
		1,50,000

Assume that except for fixed assets, debentures, retained earnings and ordinary shares, the balance sheet items vary directly with sales, and because of the rapid growth the company will need to spend around Rs. 50,000 on new capital investment and on replacement capital expenditure during 2008.

Earnings in 2007, before interest and tax, were 20% of sales, and this was after deducting depreciation of Rs. 12,000. The depreciation charge for 2008 is expected to remain the same. The interest rate on the debentures is 10%. The corporation tax rate is 40% and the company distributes as dividends 30% of available earnings.

Required:

(a) Determine the increased net working capital required to meet the higher sales level during 2008.

(b) Determine the company's total additional financial requirements for 2008.

(c) Estimate how much new external finance London Fumes (P) Ltd. is likely to require during 2008.

(Factoring)

14. The Shivant Ltd. sells goods on credit. Its current annual credit sales amount to Rs. 840 lakhs. The variable cost ratio is 80 per cent. The credit terms are 2/10, net 30. On the current level of sales, the bad debts are 0.70 per cent. The past experience has been that 50 per cent of the customers avail of the cash discount, the remaining customers pay on an average 50 days after the date of sale.

    The book debts (receivables) of the firm are presently being financed in the ratio of 2 : 1 by a mix of bank borrowings and owned funds which cost per annum 25 per cent and 28 per cent respectively.

As an alternative to the in-house management of receivables, Shivant Ltd. is contemplating use of full advance non-recourse factoring deal with the Indbank Factors Ltd. The main elements of such a deal structured by the factor are (i) factor reserve, 15 per cent; (ii) guaranteed payment date, 24 days after the date of purchase; (iii) discount charge, 22 per cent and (iv) commission for other services (payable up-front), 5 per cent of the value of receivables.

The finance manager of Shivant Ltd. seeks your advice, as a consultant, on the cost-benefit of the factoring arrangement. What advice would you give? You can make your own assumptions, where necessary.

(Short Questions)

15. (i) Write a short note on the evolution of Financial Management.

    (ii) Rs. 200 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the amount of this annuity after 10th payment? Given that $(1.005)^{10} = 1.0511$

    (iii) Differentiate among terms "Owners Equity", "External Equity" and "Equity".

    (iv) What do you mean by Stability Ratios.

    (v) Calculate the cost of equity capital of H Ltd., whose risk free rate of return equals 10%. The firm's beta equals 1.75 and the return on the market portfolio equals to 15%.

    (vi) Define briefly term "Trading on Equity".

    (vii) Give two examples of Spontaneous sources of finance.

    (viii) in what case IRR can be multiple.

    (ix) ABC grants credit terms of 60 days net to customer, but offer an early settlement discount of 2% for the payment within 7 days. What is the cost of discount to ABC.

    (x) Calculate return on equity from following data:

    Revenue: Rs. 29,261; Net Income: Rs. 4,212 ; Assets: Rs. 27,987; Shareholders' Equity: Rs. 13,572.

Differentiate between the following

16. (a) Annuity and Perpetuity

    (b) Fund Flow Statement and Cash Flow Statement

    (c) Weighted Average Cost of Capital and Marginal Cost of Capital

    (d) Concentration Banking and Lock Box System

    (e) Cash Credit and Overdraft

SUGGESTED ANSWERS / HINTS

1. Optimal replacement period

The effects of increasing running costs and decreasing resale value have to be weighed up against capital cost. Road fund licence etc. can be ignored, since Truefi will always pay Rs. 300 per year per car.

The following table is one of the quickest ways to reach an answer.

	Running cost	*PV of RC*	*Cum PV of RC*	*Resale value*	*PV of RV*	*NPV of car*	*PVAF*	*EAC*
	Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*		*Rs.*
Life 1	3,000	2,727	2,727	3,500	3,182	5,045*	0.909	5,550
Life 2	3,500	2,891	5,618	2,100	1,735	9,383	1.736	5,405
Life 3	4,300	3,229	8,847	900	676	13,671	2.487	5,497

*NPV = 5,500 (cost) + 2,727 (running cost) – 3,182 (resale value) = Rs. 5,045.

From the above table it can be seen that the optimal replacement period is every two years.

2. **(a)** Without the tax advantage:

T	0	1	2	3
C_t	–1,50,000	60,000	60,000	60,000

$$NPV = -Rs.1,50,000 + \frac{Rs.60,000}{(1+0.15)^1} + \frac{Rs.60,000}{(1+0.15)^2} + \frac{Rs.60,000}{(1+0.15)^3} = -Rs.13,006.50$$

Annual interest tax shield: = 0.3 × Rs. 5,000 = Rs. 1,500.

PV of tax shield

T	0	1	2	3	4
C_t	0	Rs. 1500	Rs. 1500	Rs. 1500	Rs. 1500

$$NPV = \frac{1500}{(1+0.05)^1} + \frac{1500}{(1+0.05)^2} + \frac{1500}{(1+0.05)^3} + \frac{1500}{(1+0.05)^4} = Rs.5318.93$$

Project NPV is

NPV = -13,006 + 5319 = - Rs. 7687.

(b) Value of debt tax shied = Rs. $2,50,00,000 \times \frac{8}{100} \times \frac{28}{100} = \text{Rs. } 5,60,000$

3. **(a)** A bank overdraft rate of 11% a year is approximately 11/365 = 0.03% a day.

(b) Annual takings of Rs. 19,50,000 would be an average of Rs. 19,50,000/312 = Rs. 6,250 a day for the seven shops in total, on the assumption that they opened for a 52 week year of six days a week (312 days).

(c) Using the approximate overdraft cost of 0.03% a day, the cost of holding Rs. 6,250 for one day instead of banking it, is 0.03% × Rs. 6,250 = Rs. 1.875.

(d) Banking all takings up to Thursday evening of each week on Friday morning involves an unnecessary delay in paying cash into the bank. The cost of this delay would be either:

(i) The opportunity cost of investment capital for the business, or

(ii) The cost of avoidable bank overdraft charges.

It is assumed here that the overdraft cost is higher and is therefore more appropriate to use. It is also assumed that, for interest purposes, funds are credited when banked.

Takings on	*Could be banked on*	*Number of days delay incurred by Friday banking*
Monday	Tuesday	3
Tuesday	Wednesday	2
Wednesday	Thursday	1
Thursday	Friday	0
Friday	Saturday	6
Saturday	Monday	4
		16

In one week, the total number of days delay incurred by Friday banking is 16. At a cost of Rs. 1.875 a day, the weekly cost of Friday banking was Rs. 1.875 × 16 = Rs. 30.00, and the annual cost of Friday banking was Rs. 30.00 × 52 = Rs. 1,560.

(e) **Conclusion:** The company could have saved about Rs. 1,560 a year in bank overdraft charges. If the overdraft rate remains at 11% and turnover continues to increase, the saving from daily banking would be even higher next year.

4. Effects of Alternative Financial Policies

		Financing Policies		
		Conservative	*Moderate*	*Aggressive*
		(Rs. in crores)	*(Rs. in crores)*	*(Rs. in crores)*
1.	Current Assets (CA)	3.90	3.90	3.90
2.	Fixed Assets (FA)	2.60	2.60	2.60
3.	Total Assets (TA)	6.50	6.50	6.50
4.	Current liabilities	2.34	2.34	2.34
5.	Short-term debt	0.54	1.00	1.50
6.	Long-term debt	1.12	0.66	0.16
7.	Equity capital	2.50	2.50	2.50
8.	Total capital (4 + 5 + 6 + 7)	6.50	6.50	6.50
9.	Forecasted sales	11.50	11.50	11.50
10.	Expected EBIT	1.15	1.15	1.15
11.	Interest: Short Term Debt	0.06	0.12	0.18
	Long Term Debt	0.18	0.11	0.03
12.	Profit before tax (10 – 11)	0.91	0.92	0.94
13.	Taxes @ 35%	0.32	0.32	0.33
14.	Profit after tax (12 – 13)	0.59	0.60	0.61
	(a) Return on equity (14 ÷ 7)	23.7%	23.9%	24.4%
	(b) Net working capital position [1 – (4 + 5)]	1.02	0.56	0.06
	(c) Current ratio [1 ÷ (4 + 5)]	1.35	1.17	1.02

Conclusion: The Company is advised to follow aggressive financing policy in view of higher profitability.

5.

	2008	*2007*
Current ratio	$\frac{572.30}{501.00} = 1.14$	$\frac{523.20}{420.30} = 1.24$
Quick ratio	$\frac{453.30}{501.00} = 0.90$	$\frac{414.20}{420.30} = 0.99$

Debtors' payment period	$\frac{329.80}{2{,}065.00} \times 365 = 58$ days	$\frac{285.40}{1{,}788.70} \times 365 = 58$ days
Creditors' turnover period	$\frac{236.20}{1{,}478.60} \times 365 = 58$ days	$\frac{210.80}{1{,}304.00} \times 365 = 59$ days
Stock turnover period	$\frac{119.00}{1{,}478.60} \times 365 = 29$ days	$\frac{109.00}{1{,}304.00} \times 365 = 31$ days

The company is a manufacturing group serving the construction industry, and so would be expected to have a comparatively lengthy debtors' turnover period, because of the relatively poor cash flow in the construction industry. It Is clear that the company compensates for this by ensuring that they do not pay for raw materials and other costs before they have sold their stocks of finished goods (hence the similarity of debtors' and creditors' turnover periods).

The company's current ratio is a little lower than average but its quick ratio is better than average and very little less than the current ratio. This suggests that stock levels are strictly controlled, which is reinforced by the low stock turnover period. It would seem that working capital is tightly managed, to avoid the poor liquidity which could be caused by a higher debtors' turnover period and comparatively high creditors.

6. (a)

	January Rs.'000	*February Rs.'000*	*March Rs.'000*	*April Rs.'000*	*May Rs.'000*	*June Rs.'000*
Sales revenue						
Cash (40%)	44	52	56	60	64	72
Credit (60%, 2 months)	48	60	66	78	84	90
	92	112	122	138	148	162
Purchases	60	80	90	110	130	140
Wages*	15	19	23	27	31	35
75%	12	15	18	21	24	27
25%	3	4	5	6	7	8
Overheads	10	15	15	15	20	20
Dividends			20			
Capital expenditure			30			40
	85	114	178	152	181	235

Opening Balance	15	22	20	(36)	(50)	(83)
Net cash flow	7	(2)	(56)	(14)	(33)	(73)
Closing Balance	22	20	(36)	(50)	(83)	(156)

(b) The overdraft arrangements are quite inadequate to service the cash needs of the business over the six-months period. If the figures are realistic then action should be taken now to avoid future uncertainties. The following are possible courses of action.

(i) Activities could be curtailed.

(ii) Other sources of cash could be explored, for example a long-term loan to finance the capital expenditure and a factoring arrangement to provide cash due from debtors more quickly.

(iii) Efforts could be made to increase the speed of debt collection.

(iv) Creditors' payments could be delayed.

(v) The dividend payments could be postponed (the figures indicate that this is a small company, possibly owner-managed).

(vi) Staff might be persuaded to work at a lower rate in return for, say, an annual bonus or a profit-sharing agreement.

(vii) Extra staff might be taken on to reduce the amount of overtime paid.

(viii) The stockholding policy should be reviewed; it may be possible to meet demand from current production and minimise cash tied up in stocks.

7. Workings:

(i) Calculation of depreciation:

Year	*Cost / Written down value*	*Deprecation at $33^{1/3}$% rounded off*
	Rs. Lakhs	*Rs. Lakhs*
1	60	20
2	40	13.3
3	26.7	8.9
4	17.8	5.9
5	11.9	4.0
6	7.9	2.6
Written down value at the end of year 6	5.3	

(ii) Computation of Cash Inflows and present values thereof:

Year	No. of units	Sales value (Rs. in lakhs)	Contri-bution (1)	Fixed costs (2)	Opera-ting profit (1) – (2) = (3)	Depreciation (4)	Taxable profit (3) – (4) = (5)	Tax at 50% (6)	Profit after tax (7) = (5) – (6)	Cash inflows (7) + (4)	Present value factors at 15%	Present value of cash inflows
1	4,00,000	80	32	24	8	20	(–)12	(–)6	(–)6	14	0.869	12.2
2	8,00,000	160	64	36	28	13.3	14.7	7.4	7.3	20.6	0.756	15.6
3	10,80,000	216	86.4	48	38.4	8.9	29.5	14.8	14.7	23.6	0.657	15.5
4	12,00,000	240	96	48	48	5.9	42.1	21.1	21	26.9	0.571	15.4
5	12,00,000	240	96	48	48	4	44	22	22	26	0.497	12.9
6	12,00,000	240	96	48	48	2.6	45.4	22.7	22.7	25.3	0.432	10.9
												82.5

(iii) Calculation of profit / loss on sale of fixed assets:

	Rs. in lakhs
Written down value of fixed assets	5.3
Terminal sale proceeds	6.0
Profit on sale	0.7
Tax @ 50% (rounded off)	0.4
Net sale proceeds (Rs. 6 lakhs – Rs. .4 lakhs)	5.6

Computation of Net present value for the project:

Inflows	*Rs. in lakhs*	*Rs. in lakhs*
Present value of 6-year cash inflows	82.5	
Present value of terminal cash inflows:		
(Working Capital Rs. 25 lakhs + Fixed Assets Rs. 5.6 lakhs i.e. Rs. 30.6 lakhs × 0.432)	13.2	95.7
Outflows		
Initial capital expenditure	60	
Initial working capital	15	
Present value of cash outflow of		
Rs. 10 lakhs on additional investment in working capital at the end of third year	6.6	81.6
(Rs. 10 lakhs × 0.657)		
Net present value		14.1

Conclusion: Since net present value is positive, the project is viable to the company.

Note: In above solution, the taxable profit in the first year is negative and a tax saving has been assumed. Alternatively, it may also be presumed that the loss is carried forward to the second year for adjustment and accordingly calculation may be made.

8. The change in credit policy would be justifiable, in the context of this question, if the rate of return on the additional investment in working capital exceeds 20%.

Extra profit

Profit margin $\frac{\text{Rs.1.50}}{\text{Rs.10}} =$ 15%

Increase in sales revenue Rs. 2.4m × 25%	Rs. 0.6 million
Increase in profit (15% × Rs. 0.6 m)	Rs. 90,000

The total sales revenue is now Rs. 3 m (Rs. 2.4 m + Rs. 0.6 m)

(a) Extra investment, if all debtors take two months credit.

	Rs.
Average debtors after the sales increase (2/12 × Rs. 3 million)	5,00,000
Current average debtors (1/12 × Rs. 2.4 million)	2,00,000
Increase in debtors	3,00,000
Increase in stocks	1,00,000
	4,00,000
Increase in creditors	(20,000)
Net increase in 'working capital'	3,80,000

$$\text{Return on extra investment} = \frac{\text{Rs. } 90{,}000}{\text{Rs. } 3{,}80{,}000} = 23.7\%$$

(b) Extra investment, if only the new debtors take two months credit.

	Rs.
Increase in debtors (2/12 × Rs. 0.6 million)	1,00,000
Increase in stocks	1,00,000
	2,00,000
Increase in creditors	(20,000)
Net increase in working capital investment	1,80,000

$$\text{Return on extra investment} = \frac{\text{Rs. } 90{,}000}{\text{Rs. } 1{,}80{,}000} = 50\%$$

In both cases, case (b) the new credit policy appears to be worthwhile.

Furthermore, the cost profile of the product can also support extra sales. If the firm has high fixed costs but low variable costs, the extra production and sales could provide a substantial contribution at little extra cost.

9. (a) The gearing ratio can be calculated using the following expression:

$$\text{Gearing} = \frac{\text{Debt}}{\text{Debt} + \text{equity}}$$

(i) Using book values:

	Book value
	Rs. '00,000
9% debentures	8,000
7% preference shares	1,000
	9,000
Equity:	
Ordinary share capital	2,000
Share premium account	1,100
Profit and loss account	6,550
	9,650

$$\text{Gearing} = \frac{9{,}000}{9{,}000 + 9{,}650} = 48.3\%$$

(ii) Using market values:

	Book value
	Rs. '00,000
9% debentures @ Rs. 8,000 per Rs. 10,000	6,400
7% preference shares @ Rs. 77 per Rs. 100	770
	7,170
Equity:	
Ordinary shares @ Rs. 135 per Rs. 25 nominal value	10,800

$$\text{Gearing} = \frac{7{,}170}{7{,}170 + 10{,}800} = 39.9\%$$

(b) The weighted average cost of capital (WACC) can be found using the following expression:

$$\text{WACC} = k_e \left[\frac{V_E}{V_E + V_P + V_D} \right] + k_{pref} \left[\frac{V_P}{V_E + V_P + V_D} \right] + k_{dnet} \left[\frac{V_D}{V_E + V_P + V_D} \right]$$

where,

k_e = cost of equity

k_{pref} = cost of preference shares

k_{dnet} = cost of debt (after tax)

V_E = market value of equity in the firm

V_P = market value of preference shares in the firm

V_D = market value of debt in the firm.

The next step is to calculate the cost of the different sources of capital in ABC Public Ltd.

Cost of equity (K_e)

This can be found using the dividend growth model:

$$k_e = \frac{d_0(1+g)}{P} + g$$

where,

d_o = current level of dividends

g = dividend growth rate in perpetuity

P_o = current market price of equity

$$k_e = \frac{10(1+0.09)}{135} + 0.09$$

= 17.1%

Cost of preference shares (k_{pref})

This can be found by dividing the preference dividend rate by the market price of the shares:

$$k_{pref} = \frac{7}{77}$$

= 9.1%.

Cost of debentures (k_{dnet})

The after tax cost of the debentures can be found using the following expression:

$$k_{dnet} = \frac{i(1-t)}{P_0}$$

Where,

i = rate of debentures interest

P_0 = market price of debentures

t = rate of corporation tax.

$$k_{dnet} = \frac{900(1-0.3)}{8,000}$$

= 7.9%.

The WACC can now be calculated:

$$WACC = \frac{(17.1 \times 10,800)}{17,970} + \frac{(9.1 \times 770)}{17,970} + \frac{(7.9 \times 6,400)}{17,970}$$

= 13.5%.

10. (a) (i) The current market price can be found by multiplying the earnings per share (EPS) by the price/earnings (P/E) ratio.

EPS is Rs. 12,00,000/60,000 = Rs. 20 per share.

P/E ratio is 12

Market price of shares is 12 × Rs. 20 = Rs. 240 per share.

(ii) In order to raise Rs. 50,40,000 at a price of Rs. 192, the company will need to issue an additional 26,250 (Rs. 50,40,000/Rs 192) shares.

Following the investment, the total number of shares in issue will be Rs. 86,250 (60,000 + 26,250).

At this point, the total value of the company will be:

(60,000 × Rs. 240) + Rs. 50,40,000 = Rs. 1,94,40,000.

The theoretical ex-rights price will therefore, be Rs. 1,94,40,000/86,250 = Rs. 225.39 say Rs. 225

Alternative solution:

Theoretical ex-rights price

$$= \frac{1}{N+1}\left[(N + \text{cum rights price}) + \text{issue price}\right]$$

$$= \frac{1}{\left(\frac{60,000}{26,250}\right)+1}\left(\left(\frac{60,000}{26,250} \times \text{Rs. } 240\right) + \text{Rs. } 192\right)$$

= Rs. 225.

Problems with calculations:

(1) The cost of arranging the issues have not been included in the calculations:

(2) The market view of the quality of the new investment will affect the actual price of the company's shares.

(3) If the issue is not fully subscribed and a significant number of shares remain with the underwriters, this will depress the share price.

(4) The effect of the new investment on the risk profile of the company and the expected future dividend stream could also cause the share price to differ from that predicted

(5) The price of the shares depends not only on the financial performance of the company, but also on the overall level of demand in the stock market. If the market moves significantly following the announcement of the issue,

this will affect the actual price at which the shares are traded.

(b) Conversion premium

In this case, Rs.10000 debenture can be converted into 35 equity shares. The effective price of these shares is therefore Rs. 286 (Rs. 10000/35) per share.

The current market price of the shares is Rs. 240. The conversion premium is therefore Rs. 286 – Rs. 240 = Re. 46. This can also be expressed in percentage terms as 19.17% (46/240).

11. Since interest rates are expected to rise, the best solution is likely to be one in which only short-term deposits are made, thus allowing advantage to be taken of the rise in rates. Options structured in this way include the following:

	Amount	*Month invested*	*Period (in months)*	*Rate*	*Value*
	Rs. '000				*Rs.*
1	2,000	0	2	7.3%	24,333
	6,000	2	2	8.0%	80,000
	4,000	4	2	8.3%	55,333
	Transaction costs				(300)
					1,59,366
2	2,000	0	4	7.4%	49,333
	4,000	2	4	8.1%	1,08,000
	Transaction costs				(200)
					1,57,133
3	2,000	0	4	7.4%	49,333
	4,000	2	2	8.0%	53,333
	4,000	4	2	8.3%	55,333
	Transaction costs				(300)
					1,57,699
4	2,000	0	2	7.3%	24,333
	2,000	2	2	8.0%	26,667
	4,000	2	4	8.1%	1,08,000
	Transaction costs				(300)
					1,58,700

5	2,000	0	6	7.5%	75,000
	2,000	2	4	8%	54,000
	2,000	2	2	8.0%	26,667
	Transaction costs				(300)
					1,55,367
6	2,000	0	6	7.5%	75,000
	4,000	2	2	8.0%	53,333
	2,000	4	2	8.3%	27,667
	Transaction costs				(300)
					1,55,700

It can be seen that option 1 yields the best return.

Above combinations are not exhaustive hence other combinations can also be possible.

12. PQR Ltd. has the following options:

(a) It can continue its existing policy.

(b) It can use the export factor, either in combination with its existing overdraft, or using the 80% finance offered by the factor.

(c) It can use the insurer with the assignment of policy rights (since cheaper finance is available at no extra cost).

It is assumed that all export debts will be financed by an overdraft or by special lending arrangements.

(a) Use of the export factor for debt collection only

	Rs.
Service fee (3% × Rs. 10,00,000)	(30,000)
Bad debts saved (by insurance) (0.5% × Rs. 10,00,000)	5,000
Administration costs saved	35,000
Net saving	10,000

(b) Use of the export factor for debt collection and finance

That there will be a saving in finance charges of 0.5% a year on 80% of the average debtors required:

	Rs.
Service fee for debt collection	(30,000)
Interest cost saved (2.5% – 2.00% = 0.5% × 80% × Rs. 10,00,000 × 90/360)	1,000
Bad debts saved	5,000
Administrative costs saved	35,000
Net saving	11,000

(c) Use of the insurer

If the insurer was used, there is a saving of 1% on 70% of the finance required, since 70% of finance will be obtained at just 1.5% above base rate, instead of 2.5% above base rate.

	Rs.
Insurance costs (0.35% × Rs. 10,00,000)	(3,500)
Savings in bank interest (1% × 70% × Rs. 10,00,000 × 90/360)	1,750
Savings in bad debts (90% × 0.5% × Rs. 10,00,000)	4,500
Net saving	2,750

Conclusion:

PQR Ltd. should use the services of the export factor, and obtain finance for 80% of export credit sales from the factor.

13. (a) Current net working capital needs (2007) is:

(Stock + debtors + cash) – creditors

= (Rs. 42,000 + Rs. 38,000 + Rs. 12,000) – Rs. 22,000

= Rs. 70,000

2008 allow for a 25% increase = Rs. 87,500.

(b) Capital expenditure + additional working capital

= Rs. 50,000 + Rs. 17,500 = Rs. 67,500

(c) Additional external financing = Additional financing – cash flow

Assume: No accruals or prepayments

No tax delay

No change in dividend policy

Then cash flow = retained profits + depreciation

Forecasted Profit and Loss A/c	*Rs. '000*
Sales (300 + 25%)	375
COGS (80% of sales)	(300)
Operating profit	75
Less: Interest (10% × Rs. 40,000)	(4)
Taxable profit	71
Corporation Tax (40%)	(28.4)
PAT	42.6
Dividend (30%)	(12.78)
Retained profit	29.82

Cash flow = Rs. 29,820 + Rs. 12,000 = Rs. 41,820.

Needed for a 25% increase in sales is Rs. 67,500 less Rs. 41,820 = shortfall of Rs. 25,680.

14. Relevant Costs: In-House Management Alternative

Relevant Costs	*Amount (Rs. in lakhs)*	
Cash discount	8.40	(Rs. 840 × 0.02 × 0.5)
Cost of funds in receivables	18.20	(working note 1)
Bad debt losses	5.88	(Rs. 840 × 0.0070)
	32.48	

Working Note:

1. Cost of funds invested in receivables:

Average collection period = (10 days × 0.5) + (50 days × 0.5) = 30 days

$$\text{Average investment in debtors} = \frac{\text{Rs. 840 lakhs}}{12} = \text{Rs. 70 lakhs}$$

Cost of bank funds = (Rs. 70 lakhs × 2/3 × .25) = Rs. 11.67 lakhs

Cost of owned funds = (Rs. 70 lakhs × 1/3 × 0.28) = Rs. 6.53 lakhs

Total cost = Rs. 11.67 lakhs + Rs. 6.53 lakhs

= Rs. 18.20 lakhs.

Decision Analysis : Non-recourse Factoring Alternative

Relevant Costs		*Amount (Rs. in lakhs)*
Factoring commission	42.00	(Rs. 840 × 0.05)
Discount charge	9.95	(working note 2)
Cost of owned funds invested in receivables	3.02	(Rs. 840 lakhs – Rs. 678.3 lakhs) × .28 × 24/360
Total	54.97	

Working Note:

2. Eligible amount of advance = 0.85 × (Rs. 840 lakhs – Rs. 42 lakhs) = Rs. 678.3 lakhs

Discount charge = (Rs. 678.3 lakhs × 0.22 × 24/360) = Rs. 9.9484 lakhs

Decision Analysis : Cost Benefit of Non-recourse Factoring

	Amount (Rs. in lakhs)
Benefits (savings of cost as per in-house management alternative)	32.48
Cost (of non-recourse factoring alternative)	54.97
Net loss	(22.49)

Recommendation: Shivant Ltd. should not go for the factoring alternative.

15. (i) The evolution of financial management is divided into three phases. Financial Management evolved as a separate field of study at the beginning of the century. The three stages of its evolution are:

The Traditional Phase: During this phase, financial management was considered necessary only during occasional events such as takeovers, mergers, expansion, liquidation, etc. Also, when taking financial decisions in the organisation, the needs of outsiders (investment bankers, people who lend money to the business and other such people) to the business was kept in mind.

The Transitional Phase: During this phase, the day-to-day problems that financial managers faced were given importance. The general problems related to funds analysis, planning and control were given more attention in this phase.

The Modern Phase: Modern phase is still going on. The scope of financial management has greatly increased now. It is important to carry out financial analysis for a company. This analysis helps in decision making. During this phase, many theories have been developed regarding efficient markets, capital budgeting, option pricing, valuation models and also in several other important fields in financial management.

(ii)

We have $A(n,i) = \frac{(1+i)^{n-1}}{i}$, i being the interest rate (in decimal) per payment period over n payment period.

Here, i = .06/12 = .005, n = 10.

Required amount is given by A = P.A (10, .005)

= 200 × 10.22 = Rs. 2,044.

(iii) *"Owners' Equity"* means share capital, both equity share capital and preference share capital and reserves and surplus. '*External Equity'* means all outside liabilities (inclusive of current liabilities and provisions). Also these are sometimes classified as equity and debt. '*Equity*' means shareholders fund and '*Debt*' means long term borrowed fund (so short-term loans, current liabilities and provisions are excluded).

(iv) These ratios concentrate on the long-term health of a business - particularly the effect of the capital/finance structure on the business.

Ratio	*Calculation*	*Comments*
Gearing	Borrowing (all long-term debts + normal overdraft)/ Net Assets (or Shareholders' Funds)	Gearing (otherwise known as "leverage") measures the proportion of assets invested in a business that are financed by borrowing. In theory, the higher the level of borrowing (gearing) the higher are the risks to a business, since the payment of interest and repayment of debts are not "optional" in the same way as dividends. However, gearing can be a financially sound part of a business's capital structure particularly if the business has strong, predictable cash flows.
Interest cover	Operating profit before interest / Interest	This measures the ability of the business to "service" its debt. Are profits sufficient to be able to pay interest and other finance costs?

(v) $K_e = R_f + b (R_m - R_f)$

$K_e = .10 + 1.75 (.15 - .10)$

$= .10 + 1.75 (.05)$

$= .1875$ or 18.75%

(vi) The term 'trading on equity' is derived from the fact that debts are contracted and loans are raised mainly on the basis of equity capital. Those who provide debt have a limited share in the firm's earnings and hence want to be protected in terms of

earnings and values represented by equity capital. Since fixed charges do not vary with the firms earnings before interest and tax, a magnified effect is produced on earnings per share. Whether the leverage is favourable in the sense increase in earnings per share more proportionately to the increased earnings before interest and tax depends on the profitability of investment proposals. If the rate of return on investment exceeds their explicit cost financial leverage is said to be positive.

However, the determination of optimal level of debt is a formidable task and is a major policy decision. Determination of optimal level of debt involves equalising between return and risk. Though, there are number of approaches to determine the level of debt, they cannot be considered as satisfactory and as such can serve only as a guideline. Whatever approaches may be followed for determining the optimal level of debt, the objective of maximising share price should be borne in mind.

(vii) (a) Trade Credit: It represents credit granted by suppliers of goods, etc., as an incident of sale. The usual duration of such credit is 15 to 90 days. It generates automatically in the course of business and is common to almost all business operations. It can be in the form of an 'open account' or 'bills payable'. Trade credit is preferred as a source of finance because it is without any explicit cost and till a business is a going concern it keeps on rotating. Another very important characteristic of trade credit is that it enhances automatically with the increase in the volume of business.

(b) Accrued Expenses and Deferred Income: Accrued expenses represent liabilities which a company has to pay for the services which it has already received. Such expenses arise out of the day to day activities of the company and hence represent a spontaneous source of finance.

(viii) Multiple Internal Rate of Return: In cases where project cash flows change signs or reverse during the life of a project e.g. an initial cash outflow is followed by cash inflows and subsequently followed by a major cash outflow , there may be more than one IRR.

(ix) ABC is offering customers the option of Paying Rs. 98 after seven days per Rs. 100 of sale, or payment in full after 60 days.

Using the formula:

$$\text{Cost of discount} = \left(\frac{100}{100-d}\right)^{\frac{365}{t}} - 1$$

$$= \left(\frac{100}{100-2}\right)^{\frac{365}{53}} - 1$$

= 14.9%.

(x) Net Profit Margin = Net Income (Rs. 4,212) ÷ Revenue (Rs. 29,261) = 0.1439, or 14.39% Asset Turnover = Revenue (Rs. 29,261) ÷ Assets (Rs. 27,987) = 1.0455 Equity Multiplier = Assets (Rs. 27,987) ÷ Shareholders' Equity (Rs. 13,572) = 2.0621

Finally, we multiply the three components together to calculate the return on equity:

Return on Equity= (0.1439) x (1.0455) x (2.0621) = 0.3102, or 31.02%

Analysis: A 31.02% return on equity is good in any industry. Yet, if you were to leave out the equity multiplier to see how much company would earn if it were completely debt-free, you will see that the ROE drops to 15.04%. In other words, for fiscal year 2004, 15.04% of the return on equity was due to profit margins and sales, while 15.96% was due to returns earned on the debt at work in the business. If you found a company at a comparable valuation with the same return on equity yet a higher percentage arose from internally-generated sales, it would be more attractive.

16. (a) Annuity and Perpetuity : An annuity is a stream of regular periodic payment made or received for a specified period of time. A recurring deposit with the bank is typical example of an annuity. The interest rate remains the same through out the period stream of cash flows.

Perpetuity is a stream of payments or a type of annuity that starts payments on a fixed date and such payments continue forever, or perpetually. Often preferred stock which pays a dividend is considered as a form of perpetuity. Perpetuity is an annuity in which the periodic payments begin on a fixed date and continue indefinitely.

(b) Fund Flow Statement Vs. Cash Flow Statement : Funds flow statement is based on the accrual accounting system. In case of cash flow statements only those transactions are considered which are affecting cash or cash equivalents .

Funds flow statement analyses the sources and application of funds of long-term nature and the net increase or decrease in long-term funds will be reflected on the working capital of the firm. The cash flow statement will only consider the increase or decrease in current assets and current liabilities in calculating the cash flow of funds from operations.

Funds Flow analysis is more useful for long range financial planning, whereas cash flow analysis is more useful for identifying and correcting the current liquidity problems of the firm.

Funds flow statement tallies the funds generated from various sources with various uses to which they are put. Cash flow statement starts with the opening balance of cash and reach to the closing balance of cash by proceeding through sources and uses.

(c) Weighted Average Cost of Capital (WACC) Vs Marginal Cost of Capital

weighted average cost of capital is the weighted average after tax costs of the individual components of firm's capital structure. That is, the after tax cost of each debt and equity is calculated separately and added together to a single overall cost of capital.

K_0 = % (Dmkt) (K_i) (1 – t) + (% Psmkt) K_p + (C_s mkt) Ke

Where,

K_0 = Overall cost of capital

K_i = Before tax cost of debt

1 – t = 1 – Corporate tax rate

K_p = Cost of preference capital

Ke = Cost of equity

% Dmkt = % of debt in capital structure

%Psmkt = % of preference share in capital structure

% Cs = % of equity share in capital structure.

The cost of weighted average method is preferred because the proportions of various sources of funds in the capital structure are different. The weighted average cost of capital for a firm is of use in two major areas: in considering the firm's position and in evaluation of proposed changes necessitating a change in the firm's capital.

The marginal cost of capital may be defined as the cost of raising an additional rupee of capital. Since the capital is raised in substantial amount in practice marginal cost is referred to as the cost incurred in raising new funds. Marginal cost of capital is derived, when the average cost of capital is calculated using the marginal weights. The marginal weights represent the proportion of funds the firm intends to employ. To calculate the marginal cost of capital, the intended financing proportion should be applied as weights to marginal component costs. The marginal cost of capital should, therefore, be calculated in the composite sense.

(d) Concentration Banking and Lock Box System : In concentration banking the company establishes a number of strategic collection centres in different regions instead of a single collection centre at the head office. This system reduces the period between the time a customer mails in his remittances and the time when they become spendable funds with the company. Payments received by the different collection centers are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of head office. The concentration bank with which the company has its major bank account is generally

located at the headquarters. Concentration banking is one important and popular way of reducing the size of the float.

Another means to accelerate the flow of funds is a lock box system. While concentration banking, remittances are received by a collection centre and deposited in the bank after processing. The purpose of lock box system is to eliminate the time between the receipt of remittances by the company and deposited in the bank. A lock box arrangement usually is on regional basis which a company chooses according to its billing patterns.

(e) Cash Credit and Bank Overdraft: Cash credit facility is given by the banker to its customers by giving a certain amount of credit facility on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank. He is not required to borrow the entire sanctioned amount at once rather he can draw periodically to the extent of his requirements and interest is payable on the amount actually utilized

Bank overdraft is a short-term borrowing facility made available to the companies in case of urgent need of funds. A borrower is allowed to withdraw fund in excess of the balance in his current account upto a specified limit during a stipulated period. The banks issue overdrafts with a right to call them in at short notice.