

PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART – I : COST ACCOUNTING

QUESTIONS

Material : EOQ

1. (i) The average annual consumption of a material is 18,250 units at a price of Rs.36.50 per unit. The storage cost is 20% on an average inventory and the cost of placing an order is Rs.50. How much quantity is to be purchased at a time?

Labour : Halsey plan

- (ii) The time allowed for a job is 8 hours. The hourly rate is Rs.8. Prepare a statement showing :
- (a) The bonus earned
 - (b) The total earnings of labour and
 - (c) Hourly earnings.

Under the Halsey System with 50% bonus for time saved and Rowan System for each hour saved progressively.

Standard Costing

- (iii) If activity ratio of a company is 104% and its capacity ratio is 96%, find out its efficiency ratio.

Material : Inventory Turnover Ratio

- (iv) 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	2,70,000
Closing stock	1,10,000

Calculate: (i) Inventory turnover ratio; and (ii) the number of days for which the average inventory is held.

Operating Costing

- (v) A lorry starts with a load of 20 tonnes of goods from station A. It unloads 8 tonnes at station B and rest of goods at station C. It reaches back directly to station A after

getting reloaded with 16 tonnes of goods at station C. The distance between A to B, B to C and then C to A are 80 kms., 120 kms., and 160 Kms. respectively. Compute 'Absolute tonnes-kms' and 'Commercial tonnes – kms.'

Labour : Rate per hour and wages

- (vi) An employee working under a bonus scheme saves in a job for which the standard time is 60 hours. Calculate the rate per hour worked and wages payable to a worker if incentive bonus of 10% on hourly rate is payable when standard time, namely 100% efficiency is achieved, and a further incentive bonus of 1% on hourly rate for each 1% in excess of that 100% efficiency is payable.

Assume that the normal payment is Rs.5 per hour.

Marginal Costing : Margin of Safety

- (vii). A company earned a profit of Rs. 30,000 during the year 2007-08. If the marginal cost and selling price of a product are Rs. 8 and Rs. 10 per unit respectively, find out the amount of 'Margin of Safety'.

Application of Marginal Costing and Flexible Budget

- (viii) 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.

Marginal Costing : Break – Even point

- (ix) A company sells its product at Rs. 15 per unit. In a period, if it produces and sells 8,000 units, it incurs a loss of Rs. 5 per unit. If the volume is raised to 20,000 units, it earns a profit of Rs. 4 per unit. Calculate break-even point both in terms of rupees as well as in units.

Process Costing

- (x) In Akanksha Ltd raw material passes through four processes A, B, C and D and the output of each process is the input of the subsequent process. The loss in the four processes A, B, C and D are respectively 25%, 20%, 20% and 16% of the Input. If the end product at the end of process D is 40,000 kgs, what is the quantity of raw materials required along with its cost to be fed at the beginning of Process A when the cost of the same is Rs.5 per kg.

Introduction to Cost Accounting

2. Explain the following terms:

- (i) Direct Cost

- (ii) Marginal Cost
- (iii) Responsibility Centre
- (v) Cost absorption
- (v) Imputed costs
- (vi) Out -of- Pocket Cost
- (vii) Shut Down Costs
- (viii) Sunk costs
- (ix) Discretionary Costs
- (x) Engineered costs

Material : FIFO/LIFO

3. 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 :

- (i) Calculate using FIFO and LIFO methods of pricing issues (you may assume a nil opening and closing balance of stock on the production floor):
 - (a) the value of raw materials consumed during the period
 - (b) the value of stock of raw materials on 15-4-07.
- (ii) Explain why the figures in (a) and (b) in part i of this question are different under the two methods of pricing of raw material issues used. You need not draw up the Stores Ledgers.

Material : Material Control and EOQ

4. (i) Explain the meaning of Material Control and give the objectives of material control system.
- (ii) A Company manufactures a special product which requires a component .Alpha. The following particulars are collected for the year 2008 :

- 1 Annual demand of Alpha 8,000 units
- 2 Cost of placing an order Rs.200 per order
- 3 Cost per unit of Alpha Rs.400
- 4 Carrying cost % p.a. 20%

The company has been offered a quantity discount of 4 % on the purchase of Alpha provided the order size is 4,000 components at a time.

Required :

- (a) Compute the economic order quantity
- (b) Advise whether the quantity discount offer can be accepted.

Labour : Allocation of Earnings to Jobs

5. 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.

Labour : Incentive System & Bonus Plan

6. (i) What are the main factors that should be taken into account before introducing a scheme of incentives?
 - (ii) Two workmen, .A. and .B., produce the same product using the same material. Their normal wage rate is also the same. .A. is paid bonus according to the Rowan system, while .B. is paid bonus according to the Halsey system. The time allowed to make the product is 50 hours. .A. takes 30 hours while .B. takes 40 hours to complete the product. The factory overhead rate is Rs.5 per man-hour actually worked. The factory cost for the product for .A. is Rs.3,490 and for .B. it is Rs.3,600.
- Required :
- (a) Compute the normal rate of wages;
 - (b) Compute the cost of materials cost;
 - (c) Prepare a statement comparing the factory cost of the products as made by the two workmen.

Overheads : Overhead Rates and Over/Under Absorption of Overheads

7. A cost centre in a factory furnishes the following working conditions:

Normal working week	40 hours
Number of machines	15
Normal weekly loss of hours on maintenance, etc.	4 hours per machine
Estimated annual overhead	Rs. 1,55,520
Estimated direct wage rate	Rs. 3 per hour
Number of weeks worked per year	48
Actual results in respect of a 4–week period are:	
Overhead incurred	Rs. 15,000
Wages incurred	Rs. 7,000
Machine-hours produced	2,200

You are required to:

- (i) Calculate the overhead rate per machine-hour, and
- (ii) Calculate the amount of under or over-absorption of both wages and overhead.

Overheads : Concept of Capacity

8. Explain the following concepts relating to capacity:

- (i) Rated capacity
- (ii) Practical capacity
- (iii) Normal capacity
- (iv) Idle capacity

Non : Integrated Accounting

9. As on 31st March, 2008, the following balances existed in a firm's Cost Ledger :

	Dr. Rs.	Cr. Rs.
Stores Ledger Control A/c	3,00,000	
Work-in-Progress Control A/c	1,20,000	
Finished Stock Ledger Control A/c	2,50,000	
Manufacturing Overhead Control A/c		10,000
Cost Ledger Control A/c	<u>6,70,000</u>	<u>6,60,000</u>
		<u>6,70,000</u>

During the next three months the following items arose:

	Rs.
Finished product (at cost)	2,10,000
Manufacturing overhead incurred	90,000
Raw materials purchased	1,23,000
Factory Wages	50,000
Indirect Labour	21,000
Cost of Sales	1,85,000
Material issued to production	1,27,000
Sales returned at Cost	5,000
Material returned to suppliers	3,000
Manufacturing overhead charged to production	77,000

You are required to pass Journal Entries and prepare Trial Balance.

Job Costing

10. ABC Ltd specialises in producing and packaging compact discs (CDs) for the music recording industry. ABC Ltd uses a job order cost system. The following data summarise the operations related to production for March, the first month of operations:

- (a) Materials purchased on account, Rs. 15,500.
- (b) Materials requisitioned and labour used:

	Materials	Factory Labour
	Rs.	Rs.
Job No. 100	2,650	1,770
Job No. 101	1,240	650
Job No. 102	980	420
Job No. 103	3,420	1,900
Job No. 104	1,000	500
Job No. 105	2,100	1,760
For general factory use	450	650

- (c) Factory overhead costs incurred on account, Rs. 2,700.
- (d) Depreciation of machinery, Rs. 1,750.
- (e) Factory overhead is applied at a rate of 70% of direct labour cost.
- (f) Jobs completed: Nos. 100, 101, 102, 104.
- (g) Jobs 100, 101 and 102 were shipped, and customers were billed for Rs. 8,100, Rs. 3,800, and Rs. 3,500 respectively.

Instructions:

- (i) Journalise the entries to record the transactions identified above.
- (ii) Determine the account balances for Work in Process and Finished Goods.
- (iii) Prepare a schedule of unfinished jobs to support the balance in the work in process account.
- (iv) Prepare a schedule of completed jobs on hand to support the balance in the finished goods account.

Contract Costing

11. ABC Ltd is a construction company, which has undertaken three contracts. Information for the previous year along with other details is provided to you below;

	Contract A (Rs.000).	Contract B (Rs.000).	Contract C (Rs.000)
Contract price	1,760	1,485	2,420
Balances brought forward at the beginning of the year:			
Material on site		20	30
Written down value of plant and machinery		77	374
Wages accrued		5	10
Transactions during previous year:			
Profit previously transferred to profit and loss a/c			35
Cost of work certified (cost of sales)		418	814
Transactions during current year:			
Material delivered to site	88	220	396
Wages paid	45	100	220
Salaries and other cost	15	40	50
Written down value of plant issued to site	190	35	
Head office expenses apportioned during the year	10	20	50
Balances c/fwd at the end of the year:			
Material on site	20		
Written down value of plant and machinery	150	20	230
Wages accrued	5	10	15
Value of work certified at the end of the year	200	8 60	2100
Cost of work not certified at the end of the year			55

The agreed retention rate is 10% of the value of work certified by the contractee's architect. Contract C is scheduled to be handed over to the contractee in the near future. It is estimated that Rs 3,05,000 shall be needed to be spent in addition to what has been tabulated above to complete this particular contract. This amount includes an allowance for plant depreciation, construction services and for contingencies.

You are required to prepare contract accounts for each of the three contracts and recommend how much profit or loss should be taken up for the year.

Process Costing : Statement of Equivalent Production, Cost & Distribution Cost

- Following details are related to the work done in Process 'A' XYZ Company during the month of March, 2007 :

	(Rs.)
Opening work-in progress (2,000 units)	
Materials	80,000
Labour	15,000
Overheads	45,000
Materials introduced in Process 'A' (38,000 units)	14,80,000
Direct Labour	3,59,000
Overheads	10,77,000

Units scrapped : 3,000 units

Degree of completion :

Materials	100%
Labour and overheads	80%

Closing work-in progress : 2,000 units

Degree of completion :

Materials	100%
Labour and overheads	80%

Units finished and transferred to Process 'B' : 35,000 units

Normal Loss :

5% of total input including opening work-in-progress.

Scrapped units fetch Rs.20 per piece.

You are required to prepare :

- (i) Statement of equivalent production
- (ii) Statement of cost
- (iii) Statement of distribution cost, and
- (iv) Process 'A' Account, Normal and Abnormal Loss Accounts.

Process Costing : Process Cost and Finished Stock Account with Profit Element

13. Ivoke Co Ltd. produces product ABC which passes through two processes before it is completed and transferred to finished stock. The following data relate to October 2008.

Particulars	Processes		Finished Stock
	I	II	
Opening stock	Rs.3,750	Rs.4,500	Rs.11,250

Direct materials	15,000	15,750	–
Direct wages	11,200	11,250	–
Factory overheads	10,500	4,500	–
Closing Stock	3,700	4,500	–
Inter-process profit included in opening stock		1,500	2250

Output of Process I is transferred to Process II at 25% profit on the transfer price.

Output of Process II is transferred to finished stock at 20% profit on the transfer price. Stocks in process are valued at prime cost. Finished stock is valued at the price at which it is received from Process II. Sales during the period is Rs.120,000

Required-Process Cost Accounts and Finished Stock Account showing the profit element at each stage.

Operating Costing

14. Kirti Health Care Center consists of 20 beds. Unit is open for 300 days in a year. For 200 days, the unit has the full capacity of 20 patients per day and for balance 100 days, it has an average 16 beds only occupied per day.

Following are the expenses:

Rs.

Rent	15,000/- p.m.
Repair & Maintenance (fixed)	10,000/-
Food supplied to patients (variable)	72,000/-
Laundry charges (variable)	36,000/-
Medicines (variable)	60,000/-
Other expenses (fixed)	72,000/-
2 supervisor (each salary)	2,000/- p.m.
4 nurses (each salary)	2,000/- p.m.
2 ward boys (each salary)	1,000/- p.m.

The unit engaged expert doctors from outside to attend the patients and the fees were paid to them on an average of Rs. 2,0000 per month. Fees of expert doctors were paid on the basis of number of patients attended by them.

Required:

- Charge per day per patient to earn a profit of 100% on cost.
- Number of patient days required by the unit to break even assuming above charge per patient day.

Operating Costing

15. Mr. X owns a bus which runs according to the following schedule:

- (a) Delhi to Chandigarh and back, the same day.

Distance covered: 150 kms. one way.

Number of days run each month : 8

Seating capacity occupied 90%.

- (b) Delhi to Agra and back, the same day.

Distance covered: 120 kms. one way.

Number of days run each month : 10

Seating capacity occupied 85%.

- (c) Delhi to Jaipur and back, the same day.

Distance covered: 270 kms. one way.

Number of days run each month : 6

Seating capacity occupied 100%.

- (d) Following are the other details:

Cost of the bus	Rs. 6,00,000
Salary of the Driver	Rs. 2,800 p.m.
Salary of the Conductor	Rs. 2,200 p.m.
Salary of the part-time Accountant	Rs. 200 p.m.
Insurance of the bus	Rs. 4,800 p.a.
Diesel consumption 4 kms per litre at	Rs. 6 per litre
Road tax	Rs. 1,500 p.a.
Lubricant oil	Rs. 10 per 100 kms.
Permit fee	Rs. 315 p.m.
Repairs and maintenance	Rs. 1,000 p.m.
Depreciation of the bus	@ 20% p.a.
Seating capacity of the bus	50 persons.

Passenger tax is 20% of the total takings. Calculate the bus fare to be charged from each passenger to earn a profit of 30% on total takings. The fares are to be indicated per passenger for the journeys:

- (i) Delhi to Chandigarh
(ii) Delhi to Agra
(iii) Delhi to Jaipur.

Marginal Costing : Break Even Point, P/V Ratio and Margin of Safety

16. You are given the following data for the year 2007 of Rio Co. Ltd:

Variable cost	60,000	60%
Fixed cost	30,000	30%
Net profit	<u>10,000</u>	<u>10%</u>
Sales	<u>1,00,000</u>	100%
Find out		

- (i) Break-even point,
- (ii) P/V ratio,
- (iii) Margin of safety and,
- (iv) Draw a break-even chart showing contribution and profit.

Marginal Costing : Income Statement According to Marginal & Absorption Costing

17. Aisha Automobiles assembles and sells motor vehicles. It uses an actual costing system, in which unit cost are calculated on a monthly basis. Data relating to August and September 2008 are

	August 2008	September 2008
Unit Data		
Beginning Inventory	0	150
Production	500	400
Sales	350	520
Variable-cost data:	Rs.	Rs.
Manufacturing Costs per Unit Produced	10,000	10,000
Distribution cost per unit sold	3,000	3,000
Fixed-cost data:		
Manufacturing Costs	22,00,000	22,00,000
Marketing Costs	4,00,000	4,00,000
The selling price per motor vehicle is Rs.24,000		

Basic Data

	August	September
Production Units	500	400
Sales Unites	350	520
Opening inventory Units	0	150
Closing inventory units	150	30

Required

- (i) Present income statement for Aisha Automobiles in August and September under :
 - (a) Marginal Costing
 - (b) Absorption Costing
- (ii) Explain the differences between (a) and (b)

Standard Costing : Material and Labour Variance

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

Direct Material:	Rs.
2 units of A @ Rs.4 per unit	8.00
3 units of B @ Rs.3 per unit	9.00
15 units of C @ Rs.1 per unit	<u>15.00</u>
	32.00
Direct Labour: 3 hrs @ Rs.8 per hour	<u>24.00</u>
Total standard prime cost	<u>56.00</u>

The company manufactured and sold 6,000 units of the product during the year. Direct material costs were as follows:

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

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

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

The company worked 17,500 direct labour hours during the year. For 2,500 of these hours, the company paid at Rs.12 per hour while for the remaining, the wages were paid at standard rate. Calculate materials price variance and usage variance and labour rate and efficiency variances.

Standard Costing : Material Variance

19. Compute the missing data indicated by question mark from the following data given by the Myanmar Ltd.

Particulars	EXE	PQP
Standard price/unit	Rs.12	15
Actual price/unit	Rs.15	20
Standard input (kg)	50	?
Actual input (kg)	?	70

Material price variance	?	?
Material uses variance	?	Rs.300 (A)
Material cost variance	?	?
Material mix variance for both the products together was Rs.90 (A)		

Standard Costing : Overhead Variance

20. The following information was obtained from the records of a manufacturing unit using standard costing system.

	Standard	Actual
Production	4,000 units	3,800 units
Working days	20	21
Fixed Overhead	Rs. 40,000	Rs. 39,000
Variable Overhead	12,000	12,000

You are required to calculate the following overhead variance:

- (i) Variable overhead variance
- (ii) Fixed overhead variances
 - (a) Expenditure variances
 - (b) Volume variance

Budgetary Control : Functional and Flexible Budget

21. (i) Explain different kinds of functional budgets.
- (ii) A department of AXY Company attains sales of Rs.6,00,000 at 80% of its normal capacity. Its expenses are given below :

	Rs.	Selling Costs :	
Office salaries	90,000	Salaries	8% of sales
General expenses	2% of sales	Travelling expenses	2% of sales
Depreciation	7,500	Sales office	1% of sales
Rent and rates	8,750	General expenses	1% of sales
Distribution costs:			
Wages			15,000
Rent			1% of sales
Other expenses			4% of sales

Draw up Flexible Administration, Selling and Distribution Costs Budget, operating at 90 per cent, 100 per cent and 110 per cent of normal capacity.

SUGGESTED ANSWERS/HINTS

Material : EOQ

$$1. \quad (i) \quad \text{Economic Order Quantity (EOQ)} = \sqrt{\frac{2AB}{CS}}$$

Where;

A = annual consumption,

B = buying cost per order,

C = cost per unit, and

S = storage and carrying cost

$$= \sqrt{\frac{2 \times 18,250 \text{ units} \times \text{Rs.} 50}{\text{Rs.} 36.50 \times 20/100}}$$

$$= \sqrt{\frac{1825000}{7.3}} = 500 \text{ units}$$

Labour : Halsey plan

(ii) Statement of Bonus, total earnings of labour and hourly earnings under Halsey and Rowan Systems.

SH	AH	Time saved	Basic wages (AH × Rs.8) (B × Rs.8)	Bonus under Halsey System $\left[\frac{50}{100} \times C \times 8 \right]$	Bonus under Rowan system $\left[\frac{B}{A} \times C \times 8 \right]$	Total Earnings under Halsey System D+E	Total Earnings under Rowan System D+F	Hourly Earnings under Halsey System G/B	Hourly Earnings under Rowan System H/B
A hours	B hours	C = (A-B) hours	D Rs.	E Rs.	F Rs.	G Rs.	H Rs.	I Rs.	J Rs.
8	8	-	64	-	-	64	64	8.00	8.00
8	7	1	56	4	7	60	63	8.57	9.00
8	6	2	48	8	12	56	60	9.33	10.00
8	5	3	40	12	15	52	55	10.40	11.00
8	4	4	32	16	16	48	48	12.00	12.00
8	3	5	24	20	15	44	39	14.67	13.00
8	2	6	16	24	12	40	28	20.00	14.00
8	1	7	8	28	7	36	15	36.00	15.00

Standard Costing

(iii) Activity ratio = Capacity ratio × Efficiency ratio

$$\therefore \text{Efficiency ratio} = \frac{\text{Activity ratio}}{\text{Capacity ratio}} = \frac{104}{96} = 108.33\%$$

Material : Inventory Turnover Ratio

(iv)

	Rs.
Cost of raw material consumed	
Opening stock of raw material on 1-4-2007	90,000
Add: Purchases during the year	2,70,000
	3,60,000
Less: Closing stock of raw material	1,10,000
Cost of raw material consumed	2,50,000

$$\begin{aligned} \text{(i) Inventory turnover ratio} &= \frac{\text{Cost of stock of raw material consumed}}{\text{Average stock of raw material}} \\ &= \text{Rs. } 2,50,000 \div \{(90,000 + 1,10,000)/2\} = 2.5 \end{aligned}$$

(ii) Average number of days for which the average inventory is held

$$\text{Or Inventory turnover period} = \frac{365 \text{ days}}{2.5} = 146 \text{ days}$$

Operating Costing

(v) Absolute tonnes - kms. = tonnes × Kms.

$$= (20 \text{ tonnes} \times 80 \text{ kms.}) + (12 \text{ tonnes} \times 120 \text{ kms.}) + (16 \times 160 \text{ kms.})$$

$$= 5,600 \text{ tonnes - kms.}$$

Commercial tonnes-kms.

$$= \text{Average load} \times \text{Total kms. Covered.}$$

$$= (20 + 12 + 16)/3 \text{ tonnes} \times 360 \text{ kms.}$$

$$= 5,760 \text{ tonnes-kms.}$$

Labour : Rate per hour and wages

(vi)

Standard time	60 hours	
Actual time taken	50 hours	
(presumed)		
Time saved	10 hours	
Level of efficiency	$= \frac{\text{Standard Time}}{\text{Actual Time}} \times 100$ $= \frac{60}{50} \times 100 = 120\%$	
Normal Rate		Rs.5.00
Add: Extra benefit	(i) For 100% efficiency 10% extra on hourly rate	Rs.0.50
	(ii) For more than 100% efficiency 1% increase for every additional 1% efficiency- 20% of Rs.5	
	Adjusted Hourly Rate.	<u>Rs. 1.00</u>
		<u>Rs. 6.50</u>

Wage payable to the worker: $50 \times \text{Rs.6.50} = \text{Rs.325.}$

Marginal Costing : Margin of Safety

$$(vii) \text{ Profit/Volume Ratio} = \frac{C}{S} \times 100 = \frac{10-8}{10} \times 100 = \frac{2}{10} \times 100 = 20\%$$

$$\text{Margin of safety} = \frac{\text{Profit}}{\text{P/V ratio}} = \frac{30,000}{20\%} = \text{Rs.1,50,000}$$

Application of Marginal Costing and Flexible Budget

$$(viii) \text{ P/V ratio} = 100 - 70 = 30\%$$

$$\text{BE point} = \frac{F}{\text{P/V ratio}} = \frac{90,000}{30\%} = \text{Rs.3,00,000}$$

$$\text{When BE point at 60\% is Rs.3,00,000, capacity sales} = \frac{3,00,000}{60\%} = \text{Rs.5,00,000}$$

$$\text{Sales at 75\% capacity} = 5,00,000 \times 75\% = \text{Rs.3,75,000}$$

$$\text{Profit} = (\text{Sales} \times 30\%) - 90,000 = \text{Rs.22,500}$$

Marginal Costing : Break – Even point

(ix)

		Sales Rs.	Profit/Loss(-) Rs.
8,000 units		1,20,000	(-)40,000
20,000 units		3,00,000	80,000
	Difference (Change in Sales/Profit)	1,80,000	1,20,000
P/V ratio	$= \frac{\text{Difference in profit}}{\text{Difference in sales}} = \frac{1,20,000}{1,80,000} = \frac{2}{3}$		
Fixed cost	$= \text{Sales} \times \text{P/V ratio} - \text{Profit}$ $= (3,00,000 \times \frac{2}{3}) - 80,000 = \text{Rs.} 1,20,000$		
BEP(Rs.)	$= \frac{F}{P/V \text{ ratio}} = \frac{1,20,000}{2/3} = \text{Rs.} 1,80,000$		
BEP (in units)	$= \text{Sales in Rs.} \div \text{Selling price}$ $= 1,80,000 \div \text{Rs.} 15 = 12,000 \text{ units.}$		

Process Costing

(x) Output in a process is input minus loss in process. Suppose input in process A = 100 Kg.

$$\text{Output in Process A} = 100 - 25\% = 75 \text{ Kg}$$

$$\text{Output in Process B} = 75 \text{ kg} - 20\% = 60 \text{ Kg}$$

$$\text{Output in Process C} = 60 \text{ kg} - 20\% = 48 \text{ Kg}$$

$$\text{Output in Process D} = 40 \text{ kg} - 16\% = 40 \text{ Kg}$$

When Output in Process D is 40,000 kg, then input in Process A will be

$$= 40,000 \text{ kg.} \times \frac{100}{40}$$

$$= 1,00,000 \text{ kg.}$$

Thus cost of materials introduced in Process I = 1,00,000 kg. @ Rs. 5 = Rs. 5,00,000.

Introduction to Cost Accounting: Explanation of Various Terms

2. (i) Direct costs – Costs that are related to the cost object and can be traced in an economically feasible way.
- (ii) Marginal Cost - The amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit.
- (iii) Responsibility Centre - It is defined as an activity centre of a business organisation entrusted with a special task. Under modern budgeting and control, financial executives tend to develop responsibility centres for the purpose of control. Responsibility centres can broadly be classified into three categories. They are Cost Centres ; Profit Centres and Investment Centres.
- (iv) Cost absorption - It is defined as the process of absorbing all indirect costs allocated to or apportioned over a particular cost centre or production department by the units produced. Hence, while allocating, the relevant cost objects would be the concerned cost centre or the concerned department, while, the process of absorption would consider the units produced as the relevant cost object. For example, the overhead costs of a lathe centre may be absorbed by using a rate per lathe hour. Cost absorption can take place only after cost allocation. In other words, the overhead costs are either allocated or apportioned over different cost centres and afterwards they are absorbed on equitable basis by the output of the same cost centres.
- (v) Imputed costs - These costs are notional costs which do not involve any cash outlay. Interest on capital, the payment for which is not actually made, is an example of imputed cost. These costs are similar to opportunity costs.
- (vi) Out-of-pocket cost - It is that portion of total cost, which involves cash outflow. This cost concept is a short-run concept and is used in decisions relating to fixation of selling price in recession, make or buy, etc. Out-of-pocket costs can be avoided or saved if a particular proposal under consideration is not accepted.
- (vii) Shut down costs - Those costs, which continue to be, incurred even when a plant is temporarily shutdown, e.g. rent, rates, depreciation, etc. These costs cannot be eliminated with the closure of the plant. In other words, all fixed costs, which cannot be avoided during the temporary closure of a plant, will be known as shut down costs.
- (viii) Sunk costs - Historical costs incurred in the past are known as sunk costs. They play no role in decision making in the current period. For example, in the case of a decision relating to the replacement of a machine, the written down value of the existing machine is a sunk cost and therefore, not considered.
- (ix) Discretionary costs – Such costs are not tied to a clear cause and effect relationship between inputs and outputs. They usually arise from periodic decisions

regarding the maximum outlay to be incurred. Examples include advertising, public relations, executive training etc.

- (x) Engineered costs - These are costs that result specifically from a clear cause and effect relationship between inputs and outputs. The relationship is usually personally observable. Examples of inputs are direct material costs, direct labour costs etc. Examples of output are cars, computers etc.

Material : FIFO/LIFO

3. (i) (a) Value of Material ASH consumed during the period 1-4-06 to 15-4-07 by using FIFO method

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

(b) 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

- (ii) 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

- 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.
- 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 ($250 \times \text{Rs. } 7 + 250 \times \text{Rs. } 8$) and under LIFO Rs. 4,000 ($500 \times \text{Rs. } 8$). 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.

Material : Material Control and EOQ

4. (i) Material Control : The publication of the Institute of Cost and Management Accountants on Budgetary Control defines it as .the function of ensuring that sufficient goods are retained in stock to meet all requirements without carrying unnecessarily large stocks. When the functions of indexing buying, receiving, inspection, storing and paying of the goods are separated it is essential that these should be properly co-ordinated so as to achieve the advantages of specialisation.

Objectives of Material Control System: The objectives of a system of material control are the following :

- (a) Ensuring that no activity, particularly production, suffers from interruption for want of materials and stores-it should be noted that this requires constant availability of every item that may be needed howsoever small its cost may be. Lubricating oil may cost much less than the main raw material but, from the point of view of uninterrupted production, both have equal importance.
- (b) Seeing to it that all the materials and stores are acquired at the lowest possible price considering the quality that is required and considering other relevant factors like reliability in respect of delivery, etc.
- (c) Minimisation of the total cost involved, both for acquiring stocks (apart from the price paid to the supplier) and for holding them.
- (d) Avoidance of unnecessary losses and wastages that may arise from deterioration in quality due to defective or long storage or from obsolescence.

It may be noted that losses and wastages in the process of manufacture, concern the production department.

- (e) Maintenance of proper records to ensure that reliable information is available for all items of materials and stores that not only helps in detecting losses and pilferages but also facilitates proper production planning.
- (ii) (a) Calculation of Economic Order Quantity

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

Where;

A = annual consumption,

B = buying cost per order,

C = cost per unit, and

S = storage and carrying cost

$$\sqrt{\frac{2 \times 8,000 \text{ units} \times \text{Rs.}200}{\text{Rs.}400 \times 20/100}} = 200 \text{ units}$$

- (b) Evaluation of Profitability of Different Options of Order Quantity

(1) When EOQ is ordered		(Rs.)
Purchase Cost	(8,000 units × Rs 400)	32,00,000
Ordering Cost	[(8,000 units/200 units) × Rs.200]	8,000
Carrying Cost	(200 units × Rs.400 × ½ × 20/100)	<u>8,000</u>
Total Cost		32,16,000

(2) When Quantity Discount is accepted		(Rs.)
Purchase Cost	(8,000 units × Rs.384*)	30,72,000
Ordering Cost	[(8,000 units/4000 units) × Rs.200]	400
Carrying Cost	(4000 units × Rs.384 × ½ × 20/100)	1,53,600
Total Cost		32,26,000

Advise – The total cost of inventory is lower if EOQ is adopted. Hence, the company is advised not to accept the quantity discount.

$$* \quad 400 - (4\% \text{ of } 400) = 384$$

Labour : Allocation of Earnings to Jobs

5. 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		<u>15</u>	<u>—</u>
Gross Wages		<u>165</u>	<u>155</u>
Less: Deductions			
Employees' contribution to provident Fund (8% on basic wages)	(8)		
Employees' contribution to E.S.I. (2% on basic wages)	(2)	(10)	(10)
Net wages Payable		<u>155</u>	<u>145</u>

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.		<u>10</u>	<u>10</u>
		160	165
Normal working hours per month		200 hrs	200 hrs
Labour cost per hour		$\frac{160}{200} = \text{Rs. } 0.80$	$\frac{165}{200} = 0.825$

		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	<u>50</u>
	<u>150</u>
Normal working hours per month	200 hours

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

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.

Labour : Incentive System & Bonus Plan

6. (i) The main factors that should be taken into account before introducing a scheme of incentives are stated below :
- (a) The need for producing goods of high quality or those having very good workmanship or finish and the manner this can be ensured. Only if a system of quality control can be relied upon to maintain the quality of goods of the standard required, an incentive scheme should be introduced; otherwise, workers should be paid on time basis.
 - (b) The need to maximise production—thus required incentives to be given to workers. But sometimes workmanship is more important than quantity of output; in such cases, incentive schemes of wage payment are not suitable.
 - (c) Where the quantity of work done cannot be measured precisely, incentive schemes cannot be offered.
 - (d) The role of management and workers in achieving greater efficiency, if it is unnecessary for the management to constantly plan work, for example, when the work is repetitive, workers should be offered good incentives to achieve high efficiency; but in case management is constantly required to plan the work, as in the case of job work, the management should share the fruits of extra efficiency achieved. This factor determines the choice of a particular incentive scheme.
 - (e) Whether the quantity of output is within the control of the worker and if so, to what extent. Sometimes, as in the case of chain assembly work the output is not dependent on the effort put in by workers; incentive schemes in such cases are not suitable.

- (f) The exactitude with which standards of performance can be laid down. Fixation of standard is necessary for the introduction of a scheme of incentives. When this requires heavy expenditure, incentive schemes may be rather costly.
- (g) The effect of an incentive scheme for one set of workers on other workers. If for instance, an incentive scheme makes it possible for unskilled workers to earn high wages, the wage rates for skilled workers must also be raised (if they are paid on time basis) to avoid dissatisfaction among them. In that event, the incentive scheme may raise labour cost instead of lowering it.
- (h) The system of wage payment prevailing in other areas and industries or similar occupations. If possible, there should be uniformity.
- (i) The attitude of labour and trade unions towards incentive schemes. Workers usually like to have a certain guaranteed time-basis wage but also like to earn extra through an incentive scheme.
- (ii) Step 1 : Let X be the cost of material and Y be the normal rate of wages per hour.
Step 2 : Factory Cost of Workman 'A'

	Rs.
A. Material Cost	X
B. Wages	30 Y
C. Bonus = $\frac{AH}{SH} \times (SH - AH) \times R$	12 Y
Bonus = $\frac{30}{50} \times (50 - 30) \times Y$	
D. Overheads (30 × Rs.5)	150
E. Factory Cost	X + 30Y + 12 Y + Rs.150
or, = X + 42 Y = Rs.3,490 (Given) – Rs.150 = Rs.3,340	... Equation (I)

Step 3 : Factory Cost of Workman 'B'

	Rs.
A. Material Cost	X
B. Wages	40 Y
C. Bonus = 50% of (SH - AH) × R	5 Y
= 50% of (50 - 40) × R	
D. Overheads (40 × Rs.5)	200
E. Factory Cost	X + 40Y + 5 Y + Rs.200
or, = X + 45 Y = Rs.3,600 (Given) – Rs.200 = Rs.3,400	... Equation (II)

Step 4 : Subtracting Eq. (I) from Eq. (II)

$$3Y = \text{Rs.}60$$

$$Y = \text{Rs.}60/3 = \text{Rs.}20 \text{ per hour.}$$

(a) The normal rate of wages : Rs.20 per hour

(b) The cost of material : $X + 45 \times \text{Rs.}20 = \text{Rs.}3,400$

$$X = \text{Rs.}3,400 - \text{Rs.}900 = \text{Rs.}2,500$$

(c) Comparative Statement of the Factory Cost of the product made by the two workmen.

	'A'	'B'
	Rs.	Rs.
Material cost	2,500	2,500
Direct Wages	$(30 \times \text{Rs.}20)$ 600	$(40 \times \text{Rs.}20)$ 800
Bonus	$(12 \times \text{Rs.}20)$ 240	$(5 \times \text{Rs.}20)$ 100
Factory Overhead	<u>150</u>	<u>200</u>
Factory Cost	<u>3,490</u>	<u>3,600</u>

Overheads : Overhead Rates and Over/Under Absorption of Overheads

7. (i) Annual overhead – Rs. 1,55,520

$$\begin{aligned} \text{Annual working hours (Normal)} &= \text{Number of machines} \times \text{No. of weeks p.a.} \times \\ &\quad \text{Effective weekly hours} \\ &= 15 \times 48 \times 36 = 25,920 \end{aligned}$$

$$\text{Overhead rate per machine hour} = \text{Rs. } 1,55,520 \div 25,920 = \text{Rs. } 6.00$$

(ii) Overhead incurred = Rs. 15,000

$$\text{Overhead absorbed} = \text{Rs. } 13,200 \text{ (i.e., } 2,200 \times \text{Rs. } 6)$$

$$\text{Under-absorbed overhead} = 15,000 - 13,200 = \text{Rs. } 1,800$$

$$\text{Wages incurred} = \text{Rs. } 7,000$$

$$\text{Wages absorbed} = \text{Rs. } 7,200$$

$$\text{(i.e., } 40 \text{ hours} \times 15 \text{ machines} \times \text{Rs. } 3 \times 4 \text{ weeks)}$$

$$\text{Wages over-absorbed} = 7,200 - 7,000 = \text{Rs. } 200.$$

Overheads : Concept of Capacity

8. (i) Rated capacity : It refers to the capacity of a machine or a plant as indicated by its manufacturer. In fact this capacity is the maximum possible productive capacity of a plant. It is also known as installed capacity of a plant. Due to the loss of operating

time of a plant it is difficult to achieve this rated capacity. In other words, it is only a theoretical capacity and is therefore, seldom achieved.

- (ii) **Practical capacity** : It is defined as actually utilised capacity of a plant. It is also known as operating capacity. This capacity takes into account loss of time due to repairs, maintenance, minor breakdown, idle time, set up time, normal delays, Sundays and holidays, stock taking etc. Generally, practical capacity is taken between 80 to 90% of the rated capacity. It is also used as a base for determining overhead rates. Practical capacity is also called net capacity or available capacity.
- (iii) **Normal capacity** : It is the capacity of a plant which is expected to be utilised over a long period based on sales expectancy. The determination of this capacity considers the average utilisation of plant capacity during one full business cycle which may extend over 2 to 3 years. It is also known as average capacity and is used to compute overhead recovery rate.
- (iv) **Idle capacity** : It is that part of the capacity of a plant, machine or equipment which cannot be effectively utilised in production. In other words, it is the difference between the practical or normal capacity and capacity utilisation based on expected sales. For example, if the practical capacity of production of a machine is to the tune of 10,000 units in a month, but is used only to produce 8,000 units, because of market demand of the product, then in such a case, 2,000 units will be treated as idle capacity of the machine.

Non : Integrated Accounting

9. Journal entries are as follows:

		Dr.	Cr.
		Rs.	Rs.
1.	Finished stock ledger Control A/c	Dr. 2,10,000	
	To Work-in-Progress Control A/c		2,10,000
2.	Manufacturing Overhead Control A/c	Dr. 90,000	
	To Cost Ledger Control A/c		90,000
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. 71,000	
	To Cost Ledger Control A/c		71,000
	(ii) Work-in-progress Control A/c	Dr. 50,000	
	To Wage Control A/c		50,000

(iii)	Manufacturing Overhead Control A/c	Dr.	21,000	
	To Wage Control A/c			21,000
5.	Cost of Sales A/c	Dr.	1,85,000	
	To Finished Stock Ledger A/c			1,85,000
6.	Work-in-Progress Control A/c	Dr.	1,27,000	
	To Stores Ledger Control A/c			1,27,000
7.	Finished Stock Ledger Control A/c	Dr.	5,000	
	To Cost of Sales A/c			5,000
8.	Cost Ledger Control A/c	Dr.	3,000	
	To Stores Ledger Control A/c			3,000
9.	Work-in-Progress Control A/c	Dr.	77,000	
	To Manufacturing Overhead Control A/c			77,000

Ledger Posting

Cost Ledger Control Account

	Rs.			Rs.
To	Stores Ledger Control A/c (return)	3,000	By	Balance b/d
	"Balance c/d	9,41,000	"	Manufacturing Overhead
				Control A/c
				90,000
			"	Stores Ledger Control A/c
				1,23,000
			"	Wage Control A/c
				<u>71,000</u>
				<u>9,44,000</u>
		<u>9,44,000</u>		

Stores Ledger Control Account

	Rs.			Rs.
To	Balance b/d	3,00,000	By	Work-in-Progress
"	Cost Ledger Control A/c	1,23,000	"	Control A/c
			"	Cost Ledger Control A/c
			"	Balance c/d
				<u>2,93,000</u>
		<u>4,23,000</u>		<u>4,23,000</u>

Work-in-Progress Control Account

	Rs.		Rs.
To Balance b/d	1,20,000	By Finished Stock	
" Wage Control A/c	50,000	Ledger Control A/c	2,10,000
" Stores Ledger Control A/c	1,27,000	" Balance c/d	1,64,000
Manufacturing Overhead Control A/c	<u>77,000</u>		
	<u>3,74,000</u>		<u>3,74,000</u>

Finished Stock Ledger Control Account

	Rs.		Rs.
To Balance b/d	2,50,000	By Cost of Sales A/c	1,85,000
Work-in-Progress Control A/c	2,10,000	" Balance c/d	2,80,000
" Cost of Sales A/c (return at cost)	<u>5,000</u>		
	<u>4,65,000</u>		<u>4,65,000</u>

Manufacturing Overhead Control Account

	Rs.		Rs.
To Cost Ledger Control A/c	90,000	By Balance b/d	10,000
" Wage Control A/c	21,000	" Work-in-Progress Control A/c	77,000
" Balance c/d (under recovered)	<u>24,000</u>		
	<u>1,11,000</u>		<u>1,11,000</u>

Wage Control Account

	Rs.		Rs.
To Cost Ledger Control A/c	71,000	By Work-in-Progress Control A/c	50,000
		" Manufacturing Overhead Control A/c	<u>21,000</u>
	<u>71,000</u>		<u>71,000</u>

Cost of Sales Account

	Rs.		Rs.
To Finished Stock Ledger Control A/c	1,85,000	By Finished Stock Ledger Control A/c (Return)	5,000
		" Balance c/d	<u>1,80,000</u>
	<u>1,85,000</u>		<u>1,85,000</u>

Trial Balance

	Dr. Rs.	Cr. Rs.
Stores Ledger Control A/c	2,93,000	
Work-in-Progress Control A/c	1,64,000	
Finished Stock Ledger Control A/c	2,80,000	
Manufacturing Overhead Control A/c	24,000	
Cost of Sales A/c	1,80,000	
Cost Ledger Control A/c		<u>9,41,000</u>
	<u>9,41,000</u>	<u>9,41,000</u>

Job Costing

10. (i) Journal entries are as follows

(a)	Materials	15,500	
	To Accounts Payable		15,500
(b)	Work in process	11,390	
	To Materials		11,390
	Work in Process	7,000	
	To Wages payable		7,000
	Factory Overhead	1,100	
	To Materials		450
	To Wages Payable		650
(c)	Factory Overhead	2,700	
	To Accounts Payable		2,700
(d)	Factory Overhead	1,750	
	To Accumulated Depreciation – Machinery		1,750

(e)	Work in Process	4,900	
	To Factory Overhead (70% of Rs. 7,000)		4,900
(f)	Finished Goods	11,548	
	To Work in Process		11,548
g.	Accounts receivable	15,400	
	To Sales		15,400
	Cost of Goods sold	9,698	
	To Finished Goods		9,698

(ii) Computation of the cost of jobs finished:

Job	Direct Materials Rs.	Direct Labour Rs.	Factory Overhead Rs.	Total Rs.
Job No. 100	2,650	1,770	1,239	5,659
Job No. 101	1,240	650	455	2,345
Job No. 102	980	420	294	1,694
Job No. 104	1,000	500	350	<u>1,850</u>
				<u>11,548</u>

Cost of jobs sold computation:

	Rs.
Job No. 100	5,659
Job No. 101	2,345
Job No. 102	<u>1,694</u>
	<u>9,698</u>

Work in Process : Rs. 11,742 (Rs. 11,390 + Rs. 7,000 + Rs. 4,900 – Rs. 11,548)

Finished Goods: Rs. 1,850 (Rs. 11,548 – Rs. 9,698)

(iii) Schedule of unfinished jobs

Job	Direct Materials Rs.	Direct Labour Rs.	Factory Overhead Rs.	Total Rs.
Job No. 103	3,420	1,900	1,330	6,650

Job No. 105	2,100	1,760	1,232	<u>5,092</u>
Balance of work in process, March 31				<u>11,742</u>

(iv) Schedule of Completed Jobs

	Rs.
Job No. 104:	
Direct Materials	1,000
Direct Labour	500
Factory overhead	<u>350</u>
Balance of Finished Goods, March 31	<u>1,850</u>

Contract Costing

11.	Contract Accounts			(in Rs 000)		
	A	B	C	A	B	C
Material on site b/fwd		20	30	Wages accrued b/fwd	5	10
Plant on site b/fwd		77	374	Material on site c/fwd	20	
Material control a/c	88	220	396	Plant on site c/fwd	150	20
Wages control a/c	45	100	220	Cost of work not certified c/fwd		55
Salaries	15	40	50	Cost of sales – current period (balance) c/fwd	183	497
Plant control a/c	190	35				840
Apportionment of HO expenses	10	20	50			
Wages accrued c/fwd	5	10	15			
	<u>353</u>	<u>522</u>	<u>1,135</u>		<u>353</u>	<u>522</u>
Cost of sales b/fwd	183	497	840	Attributable sales revenue (current period)*	183	442
						1,122

Profit taken this period			282	Loss taken			55
	<u>183</u>	<u>497</u>	<u>1,122</u>		<u>183</u>	<u>497</u>	<u>1,122</u>
Cost of work not certified b/fwd			55	Wages accrued b/fwd	5	10	15
Material on site b/fwd			20				
Plant on site b/fwd	150	20	230				

* Profit taken plus cost of sales for the current period or cost of sales less loss to date

Note

- Profit/loss on the three contracts are calculated by deducting the cost of sales (both previous years and current year) from the value of work certified

(Rs 000)

Contract A	17	(Rs 200 – Rs 183)
Contract B	(55)	(Rs 860 – Rs 915)
Contract C	446	(Rs 2,100 – Rs 1,654)

Recommendation

Computation of profit taken for Contract C is as follows

(Rs000)

Cost of work certified(cost of sales to date = 814 + 840)	1,654
Cost of work not certified	55
Estimated costs to complete	305
Estimated cost of contract	2,014
Contract price	2,420
Anticipated profit	406

$$\text{Profit taken} = \frac{(0.90 \times \text{Rs}2,100)}{\text{Rs}2,420} \times \text{Rs}406 \text{ less profit previously transferred}$$

$$= \text{Rs } 3,17,000 - \text{Rs } 35,000 = \text{Rs } 2,82,000$$

- No profit has been taken for Contract A as it is in very early stages of completion
- Prudence concept has been utilized for Contract B. All loss has been taken.

Process Costing : Statement of Equivalent Production, Cost & Distribution Cost

12. (i) Statement of Equivalent Production

Input Details	Units	Output Details	Units	Equivalent Production			
				Material		Labour & O.H.	
				Units	%	Units	%
Opening WIP	2,000	Completed and transferred to process B	35,000	35,000	100	35,000	100
Units introduced	38,000	Normal Loss (5% of 40,000)	2,000	—	—	—	—
		Abnormal loss	1,000	1,000	100	800	80
		Closing WIP	<u>2,000</u>	<u>2,000</u>	100	<u>1,600</u>	80
	<u>40,000</u>		<u>40,000</u>	<u>38,000</u>		<u>37,400</u>	

(ii) Statement of Cost

Details	Cost at the beginning of the process (Rs.)	Cost added (Rs.)	Total Cost (Rs.)	Equivalent Production (units)	Cost per unit (Rs.)
Material	80,000	14,80,000	15,60,000		
Less : Value of Normal Scrap			<u>40,000</u>		
			<u>15,20,000</u>	38,000	40
Labour	15,000	3,59,000	3,74,000	37,400	10
Overheads	45,000	10,77,000	11,22,000	37,400	<u>30</u>
					80
					Rs.)

(iii) Statement of Distribution of Cost

i) Completed and transferred to Process B	(35,000 units @ Rs.80)	28,00,000
ii) Abnormal Loss – 1,000 units		
Materials	(1,000 units @ Rs.40)	40,000
Labour and overheads	(800 units @ Rs.40)	<u>32,000</u> 72,000
iii) Closing W.I.P. – 2,000 units		
Materials	(2,000 units @ Rs.40)	80,000
Labour and overheads	(1,600 units @ Rs.40)	<u>64,000</u> 1,44,000

(iv) Process A A/c						
Particulars	Units	Rs.	Particulars	Units	Rs.	
To Balance:						
Opening W.I.P.	2,000	1,40,000	By Normal Loss	2,000	40,000	
Materials – Rs.80,000			(@Rs.20 per paise)			
Labour – Rs.15,000			By Abnormal loss	1,000	72,000	
Overheads – Rs.45,000			By Process B A/c	35,000	28,00,000	
To Materials introduced	38,000	14,80,000	(transferred to the next Process)			
To Direct Labour		3,59,000	Balance c/d (Closing WIP)	<u>2,000</u>	<u>1,44,000</u>	
To Overheads	<u>—</u>	<u>10,77,000</u>	By	<u>40,000</u>	<u>30,56,000</u>	
	<u>40,000</u>	<u>30,56,000</u>				

Normal Loss A/c					
Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A A/c	2,000	40,000	By Cost Ledger Control A/c	2,000	40,000

Abnormal Loss A/c					
Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A A/c	1,000	72,000	By Cost Ledger Control A/c	1,000	20,000
			By Costing Profit / Loss A/c		<u>52,000</u>
		<u>72,000</u>			<u>72,000</u>

Process Costing : Process Cost and Finished Stock Account with Profit Element

13. Process I Account							
Particulars	Cost	Profit	Total	Particulars	Cost	Profit	Total
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
To Opening Stock	3,750	—	3,750	By Process II	3,675	12,250	49,000
To Direct Material	15,000	—	15,000				
To Direct Wages	<u>11,200</u>	—	<u>11,200</u>				
	29,950	—	29,950				
Less: Closing Stock	<u>3,700</u>	—	<u>3,700</u>				
	26,250	—	26,250				
To Factory Overheads	<u>10,500</u>	—	<u>10,500</u>				
	36,750	—	36,750				
To Profit	<u>12,250</u>		<u>12,250</u>				
	<u>36,750</u>	<u>12,250</u>	<u>49,000</u>		<u>36,750</u>	<u>12,250</u>	<u>49,000</u>

Process II Account

Particulars	Cost Rs.	Profit Rs.	Total Rs.	Particulars	Cost Rs.	Profit Rs.	Total Rs.
To Opening Stock	3,000	1,500	4,500	By Process II	67,519	33,106	10,0625
To Process I	36,750	12,250	49,000				
To Direct Material	15,750	–	15,750				
To Direct Wages	<u>11,250</u>	<u>–</u>	<u>11,250</u>				
Less: Closing Stock	66,750	13,750	80,500				
	<u>3,731</u>	<u>769</u>	<u>4,500</u>				
	63,019	12,981	76,000				
To Factory Overheads	<u>4,500</u>	<u>–</u>	<u>4,500</u>				
	67,519	12,981	80,500				
To Profit	<u>–</u>	<u>20,125</u>	<u>20,125</u>				
	<u>67,519</u>	<u>33,106</u>	<u>10,0625</u>		<u>67,519</u>	<u>33,106</u>	<u>1,00,625</u>

Finished Stock Account

Particulars	Cost Rs.	Profit Rs.	Total Rs.	Particulars	Cost Rs.	Profit Rs.	Total Rs.
To Opening Stock	9,000	2,250	11,250	By Sales	68,824	51,176	1,20,000
To Process II	<u>67,519</u>	<u>33,106</u>	<u>1,00,625</u>				
	76,519	35,356	1,11,875				
Less: Closing Stock	<u>7,695</u>	<u>3,555</u>	<u>11,250</u>				
	68,824	31,801	1,00,625				
To Profit	<u>–</u>	<u>19,375</u>	<u>19,375</u>				
	<u>68,824</u>	<u>51,176</u>	<u>1,20,000</u>		<u>68,824</u>	<u>51,176</u>	<u>1,20,000</u>

Working Notes:

1. Reserve for unrealised profit in closing stock.

Process I. Nil

Process II

$$\text{Cost of stock} = \frac{\text{Cost}}{\text{Total}} \times \text{closing stock} = \frac{66,750}{80,500} \times 4,500 = 3,731$$

$$\text{Profit} = \text{Total} - \text{Cost} = 4,500 - 3,750 = \text{Rs.750}$$

Finished Stock

$$\text{Cost of stock} = \frac{\text{Cost}}{\text{Total}} \times \text{closing stock} = \frac{76,519}{1,11,875} \times 11,250 = 7,695$$

$$\text{Profit} = \text{Total} - \text{Cost} = 11,250 - 7,695 = \text{Rs.3,555}$$

2. Profit for the month				Rs.	Rs.
Process I	-	-	-	-	12,250
Process II	-	-	-	20,125	
Add: Unrealised profit in opening stock	-	-	-	<u>1,500</u>	
				21,625	
Less: Unrealised Profit in Closing stock	-	-	-	<u>769</u>	20,856
Finished Stock	-	-	-	19,375	
Add: Unrealised profit in opening stock	-	-	-	<u>2,250</u>	
				21,625	
Less: Unrealised profit in closing stock	-	-	-	<u>3,555</u>	<u>18,070</u>
Total Profit					<u>51,176</u>

Operating Costing

14. (i)	Statement showing cost per patient day			
A.	variable costs			
i.	Foods	74,000		
ii.	Laundry charges	36,000		
iii.	Medicines	60,000		
iv.	Doctor fees	<u>240,000</u>	4,10,000	
B.	Fixed costs			
i.	Repair & Maintenance	10,000		
ii.	Rent	1,80,000		
iii.	Other fixed expenses	72,000		
iv.	Supervisors' salary (2x12x2000)	48,000		
v.	Nurses' salary (4x12x2000)	96,000		
vi.	Ward boys' salary (2x12x1000)	24,000	<u>4,30,000</u>	
	Total costs (A+B)		840,000	
	Add: Profit (100% an total cost)		840,000	
C.	Total Revenue Required		16,80,000	
D.	No. of patient days (Working Note1)		5600	
	Charge per day per patient (C/D)		300	

$$\begin{aligned}
 \text{(ii) Break even point} &= \frac{\text{Fixed costs}}{\text{Contribution per patient day}} \\
 \text{Revenue per patient day} &= \text{Rs. 300} \\
 \text{Variable cost per patient day} &= \frac{\text{Rs. 410000}}{5600} = \text{Rs. 73.21} \\
 \text{Contribution per patient day} &= \text{Rs. (300 - 73.21)} = \text{Rs. 226.79} \\
 \text{B.E.P.} &= \frac{430000}{226.79} = 1896 \text{ patient days}
 \end{aligned}$$

Operating Costing

15.	Total kms. covered per month			
Bus route	Km. per trip	Trips per day	Days per month	Km. per month
Delhi to Chandigarh	150	2	8	2,400
Delhi to Agra	120	2	10	2,400
Delhi to Jaipur	270	2	6	<u>3,240</u>
				<u>8,040</u>

Passenger kms. per month					
	Total seats available per month	Capacity utilised	Km. per trip	Passenger Km. per month	
	(100% capacity)	%	Seats		
Delhi to Chandigarh & Back	800*	90	720	150	1,08,000
Delhi to Agra & Back	1,000@	85	850	120	1,02,000
Delhi to Jaipur & Back	600#	100	600	270	<u>1,62,000</u>
Total					<u>3,72,000</u>

* 50 seats × 2 trips × 8 days = 800 seats

@ 50 seats × 2 trips × 10 days = 1,000 seats

50 seats × 2 trips × 6 days = 600 seats

Now, the operating cost can be found out as under:

Monthly Operating Cost Statement

Variable Costs	Rs.	Rs.
Diesel [(8,040 km ÷ 4 km) × Rs. 6]		12,060
Lubricant oil [(8,040 km ÷ 100) × Rs. 10]		<u>804</u>

Total variable cost (A)	12,864
Maintenance costs (B)	1,000
Fixed costs	
Salary of driver	2,800
Salary of conductor	2,200
Salary of part-time accountant	200
Insurance	400
Road tax	125
Permit fee	315
Depreciation (Rs. 6,00,000 × 20%) ÷ 12	<u>10,000</u>
Total fixed cost (C)	<u>16,040</u>
Total costs per month (A+B+C)	29,904
Profit and Passenger tax @ 100% of cost (Note below)	<u>29,904</u>
Total takings per month	<u>59,808</u>
Passenger km. per month	<u>3,72,000</u>
Rate per passenger km. = (Rs. 59,808 ÷ 3,72,000) = Re. 0.1607741 say Re. 0.16.	

Proposed fare to be charged per passenger km.

Delhi to Chandigarh	=	Re. 0.16 × 150 km	=	Rs. 24.00
Delhi to Agra	=	Re. 0.16 × 120 km	=	Rs. 19.20
Delhi to Jaipur	=	Re. 0.16 × 270 km	=	Rs. 43.20

Note:

1. Passenger tax = 20% of total takings
2. Profit = 30% of total takings
3. Passenger tax + Profit = 50% of total takings
4. Cost (balance) = 50%
5. Total takings = 100%
6. Item 3 as a % of item 4 = 100%

Passenger tax (20% of Rs. 59,808) =	Rs. 11,961.60
Profit (30% of Rs. 59,808) =	<u>Rs. 17,942.40</u>
	<u>Rs. 29,904.00</u>

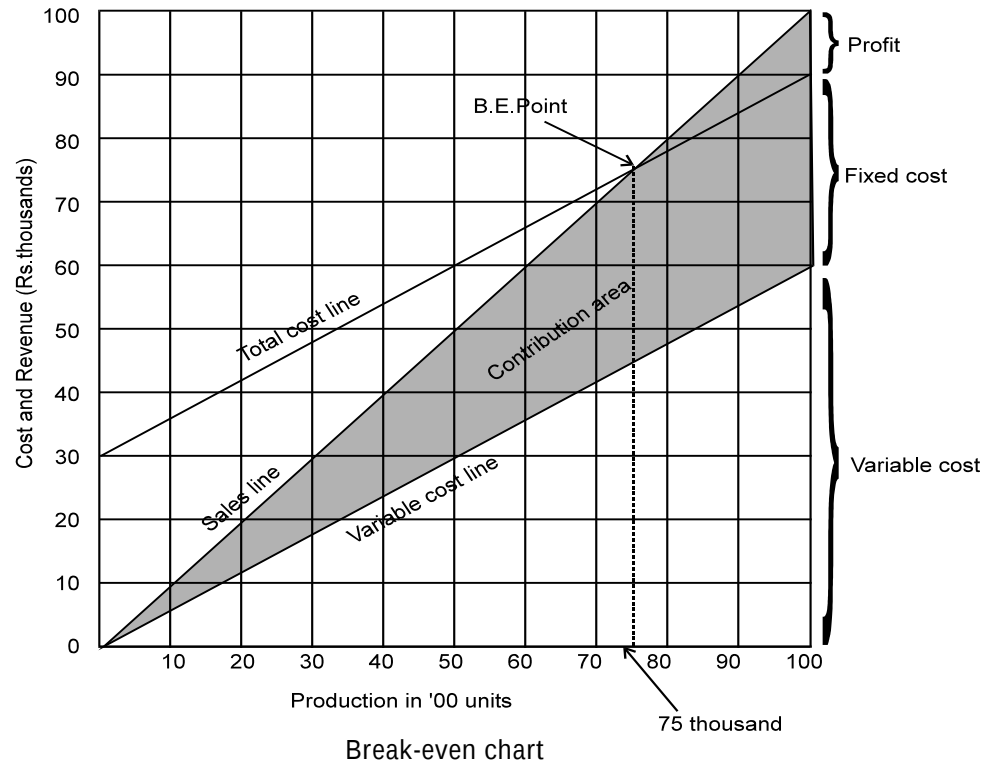
Marginal Costing : Break Even Point, P/V Ratio and Margin of Safety

$$16. (i) \quad BE \text{ point} = \frac{F}{P/V \text{ ratio}} = \frac{30,000}{40\%} = \text{Rs. } 75,000$$

$$(ii) \quad P/V \text{ ratio} = \frac{S - V}{S} = \frac{1,00,000 - 60,000}{1,00,000} = 40\%$$

$$(iii) \quad \text{Margin of safety} = \text{Actual Sales} - \text{BE point} \\ = 1,00,000 - 75,000 = \text{Rs. } 25,000$$

(iv) Break even chart showing contribution is shown below:



Marginal Costing : Income Statement According to Marginal & Absorption Costing

17. (i) Income Statement (Marginal Costing)

	August	September
	Rs.	Rs.
(A) Sales	<u>84,00,000</u>	<u>1,24,80,000</u>
Variable manufacturing cost	50,00,000	40,00,000
Add: opening inventory @ Rs.10,000 per unit	<u>—</u>	<u>1,500,000</u>
Cost of Goods available for sale	50,00,000	55,00,000

Less: Closing inventory @ Rs.10,000 per Unit	<u>15,00,000</u>	<u>3,00,000</u>
Variable cost of goods sold	35,00,000	52,00,000
Variable distribution cost	<u>10,50,000</u>	<u>15,60,000</u>
(B) Total variable cost	<u>45,50,000</u>	<u>67,60,000</u>
(C) Contribution (A-B)	<u>38,50,000</u>	<u>57,20,000</u>
Fixed cost:-Manufacturing	22,00,000	22,00,000
Marketing	<u>4,00,000</u>	<u>4,00,000</u>
(D) Total fixed cost	<u>26,00,000</u>	<u>26,00,000</u>
Net Income (C-D)	12,50,000	31,20,000

Income Statement (Absorption Costing)

	August	September
(A) Sales	<u>84,00,000</u>	<u>1,24,80,000</u>
Variable manufacturing	50,00,000	40,00,000
Fixed manufacturing cost	<u>22,00,000</u>	<u>22,00,000</u>
	72,00,000	62,00,000
Add: opening inventory*	—	<u>21,00,000</u>
Cost of goods available for sales	72,00,000	83,00,000
Less: Closing inventory*	<u>21,60,000</u>	<u>4,65,000</u>
Cost of goods sold (B)	50,40,000	78,35,000
Add: Distribution cost-variable	10,50,000	15,60,000
Add: Marketing cost-fixed	<u>4,00,000</u>	<u>4,00,000</u>
(B) Total Cost	<u>64,90,000</u>	<u>97,95,000</u>
Net Income (A-B)	<u>19,10,000</u>	<u>26,85,000</u>

- (ii) Comments Marginal costing rewards sales while absorption costing rewards production. This means that when sales are more than production, marginal costing produces higher profit and vice versa, when production is more than sales, absorption costing shows higher profit.

In August, absorption costing shows higher profit by Rs.6,60,000 (i.e., 19,10,000 – 12,50,000) than marginal costing because production is more than sales. In September marginal costing shows higher profit than absorption costing by Rs. 4,35,000.

Sales are more than production. Difference in profit is exactly equal to difference in inventory values in the two months.

***Working Notes:**

In marginal costing inventory is valued at variable manufacturing cost while in absorption costing inventory valuation is done as follows:

For September closing inventory of 30 Units:

	Rs.
Variable manufacturing cost (30 units @ Rs.10,000)	3,00,000
Fixed manufacturing cost (30 units @ Rs.5,500)	<u>1,65,000</u>
	<u>4,65,000</u>

Fixed manufacturing cost per unit is calculated as under

$$\frac{\text{Rs. 22,00,000}}{400 \text{ units of production}} = \text{Rs. 5,500 per unit}$$

For March, inventory of 150 units:

	Rs.
Variable manufacturing cost (150 units @ Rs.10,000)	15,00,000
Fixed manufacturing cost (150 units @ Rs.4,400)	<u>6,60,000</u>
	<u>21,60,000</u>

$$\text{Fixed manufacturing cost per unit} = \frac{\text{Rs. 22,00,000}}{500 \text{ units of production}} = \text{Rs. 4,400 per unit .}$$

Standard Costing : Material and Labour Variance

18. For Material Cost Variances

Actual cost of material used (AQ × AR)

A	12,500 units × Rs.4.40 =	Rs. 55,000
B	18,000 units × Rs.2.80 =	Rs. 50,400
C	88,500 units × Rs.1.20 =	Rs. <u>1,06,200</u>
		<u>2,11,600</u>

Standard cost of material used (AQ × SR)

A	12,500 units × Rs.4.00 =	Rs. 50,000
B	18,000 units × Rs.3.00 =	Rs. 54,000
C	88,500 units × Rs.1.00 =	Rs. <u>88,500</u>
		<u>1,92,500</u>

$$\begin{aligned}
 \text{Standard material cost of production : (SQ for actual production} \times \text{SR)} \\
 &= 6,000 \text{ units} \times \text{Rs. } 32 \\
 &= \text{Rs. } 1,92,000
 \end{aligned}$$

Variances:

$$\begin{aligned}
 \text{Material Price Variance} &= (\text{Actual cost of material used} - \text{Standard cost of material used}) \\
 &= \text{Rs. } 2,11,600 - \text{Rs. } 1,92,500 \\
 &= \text{Rs. } 19,100
 \end{aligned}$$

$$\begin{aligned}
 \text{Material Usage Variance} &= (\text{Standard cost of material used} - \text{Standard material cost of production}) \\
 &= \text{Rs. } 1,92,500 - \text{Rs. } 1,92,000 \\
 &= \text{Rs. } 500 \text{ (A)}
 \end{aligned}$$

For Labour Cost Variance :

Actual wages paid to workers (AH $\times$ AR)

$$\begin{aligned}
 2,500 \text{ hrs} \times \text{Rs. } 12 &= \text{Rs. } 30,000 \\
 15,000 \text{ hrs} \times \text{Rs. } 8 &= \text{Rs. } \underline{1,20,000} \\
 &\quad \underline{1,50,000}
 \end{aligned}$$

Standard cost for actual hours (AH $\times$ SR) :

$$17,500 \text{ hrs} \times \text{Rs. } 8 = \text{Rs. } 1,40,000$$

Standard labour cost of output achieved (Actual output $\times$ SR of labour per unit):

$$= 6,000 \text{ units} \times \text{Rs. } 24 = \text{Rs. } 1,44,000$$

Variances :

$$\begin{aligned}
 \text{Labour Rate Variance :} & \quad (\text{Actual wages paid to workers} - \text{Standard cost for actual hours}) \\
 &= \text{Rs. } 1,50,000 - \text{Rs. } 1,40,000 \\
 &= \text{Rs. } 10,000 \text{ (A)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Labour Efficiency Variance :} & \quad (\text{Standard cost for actual hours} - \text{Standard labour cost of output achieved}) \\
 &= \text{Rs. } 1,40,000 - \text{Rs. } 1,44,000 \\
 &= \text{Rs. } 4,000 \text{ (F)}
 \end{aligned}$$

Standard Costing : Material Variance

19.

Material	Standard			Actual		
	Qty Kg	Rate Rs.	Amt. Rs.	Qty Kg	Rate Rs.	Amt. Rs.
EXE	50	12	600	?	15	?
POP	?	15	?	70	20	1400

For determining actual input of EXE

Suppose actual input of EXE in kg = X

Material Mix Variance = $\left[\text{Std. cost of St. mix per kg.} - \text{St. cost of actual mix per kg.} \right] \times \text{Actual quantity mix per kg.}$

$$(-) 45 = \left[13.50 * - \frac{12x + 1,050}{x + 70} \right] \times (x + 70) \text{ kg.}$$

$$(-) 45 = 13.50 (X + 70) - (12X + 1,050)$$

$$(-) 45 = (13.50X + 945) - (12X + 1,050)$$

$$- 45 = 1.5X - 105$$

$$X = 40 \text{ kg}$$

Thus actual input of EXE = 40 kg

*Note: St. cost of mix per kg. is taken as the average cost of EXE and PQPs.

$$(\text{Rs. } 12 + \text{Rs. } 15) \div 2 = \text{Rs. } 13.50$$

For determining standard input of PQP

Suppose standard quantity of PQP = Y

$$\text{Material uses variance} = (SQ - AQ) \times SP$$

$$(-) \text{ Rs. } 300 = (Y \text{ kg.} - 70 \text{ kg}) \times \text{Rs. } 15$$

$$Y = 50$$

$$\text{Thus standard quantity of PQP} = 50 \text{ kg}$$

Computation of variances

$$\text{Material price Variance} = (SP - AP) \times AQ$$

$$\text{EXE} = (12 - 15) \times 40 = 120 \text{ (A)}$$

$$\text{PQP} = (15 - 20) \times 70 = \text{Rs. } 350 \text{ (A)}$$

$$\begin{aligned}
 \text{Material Uses Variance} &= (SQ - AQ) \times SP \\
 \text{EXE} &= (50-40) \times 12 = \text{Rs.120 (F)} \\
 \text{PQP} &= (\text{It is given in the question}) \text{Rs.300 (A)} \\
 \text{Material Cost variance} &= (SC - AC) \\
 \text{EXE} &= (50 \times 12) - (40 \times 15) = \text{Rs. Nil} \\
 \text{PQP} &= (50 \times 15) - (70 \times 20) = \text{Rs.650 (A)}
 \end{aligned}$$

Varification:

Material Cost Variance = Material Price Variance + Material Uses Variance

$$\begin{aligned}
 \text{EXE} &= \text{Rs.120 (A)} + \text{Rs. 120 (F)} \\
 &= \text{Nil} \\
 \text{PQP} &= \text{Rs. 350 (A)} + \text{Rs. 300(A)} \\
 &= \text{Rs. 650 (A)}
 \end{aligned}$$

Standard Costing : Overhead Variance

20. (i) For Variable Overhead Variance:

$$\begin{aligned}
 \text{Actual variable overhead} &= \text{Rs.12, 000} \\
 \text{Standard variable overhead} & \\
 \text{for production :} &= (\text{Budgeted output} \times \text{Std. variable overhead rate per unit}) \\
 &= (12,000 \div 4,000) \times 3,800 = \text{Rs.11, 400} \\
 \text{Variable overhead variance:} &= (\text{Actual variable overhead} - \text{Standard variable overhead}) \\
 &= \text{Rs.12, 000} - \text{Rs.11, 400} \\
 &= 600 \text{ (A)}
 \end{aligned}$$

(ii) For Fixed Overhead Variance:

$$\begin{aligned}
 \text{Actual fixed overhead incurred} &= \text{Rs. 39, 000} \\
 \text{Budgeted fixed overhead} & \\
 \text{for the period} &= \text{Rs. 40, 000} \\
 \text{Standard fixed overhead} & \\
 \text{for production:} &= (\text{Standard output for actual time} \times \text{Standard Fixed Overhead per unit}) \\
 &= (\text{Rs.40, 000} \div 4,000 \text{ units}) \times 3,800 \text{ units} \\
 &= \text{Rs.38, 000.}
 \end{aligned}$$

Variances:

(a) Fixed Overhead Expenditure Variances:

(Actual fixed overhead – Budgeted fixed overhead)

= Rs.39, 000 – Rs.40, 000 = 1,000 (F)

(b) Fixed Overhead Volume Variance:

(Budgeted fixed overhead – Standard fixed overhead)

= Rs.40, 000 – Rs.38, 000 = Rs.2, 000 (A)

(c) Fixed Overhead Variance :

(Actual fixed overhead – Standard fixed overhead)

= Rs.39, 000 – Rs.38, 000 = Rs.1, 000 (A)

Varification:

Fixed Overhead Variance = Fixed Overhead Expenditure Variance + Fixed Overhead
Volume Variance)

Rs. 1,000 (A) = Rs. 1,000 (F) + Rs. 2,000 (A)

Budgetary Control : Functional and Flexible Budget

21. (i) The functional budgets are broadly grouped under the following heads :

- (a) Physical budgets - Those budgets which contains information in terms of physical units about sales, production etc. for example, quantity of sales, quantity of production, inventories, and manpower budgets are physical budgets.
- (b) Cost budgets - Budgets which provides cost information in respect of manufacturing, selling, administration etc. for example, manufacturing costs, selling costs, administration cost, and research and development cost budgets are cost budgets.
- (c) Profit budgets - A budget which enables in the ascertainment of profit, for example, sales budget, profit and loss budget, etc.
- (d) Financial budgets - A budget which facilitates in ascertaining the financial position of a concern, for example, cash budgets, capital expenditure budget, budgeted balance sheet etc.

(ii)		Flexible Budget/ For the period			
		80%	90%	100%	110%
		Rs.	Rs.	Rs.	Rs.
Sales		6,00,000	6,75,000	7,50,000	8,25,000
Administration Costs:					
Office Salaries (fixed)		90,000	90,000	90,000	90,000
General expenses (2% of Sales)		12,000	13,500	15,000	16,500
Depreciation (fixed)		7,500	7,500	7,500	7,500
Rent and rates (fixed)		8,750	8,750	8,750	8,750
(A) Total Adm. Costs		1,18,250	1,19,750	1,21,250	1,22,750
Selling Costs :					
Salaries (8% of sales)		48,000	54,000	60,000	66,000
Travelling expenses (2% of sales)		12,000	13,500	15,000	16,500
Sales office (1% of sales)		6,000	6,750	7,500	8,250
General expenses (1% of sales)		6,000	6,750	7,500	8,250
(B) Total Selling Costs		72,000	81,000	90,000	99,000
Distribution Costs :					
Wages (fixed)		15,000	15,000	15,000	15,000
Rent (1% of sales)		6,000	6,750	7,500	8,250
Other expenses (4% of sales)		24,000	27,000	30,000	33,000
(C) Total Distribution Costs		45,000	48,750	52,500	56,250
Total Costs (A + B + C)		2,35,250	2,49,500	2,63,750	2,78,000

Note : All fixed costs have been assumed to remain unchanged even at 110% capacity. However, in practice, fixed costs may change when capacity utilisation exceeds 100%.

PART II : FINANCIAL MANAGEMENT

1. Answer the following, supporting the same with reasoning/working notes:
 - (a) Ram has deposited Rs. 55,650 in a bank, which is paying 15 per cent rate of interest on a ten-year time deposit. Calculate the amount at the end of ten years?
 - (b) Calculate the amount which Mr. Shyam should deposit now to receive Rs. 50,000 after 15 years. The interest rate is 9 per cent.
 - (c) Which of the following statements concerning Net Operating Income (NOI) is correct?
 - (i) That debt and equity levels remain unchanged.
 - (ii) That dividends increase at a constant rate.
 - (iii) That k_0 remains constant regardless of changes in leverage.
 - (iv) That interest expense and taxes are included in the calculation.
 - (d) Mr. X is considering purchasing a 12 year, 10% Rs. 100 par value preference share. The redemption value of the preference share on maturity is Rs. 120. Mr. X's required rate of return is 10.5 per cent. What should he be willing to pay for the share now?
 - (e) PL Forgings Limited estimates its total cash requirement as Rs. 2 crore next year. The company's opportunity cost of funds is 15 per cent per annum. It will have to incur Rs. 150 per transaction when it converts its short-term securities to cash. Calculate the optimum cash balance. Also, determine the total annual cost of the demand for the optimum cash balance?
 - (f) The shares of Delta Limited are selling at Rs. 20 per share. The company had paid dividend @ Rs. 2 per share last year. The estimated growth rate of the company is approximately 5 per cent per year.
 - (i) Calculate the cost of equity capital.
 - (ii) Also, compute the estimated market price of the equity shares if the anticipated growth rate of the company rises to 8 per cent or falls to 3 per cent.
 - (g) The decision criterion for the payback period technique is to accept the project if the payback period is:
 - (i) Greater than the minimum time period acceptable to the firm.
 - (ii) Greater than the minimum time period acceptable for similar projects.
 - (iii) Less than one year.
 - (iv) None of the above.

- (h) Alpha Limited has Rs. 10,00,000 in fixed costs. The company produces only one product and anticipates selling each unit for Rs. 25 with variable costs of Rs. 5 per unit. Calculate the break-even (quantity) point.

2. Financial Analysis and Planning

The following information relates to Gamma Trading Limited for the year ended 30th June, 2008:

Gamma Trading Limited

	Rs.		Rs.
Sales	15,00,000	Administrative expenses:	
Purchases	9,66,750	Salaries	81,000
Opening stock	2,28,750	Rent	8,100
Closing stock	2,95,500	Stationery, postage, etc.	7,500
Sales returns	60,000	Depreciation	27,900
Selling and distribution expenses		Other charges	49,500
Salaries	45,900	Provision for taxation	1,20,000
Advertising	14,100	Non-operating income	
Travelling	6,000	Dividend on shares	27,000
Non-operating expenses		Profit on sale of shares	9,000
Loss on sale of assets	12,000		

You are required:

- To rearrange the figures of Gamma Trading Company in a suitable form for analysis, and
- Determine the following ratios:
 - Gross profit ratio;
 - Operating stock; and
 - Stock turnover ratio.

3. Financing Decisions

The following information is given for Beta Limited:

	Rs. in lakhs
EBIT	1,120
PBT	320
Fixed cost	700

You are required to compute:

- (a) Degree of operating leverage
- (b) Degree of financial leverage
- (c) Degree of combined leverage
- (d) Percentage change in earnings per share if sales increases by 5 per cent.

4. Management of Working Capital

Alcatech Limited has applied for a loan to Srinagar bank for financing its working capital requirements. The bank has requested you to prepare an estimate of the requirements of the working capital for the company. Add 10 percent to your estimated figure to cover unforeseen contingencies. The information about the projected profit and loss account of Alcatech is as follows:

		(Rs.)
Sales		21,00,000
Cost of goods sold		<u>15,30,000</u>
Gross Profit		5,70,000
Less: Administrative expenses	1,40,000	
Selling expenses	<u>1,30,000</u>	<u>2,70,000</u>
Profit before tax		<u>3,00,000</u>
Provision for tax		1,00,000
Cost of goods sold has been derived as follows:		
Material used		8,40,000
Wages and manufacturing expenses		6,25,000
Depreciation		<u>2,35,000</u>
		17,00,000
Less: Stock of finished goods (10 percent not yet sold)		<u>1,70,000</u>
		<u>15,30,000</u>

The figures given relate only to the goods that have been finished and not to work-in-progress; goods equal to 15 percent of the year's production (in terms of physical units) are in progress on an average, requiring full materials but only 40 percent of other expenses. Alcatech believes in keeping two months consumption of material in stock; desired cash balance is Rs. 40,000. Average time-lag in payment of all expenses is 1 month; suppliers of materials extend 1.5 months credit; sales are 20 percent cash; rest is at two months credit; 70 percent of the income tax has to be paid in advance in quarterly installments.

5. Management of Working Capital

Mr. Gupta, a customer of Goodluck Company, has been ordering 5,000 units at the rate of 1000 units per order during last year. The production cost is Rs. 12 per unit - Rs. 8 for materials and labour and Rs. 4 overhead cost. It costs Rs. 1,500 to set up for one run of 1,000 units and inventory-carrying cost is 20% of the production cost. Since Mr. Gupta may buy at least 5,000 units this year, the company would like to avoid making five different production runs. Calculate the most economic production run.

6. Management of Working Capital

Mahalaxmi Limited has budgeted its sales to be Rs. 7,00,000 per annum. Its costs as a percentage of sales are as follows:

	%
Raw materials	20
Direct labour	35
Overheads	15

Raw materials are carried in stock for two weeks and finished goods are held in stock before sale for three weeks. Production takes four weeks. Mahalaxmi Limited takes four weeks' credit from suppliers and gives eight weeks' credit to its customers. If both overheads and production are incurred evenly throughout the year, what is Mahalaxmi Limited's total working capital requirement?

7. Financial Analysis and Planning

You are required to prepare a Cash Flow Statement according to (a) Direct Method (b) Indirect Method as per AS-3 (Revised) from the following information:

Balance Sheet
as on 31.12. 2008

	2008	2007
(Rs. in '000)		
Assets		
Cash on hand and balances with banks	200	25
Short-term investments	670	135
Sundry debtors	1,700	1,200
Interest receivable	100	--
Inventories	900	1,950
Long-term investments	2,500	2,500

Fixed assets at cost	2,180	1,910
Less: Accumulated depreciation	(1,450)	(1,060)
Fixed assets (net)	730	850
Total Assets	6,800	6,660

	2008	2007
Liabilities		
Sundry creditors	150	1,890
Interest payable	230	100
Income taxes payable	400	1,000
Long-term debt	1,110	1,040
Total liabilities	1,890	4,030
Shareholders' funds		
Share capital	1,500	1,250
Reserves	3,410	1,380
Total shareholders' funds	4,910	2,630
Total Liabilities and Shareholders' funds	6,800	6,660

Statement of Profit and Loss
for the period ended 31.12. 2008

(Rs. in '000)

Sales	30,650
Cost of sales	(26,000)
Gross profit	4,650
Depreciation	(450)
Administrative and selling expenses	(910)
Interest expense	(400)
Interest income	300
Dividend income	200
Foreign exchange loss	(40)
Net profit before taxation and extraordinary item	3,350
Extraordinary item-	

Insurance proceeds from earthquake disaster settlement	180
Net profit after extraordinary item	3,530
Income tax	(300)
Net Profit	3,230

Additional Information: (Figures in Rs. '000)

- An amount of 250 was raised from the issue of share capital and a further 250 was raised from long-term borrowings.
- Interest expense was 400 of which 170 was paid during the period. 100 relating to interest expense of the prior period was also paid during the period.
- Dividends paid were 1,200.
- Tax deducted at source on dividends received (included in the tax expense of 300 for the year) amounted to 40.
- During the period, the enterprise acquired fixed assets for 350. The payment was made in cash.
- Plant with original cost of 80 and accumulated depreciation of 60 was sold for 20.
- Foreign exchange loss of 40 represents the reduction in the carrying amount of a short-term investment in foreign currency designated bonds arising out of a change in exchange rate between the date of acquisition of the investment and the balance sheet date.
- Sundry debtors and sundry creditors include amounts relating to credit sales and credit purchases only.

8. Investment Decisions

Ganesha Enterprises is considering a proposal of installing a dust collector equipment. The equipment would involve a cash outlay of Rs. 6,00,000 and net working capital of Rs. 80,000. The expected life of the project is 5 years without any salvage value. Assume that the company is allowed to charge depreciation on straight-line basis for Income-tax purpose. The estimated before-tax cash inflows are given below:

Before-tax Cash inflows (Rs. '000)					
Year	1	2	3	4	5
	240	275	210	180	160

The applicable Income-tax rate to the company is 35%. If the company's opportunity cost of capital is 12%, calculate the equipment's discounted payback period, payback period, net present value and internal rate of return.

The PV factors at 12%, 14% and 15% are:

Year	1	2	3	4	5
PV factor at 12%	0.8929	0.7972	0.7118	0.6355	0.5674
PV factor at 14%	0.8772	0.7695	0.6750	0.5921	0.5194
PV factor at 15%	0.8696	0.7561	0.6575	0.5718	0.4972

9. Management of Working Capital

The present credit terms of Roltas Limited are 1/10 net 30. Its annual sales are Rs. 80 lakhs, its average collection period is 20 days. Its variable costs and average total costs to sales are 0.85 and 0.95 respectively and its cost of capital is 10 per cent. The proportion of sales on which customers currently take discount is 0.5. Roltas Limited is considering relaxing its discount terms to 2/10 net 30. Such relaxation is expected to increase sales by Rs. 5 lakhs, reduce the average collection period to 14 days and increase the proportion of discount sales to 0.8. What will be the effect of relaxing the discount policy on Roltas Limited's profit? Take year as 360 days.

10. Investment Decisions

Best Luck Company is considering building an assembly plant and the company has two options, out of which it wishes to choose the best plant. The projected output is 10,000 units per month. The following data are available:

		Rs.	
		Plant A	Plant B
Initial Cost		60,00,000	44,00,000
Direct Labour cost p.a.	(1 st Shift)	30,00,000	15,00,000
	(2 nd Shift)	-	19,00,000
Overhead	(per year)	5,00,000	4,20,000

Both the plants have an expected life of 10 years after which there will be no salvage value. The cost of capital is 10%. The present value of an ordinary annuity of Re. 1 for 10 years @ 10% is 6.1446. Ignore effect of taxation.

You are required to determine:

- What would be the desirable choice?
- What other important elements are to be considered before the final decision is taken?

- 11 (a) Scope and Objectives of Financial Management
Explain as to how the wealth maximisation objective is superior to the profit maximisation objective.
- (b) Financing Decisions
Explain, briefly, Modigliani and Miller approach on Cost of Capital
12. Scope and Objectives of Financial Management
“Modern financial management has come a long way from the traditional corporate finance. As the economy is opening up and global resources are being tapped, the opportunities available to finance managers virtually have no limits.” In view of these changes, discuss the role of a chief financial officer (CFO).
13. Types of Financing
What is Venture Capital Financing? Enumerate the common methods of venture capital financing.
14. Differentiate between the following:
 - (a) Bill Discounting and Bill Rediscounting
 - (b) Line of Credit and Letter of Credit
 - (c) Pledging and Factoring
 - (d) Weighted Average Cost of Capital (WACC) and Marginal Cost of Capital.
15. Write short notes on the following:
 - (a) Benefits of Commercial Papers
 - (b) Forms of Bank Credit
 - (c) Ageing Schedule of Monitoring Receivables
 - (d) Limitations of Financial Ratios.

SUGGESTED ANSWERS/HINTS

- 1 (a) Calculation of Future Value (FV)

$$FV = P \times CVF_{10,0.15}$$

$$FV = 55,650 \times CVF_{10,0.15}$$
 (CVF of Re. 1 at 15 percent for 10 years is 4.046)

$$= 55,650 \times 4.046$$

$$= \text{Rs. } 2,25,159.90.$$

(b) $PV = \text{Amount} \times PVF_{15,0.09}$

(PVF at 9 percent for 15 years is 0.275)

$$PV = 50,000 \times PVF_{15,0.09}$$

$$= 50,000 \times 0.275$$

$$= \text{Rs. } 13,750$$

(c) The correct answer is (iii) because a critical assumption of the net operating income (NOI) approach to valuation is that k_o should remain constant regardless of changes in leverage.

(d) Mr. X expects to receive Rs. 10 as preference dividend each year for 12 years and Rs. 110 on maturity (i.e. at the end of 12 years). Using the present value annuity factor to value the constant stream of preference dividends and the present value factor to value the redemption payment, we can calculate the amount he should pay now:

$$P_0 = 10 \times \left[\frac{1}{0.105} - \frac{1}{0.105 \times (1.105)^{12}} \right] + \frac{120}{(1.105)^{12}}$$

$$= 10 \times 6.506 + 120 \times 0.302$$

$$= 65.06 + 36.24 = \text{Rs. } 101.30.$$

It can be observed that the present value of Rs. 101.30 is a sum of the present value of dividends (Rs. 65.06) and the present value of the redemption value (Rs. 36.24). The Rs. 100 preference share is worth Rs. 101.3 today at 10.5 per cent required rate of return.

Therefore, Mr. X should purchase the share for Rs. 100 now.

(e) Calculation of Optimum Cash Balance

$$C^* = \sqrt{\frac{2cT}{k}}$$

$$C^* = \sqrt{\frac{2(150)(2,00,00,000)}{0.15}} = \text{Rs. } 2,00,000$$

Calculation of Total Annual Cost of Demand

The annual cost will be:

$$\text{Total cost} = 150 (2,00,00,000/2,00,000) + 0.15 (2,00,000/2)$$

$$= 150 (100) + 0.15 (1,00,000) = 15,000 + 15,000$$

$$= \text{Rs. } 30,000$$

- (f) (i) Calculation of Cost of Equity Capital

$$\begin{aligned}k_e &= (D_1 / P_0) + g \\&= (\text{Rs. } 2.10 / \text{Rs. } 20) + 0.05 \\&= 15.5 \text{ per cent}\end{aligned}$$

- (ii) Calculation of the Market Price of Equity Shares

When growth rate rises to 8 percent

$$\begin{aligned}P_0 &= D / (k_e - g) \\&= \text{Rs. } 2.16 / \text{Rs. } 0.075 \\&= \text{Rs. } 28.80\end{aligned}$$

When growth rate falls to 3 percent

$$\begin{aligned}P_0 &= D / [k_e - (-g)] \\P_0 &= D / (k_e + g) \\P_0 &= \text{Rs. } 1.94 / 0.185 = \text{Rs. } 10.49.\end{aligned}$$

- (g) The correct answer is (iv) because the decision criterion for the payback period technique is to accept the project if the payback period is less than the minimum time period acceptable for similar projects.
- (h) Calculation of Break Even Point (BEP)

$$\text{Break Even Point (BEP)} = \frac{10,00,000}{(25 - 5)}$$

$$= \frac{10,00,000}{20}$$

$$\text{BEP} = 50,000$$

2. (a) Gross profit ratio

$$= \frac{\text{Rs. } 6,00,000}{\text{Rs. } 15,00,000} = 0.40 \text{ or } 40\%$$

- (b) Operating ratio

$$= \frac{\text{Cost of goods} + \text{Operating expenses}}{\text{Sales}}$$

$$= \frac{\text{Rs. } 11,40,000}{\text{Rs. } 15,00,000} = 0.76 \text{ or } 76\%$$

(c) Stock turnover ratio

$$= \frac{\text{Cost of goods sold}}{\text{Average stock}}$$

$$= \frac{\text{Rs. 9,00,000}}{\text{Rs. 2,62,125}} = 3.43 \text{ times}$$

Where,

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$= \frac{2,28,750 + 2,95,500}{2} = \frac{5,24,250}{2} = 2,62,125$$

Gamma Trading Limited
Profit and Loss Statement

		Rs.
Sales (less return)		15,00,000
Less: Cost of goods sold:		
Opening stock	2,28,750	
Purchases	<u>9,66,750</u>	
	11,95,500	
Less: Closing stock	<u>2,95,500</u>	<u>9,00,000</u>
Gross profit		6,00,000
Operating expenses		
Selling and distribution expenses	66,000	
Administrative expenses	<u>1,74,000</u>	<u>2,40,000</u>
Operating net profit		3,60,000
Non – operating income	36,000	
Non - operating expenses	<u>12,000</u>	<u>24,000</u>
Profit before tax		3,84,000
Provision for taxes		<u>1,20,000</u>
		<u>2,64,000</u>

3. (a) Degree of Operating Leverage (DOL)

$$\text{DOL} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{EBIT} + \text{Fixed Cost}}{\text{EBIT}} = \frac{1,120 + 700}{1,120} = 1.625$$

(b) Degree of Financial Leverage (DFL)

$$\begin{aligned} \text{DFL} &= \frac{\text{EBIT}}{\text{PBT}} \\ &= \frac{1,120}{320} = 3.5 \end{aligned}$$

(c) Degree of Combined Leverage (DCL)

$$\begin{aligned} \text{DCL} &= \text{DOL} \times \text{DFL} \\ &= 1.625 \times 3.5 \\ &= 5.6875 \end{aligned}$$

(d) Percentage change in EPS if sales increases by 5 percent

$$\begin{aligned} \text{DCL} &= \frac{\% \text{ Change in EPS}}{\% \text{ Change in Sales}} \\ 5.6875 &= \frac{\% \text{ Change in EPS}}{5} \\ \% \text{ change in EPS} &= 5 \times 5.6875 \\ &= 28.4375\% \end{aligned}$$

4. Estimate of Net Working Capital of Alcatech Limited

(A)	Current Assets:	(Rs.)
(i)	Raw material in stock $\left(\text{Rs. } 8,40,000 \times \frac{2}{12} \right)$	1,40,000
(ii)	Work-in-progress	
(a)	Raw material $(\text{Rs. } 8,40,000 \times 15/100)$	1,26,000
(b)	Wages and manufacturing expenses $(\text{Rs. } 6,25,000 \times 0.4 \times 15/100)$	37,500
(iii)	Stock of finished goods $[\text{Rs. } 1,70,000 - \text{Rs. } 23,500 (0.10 \times \text{Rs. } 2,35,000; \text{ depreciation})]$	1,46,500
(iv)	Debtors	
(a)	Cost of goods sold	Rs. 15,30,000
	Less: Depreciation $(\text{Rs. } 2,35,000 \times 0.9)$	<u>2,11,500</u>

	13,18,500	
(b) Administrative expenses	1,40,000	
(c) Selling expenses	<u>1,30,000</u>	
Total	<u>15,88,500</u>	
Credit sales (4/5 of Rs. 15,88,500 = 12,70,800		2,11,800
$\left(12,70,800 \times \frac{2}{12}\right)$		
(v) Cash required		<u>40,000</u>
Total Investment in Current Assets		<u>7,01,800</u>
(B) Current Liabilities:		
(i) Average time-lag in payment of expenses:		
(a) Wages and manufacturing expenses	6,25,000	
(b) Administrative expenses	1,40,000	
(c) Selling expenses	<u>1,30,000</u>	
	8,95,000 ÷ 12	74,583
(ii) Creditors (Rs. 8,40,000 × 3/24)		<u>1,05,000</u>
Total Current Liabilities		<u>1,79,583</u>
(C) Net Working Capital: Current Assets – Current Liabilities		5,22,217
Add: 10 percent contingencies		<u>52,222</u>
		<u>5,74,439</u>

Assumptions and Working Notes:

- (a) Depreciation is not a cash expense and, therefore, excluded from cost of goods sold for the purpose of determining work-in-progress, finished goods and investment in debtors.
- (b) Since profit is not taken into consideration in the calculation as a source of working capital, income tax has been excluded as it is to be paid out of profits.

5. The most economic production run is:

$$= \sqrt{\frac{2 \times 5,000 \times 1,500}{12 \times 20\%}}$$

$$= \sqrt{\frac{10,000 \times 1,500}{2.40}}$$

$$= \sqrt{\frac{15,000,000}{2.40}}$$

$$= \sqrt{6,250,000}$$

$$= 2,500 \text{ units.}$$

Therefore, the most economic production run is of 2,500 units.

6. Annual costs:

Raw materials: $7,00,000 \times 0.20 =$ Rs. 1,40,000

Direct labour: $7,00,000 \times 0.35 =$ Rs. 2,45,000

Overheads: $7,00,000 \times 0.15 =$ Rs. 1,05,000

Calculation of Working Capital Requirement

	Rs.	Rs.
Stock of raw materials: $1,40,000 \times (2/52)$		5,385
Work-in-progress:		
Materials : $1,40,000 \times (4/52)$	10,769	
Labour : $2,45,000 \times (4/52) \times \frac{1}{2}$	9,423	
Overheads : $1,05,000 \times (4/52) \times \frac{1}{2}$	4,038	
		24,230
Finished goods : $4,90,000 \times (3/52)$		28,269
Debtors : $7,00,000 \times (8/52)$		1,07,692
Creditors : $1,40,000 \times (4/52)$		(10,769)
Working Capital Required		<u>1,54,807</u>

Note: Work-in-progress is assumed to be half complete as regards labour and overheads, but fully complete as regards raw materials, i.e. all raw materials are added at the start of production.

7.	CASH FLOW STATEMENT (Direct Method)	(Rs. in '000)
		2008
Cash flows from Operating Activities		
Cash receipts from customers	30,150	
Cash paid to suppliers and employees	(27,600)	
Cash generated from operations	<u>2,550</u>	
Income taxes paid	(860)	
Cash flow before extraordinary item	<u>1,690</u>	
Proceeds from earthquake disaster settlement	180	
Net cash from operating activities		1,870
Cash flows from Investing Activities		
Purchase of fixed assets	(350)	
Proceeds from sale of equipment	20	
Interest received	200	
Dividend received	160	
Net cash from investing activities		30
Cash Flows from Financing Activities		
Proceeds from issuance of share capital	250	
Proceeds from long-term borrowings	250	
Repayments of long-term borrowings	(180)	
Interest paid	(270)	
Dividend paid	<u>(1,200)</u>	
Net cash used in financing activities		<u>(1,150)</u>
Net increase in Cash and Cash Equivalents		750
Cash and Cash Equivalents at beginning of period (See Note 1)		<u>160</u>
Cash and Cash Equivalents at end of period (See Note 1)		<u>910</u>

Notes to the Cash Flow Statement (Direct & Indirect Method)

1. Cash and Cash Equivalents: Cash and cash equivalents consist of cash on hand and balance with banks, and investments in money-market instruments. Cash and cash equivalents included in the cash flow statement comprise the following balance sheet amounts.

	2008	2007
Cash on hand and balance with banks	200	25
Short-term investments	<u>670</u>	<u>135</u>
Cash and cash equivalents	870	160
Effects of exchange rate changes	<u>40</u>	<u>--</u>
Cash and cash equivalents as restated	910	160

Cash and cash equivalents at the end of the period include deposits with banks of 100 held by a branch which are not freely permissible to the company because of currency exchange restrictions.

The company has undrawn borrowing facilities of 2,000 of which 700 may be used only for future expansion.

2. Total tax paid during the year (including tax deducted at source on dividends received) amounted to 900.

CASH FLOW STATEMENT

(Indirect Method)

	(Rs. in '000)
	2008
Cash flows from operating activities	
Net profit before taxation, and extraordinary item	3,350
Adjustments for:	
Depreciation	450
Foreign exchange loss	40
Interest income	(300)
Dividend income	(200)
Interest expense	<u>400</u>
Operating profit before working capital changes	3,740
Increase in sundry debtors	(500)

Decrease in inventories	1,050	
Decrease in sundry creditors	<u>(1,740)</u>	
Cash generated from operations	2,550	
Income taxes paid	<u>(860)</u>	
Cash flows before extraordinary item	1,690	
Proceeds from earthquake disaster settlement	<u>180</u>	
Net cash from operating activities		1,870
Cash flows from investing activities		
Purchase of fixed assets	(350)	
Proceeds from sale of equipment	20	
Interest received	200	
Dividends received	<u>160</u>	
Net cash from investing activities		30
Cash flows from financing activities		
Proceeds from issuance of share capital	250	
Proceeds from long-term borrowings	250	
Repayment of long-term borrowings	(180)	
Interest paid	(270)	
Dividends paid	<u>(1,200)</u>	
Net cash used in financing activities		<u>(1,150)</u>
Net increase in cash and cash equivalents		750
Cash and cash equivalents at beginning of period (See Note 1)		<u>160</u>
Cash and cash equivalents at end of period (See Note 1)		<u>910</u>

Alternative Presentation (Indirect Method)

As an alternative, in an indirect method cash flow statement, operating profit before working capital changes is sometimes presented as follows:

Revenues excluding investment income	30,650
Operating expenses excluding depreciation	<u>(26,910)</u>
Operating profit before working capital changes	<u>3,740</u>

Working Notes:

The working notes given below do not form part of the cash flow statement. The purpose of these working notes is merely to assist in understanding the manner in which various figures in the cash flow statement have been derived.

(Figures are in Rs.'000)

1.	Cash receipts from customers		
	Sales		30,650
	Add: Sundry debtors at the beginning of the year		1,200
			<u>31,850</u>
	Less: Sundry debtors at the end of the year		1,700
			<u>30,150</u>
2.	Cash paid to suppliers and employees		
	Cost of sales		26,000
	Administrative & selling expenses		910
			<u>26,910</u>
	Add: Sundry creditors at the beginning of the year	1,890	
	Inventories at the end of the year	900	2,790
			<u>29,700</u>
	Less: Sundry creditors at the end of the year	150	
	Inventories at the beginning of the year	1,950	2,100
			<u>27,600</u>
3.	Income taxes paid (including tax deducted at source from dividends received)		
	Income tax expense for the year		300
	(including tax deducted at source from dividends received)		
	Add: Income tax liability at the beginning of the year		1,000
			<u>1,300</u>
	Less: Income tax liability at the end of the year		400
			<u>900</u>
	Out of 900, tax deducted at source on dividends received (amounting to 40), is included in cash flows from investing activities and the balance of 860 is included in cash flows from operating activities.		
4.	Repayment of long-term borrowings		
	Long-term debt at the beginning of the year		1,040

Add: Long-term borrowings made during the year	250
	<u>1,290</u>
Less: Long-term borrowings at the end of the year	1,110
	<u>180</u>

5. Interest paid

Interest expense for the year	400
Add: Interest payable at the beginning of the year	100
	<u>500</u>
Less: Interest payable at the end of the year	230
	<u>270</u>

8. (i) Equipment's initial cost = Rs. 6,00,000 + 80,000 = Rs. 6,80,000
(ii) Annual straight line depreciation = Rs. 6,00,000/5 = Rs. 1,20,000
(iii) Net cash flows can be calculated as follows:

$$= \text{Before tax CFs} \times (1 - T_c) + T_c \times \text{Depreciation}$$

(Rs. '000)

Year	0	1	2	3	4	5
Initial cost	(680)					
Before tax cash flows		240	275	210	180	160
Tax @ 35%		<u>84</u>	<u>96.25</u>	<u>73.5</u>	<u>63</u>	<u>56</u>
After tax cash flows		156	178.75	136.5	117	104
Depreciation tax shield (Depreciation × T _c)		42	42	42	42	42
Working capital released		<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>80</u>
Net Cash Flow		198	220.75	178.5	159	226
PVF at 12%	1.00	0.8929	0.7972	0.7118	0.6355	0.5674
PV	(680)	176.79	175.98	127.06	101.04	128.24
NPV	29.12					

	0	1	2	3	4	5
PVF at 15%	1	0.8696	0.7561	0.6575	0.5718	0.4972
PV	(680)	172.18	166.91	117.36	90.92	112.37
NPV	(20.26)					

Internal Rate of Return

$$\text{IRR} = 12\% + \frac{29.12}{49.38} \times 3\% = 13.77\%$$

Discounted Payback Period

Discounted Cash flows at K = 12% considered

$$= 176.79 + 175.98 + 127.06 + 101.04 + 12 \times \frac{99.13}{128.24}$$

= 4 years and 9.28 months

Payback Period (Net Cash flows are considered)

$$= 198 + 220.75 + 178.5 + 12 \times \frac{82.75}{159}$$

= 3 years and 6.25 months

9. Working Notes:

Calculation of Reduction in Investment in Receivables (Rs.)

Present investment in receivables

$$\left[\text{Rs. 80 lakhs} \times 0.95 \times \frac{20 \text{ days}}{360 \text{ days}} \right] \quad 4,22,222$$

Proposed investment in receivables

$$\left[\{(\text{Rs. 80 lakhs} \times 0.95) + (\text{Rs. 5 lakhs} \times 0.85)\} \times \frac{14 \text{ days}}{360 \text{ days}} \right] \quad 3,12,083$$

Reduction in investment in receivables 1,10,139

Calculation of Increase in Discount (Rs.)

Present discount	(Rs. 80 lakhs $\times$ 1/100 $\times$ 0.5)	40,000
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Proposed discount	(Rs. 85 lakhs $\times$ 2/100 $\times$ 0.8)	<u>1,36,000</u>
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Net increase in discount		<u>96,000</u>
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Statement Showing Evaluation of Effect of Relaxing the Discount Policy on Roltas Limited's Profit

(Rs.)

Incremental Revenue:

Increase in contribution	(Rs. 5 lakhs $\times$ 15/100)	75,000
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Cost of savings on investment in receivables	(Rs. 1,10,139 lakhs $\times$ 10/100)	<u>11,014</u>
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Total Incremental Cost	Total (A)	86,014
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Net increase in discount	(B)	<u>96,000</u>
Incremental Loss		<u>9,986</u>

Analysis: There will be an incremental loss by relaxing the discount policy. Hence, it is not suggested to release the Roltas Limited's present discount policy.

10. (A) Computation of Differential Cash flow

	Plant A	Plant B	(Rs.) Differential cash outflow
Direct labour cost:			
1 st shift	30,00,000	15,00,000	(15,00,000)
2 nd shift	-	19,00,000	19,00,000
Overhead	5,00,000	4,20,000	<u>(80,000)</u>
Net saving for using Plant A			<u>3,20,000</u>

Present value of net saving of (Rs. 3,20,000 × 6.1446) = Rs. 19,66,272. Plant A @ 10% (cost of capital)

(B) Additional Cash Outlay for Plant A over Plant B

	Rs.
Cost of Plant A	60,00,000
Cost of Plant B	44,00,000
Additional outlay for using Plant A	16,00,000

Analysis: The net saving for the company in choosing plant A = Rs. 19,66,272 – Rs. 16,00,000 = Rs. 3,66,272. Hence, Plant A should be implemented.

11 (a). Superiority of Wealth Maximisation Objective to Profit Maximisation Objective

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

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

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

the firm. The profit of the firm in this case is measured in terms of its total accounting profit available to its shareholders.

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

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

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

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

(b) Modigliani and Miller (MM) Approach to Cost of Capital

Modigliani and Miller's argue that the total cost of capital of a particular corporation is independent of its methods and level of financing. According to them a change in the debt equity ratio does not affect the cost of capital. This is because a change in the debt equity ratio changes the risk element of the company which in turn changes the expectations of the shareholders from the particular shares of the company. Hence they contend that leverages has little effect on the overall cost of capital or on the market price.

Modigliani and Miller made the following assumptions and the derivations there from:

Assumptions

- (i) Capital markets are perfect. Information is costless and readily available to all investors, there are no transaction costs; and all securities are infinitely divisible. Investors are assumed to be rational and to behave accordingly.
- (ii) The average expected future operating earnings of a firm are represented by a subjective random variable. It is assumed that the expected values of the probability distributions of all investors are the same. Implied in the MM illustration is that the expected values of the probability distributions of expected operating earnings for all future periods are the same as present operating earnings.
- (iii) Firms can be categorized into “equivalent return” classes. All firms within a class have the same degree of business risk.
- (iv) The absence of corporate income taxes is assumed.

Three Basic Propositions

- (i) The total market value of the firm and its cost of capital are independent of its capital structure. The total market value of a firm is given by capitalising the expected stream of operating earnings at a discount rate appropriate for its risk class.
- (ii) The expected yield of a share of stock, K_e is equal to the capitalisation rate of a pure equity stream, plus a premium for financial risk equal to the difference between the pure equity capitalization rate and K_g times the ratio B/S . In other words, K_e increases in a manner to exactly offset the use of cheaper debt funds.
- (iii) The cut-off rate for investment purposes is completely independent of the way in which an investment is financed. This proposition alongwith the first implies a complete separation of the investment and financing decisions of the firm.

Thus, the theory propounded by Modigliani and Miller is based on the prevalence of perfect market conditions which are rare to find. Corporate taxes and personal taxes are a reality and they exert appreciable influence over decision making whether to have debt or equity.

12. Role of Chief Financial Officer (CFO)

A new era has ushered during the recent years in financial management, especially with the development of new financial system, emergence of financial services industry, recent innovations and development of financial tools, techniques, instruments, and products and emphasis on public sector undertakings to be self-supporting and their dependence on capital market for fund requirements, have all changed the role of the chief financial officer. His role, especially, assumes significance in the present day context of liberalization, deregulation and globalisation.

Due to the changes in the global environment the chief financial officer needs to have a broader and far-sighted outlook, and must realize that his actions would have far reaching consequences for the firm because they influence the size, profitability, growth, risk and survival of the firm, and as a consequence, affect the overall value of the firm. He must have the flexibility to adapt to the external factors such as economic uncertainty, global competition, technological change, volatility of interest and exchange rates, changes in laws and regulations and ethical concerns. Therefore, in today's changing environment, the chief financial officer plays a pivotal leadership role in a company's overall efforts to achieve its goals.

He is one of the dynamic members of corporate managerial team. His role, day-by-day, is becoming more and more pervasive and significant in solving the complex managerial problems. The traditional role of the chief financial officer was confined just to raising of funds from a number of sources, but the recent development in the socio-economic and political scenario throughout the world has placed him in a central position in the business organisation. He is now responsible for shaping the fortunes of the enterprise, and is involved in the most vital decision of allocation of capital like mergers, acquisition etc. He like other members of corporate team cannot be averse to the fast developments around him. He has to take note of these changes in order to be relevant and dynamic according to the fast changing circumstances.

To sum it up, the chief financial officer of an organisation plays an important role in the company's goals, policies, and financial success. His responsibilities include:

- (a) Financial analysis and planning: Determining the proper amount of funds to employ in the firm, i.e. designating the size of the firm and its rate of growth.
- (b) Investment decisions: The efficient allocation of funds to specific assets.
- (c) Financing and capital structure decisions: Raising funds on favourable terms as possible, i.e., determining the composition of liabilities.
- (d) Management of financial resources (such as working capital).
- (e) Risk management: Protecting assets.

13. Venture Capital Financing and its Methods

The venture capital financing refers to financing of new high risky venture promoted by qualified entrepreneurs who lack experience and funds to give shape to their ideas. In broad sense, under venture capital financing venture capitalists make investment to purchase equity or debt securities from inexperienced entrepreneurs who undertake highly risky ventures with a potential of success.

Some common methods of venture capital financing are as follows:

- (i) Equity financing: The venture capital undertakings generally require funds for a longer period but may not be able to provide returns to the investors during the initial stages. Therefore, the venture capital finance is generally provided by way of

equity share capital. The equity contribution of venture capital firm does not exceed 49% of the total equity capital of venture capital undertakings so that the effective control and ownership remains with the entrepreneur.

- (ii) Conditional loan: A conditional loan is repayable in the form of a royalty after the venture is able to generate sales. No interest is paid on such loans. In India venture capital financiers charge royalty ranging between 2 and 15 per cent; actual rate depends on other factors of the venture such as gestation period, cash flow patterns, risk and other factors of the enterprise. Some venture capital financiers give a choice to the enterprise of paying a high rate of interest (which could be well above 20 per cent) instead of royalty on sales once it becomes commercially sound.
- (iii) Income note: It is a hybrid security which combines the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest and royalty on sales but at substantially low rates. IDBI's VCF provides funding equal to 80 – 87.50% of the project's cost for commercial application of indigenous technology.
- (iv) Participating debenture: Such security carries charges in three phases — in the start up phase no interest is charged, next stage a low rate of interest is charged up to a particular level of operation, after that, a high rate of interest is required to be paid.

14. (a) Bill Discounting and Bill Rediscounting

Bill discounting is recognized as an important short term financial Instrument and it is widely used method of short term financing. In a process of bill discounting, the supplier of goods draws a bill of exchange with direction to the buyer to pay a certain amount of money after a certain period, and gets its acceptance from the buyer or drawee of the bill.

Whereas, Bill Rediscounting scheme, on the other hand, was introduced by Reserve Bank of India with effect from 1st November, 1970 in order to extend the use of the bill of exchange as an instrument for providing credit and the creation of a bill market in India with a facility for the rediscounting of eligible bills by banks. Under the bills rediscounting scheme, all licensed scheduled banks are eligible to offer bills of exchange to the Reserve Bank for rediscount.

(b) Line of Credit and Letter of Credit

Line of Credit is a commitment by a bank to lend a certain amount of funds on demand specifying the maximum amount.

Whereas, Letter of Credit, on the other hand, is an arrangement by which the issuing bank on the instructions of a customer or on its own behalf undertakes to pay or accept or negotiate or authorizes another bank to do so against stipulated documents subject to compliance with specified terms and conditions.

(c) Pledging and Factoring

Pledging refers to the use of a firm's receivable to secure a short term loan. A firm's receivables can be termed as its most liquid assets and these serve as prime collateral for a secured loan. The lender scrutinizes the quality of the accounts receivables, selects acceptable accounts, creates a lien on the collateral and fixes the percentage of financing receivables which ranges around 50 to 90%. The major advantage of pledging accounts receivables is the ease and flexibility it provides to the borrower. Moreover, financing is done regularly. This, however, suffers on account of high cost of financing.

Whereas, Factoring, on the other hand, is a new concept in financing of accounts receivables. This refers to outright sale of accounts receivables to a factor or a financial agency. A factor is a firm that acquires the receivables of other firms. The factoring lays down the conditions of the sale in a factoring agreement. The factoring agency bears the right of collection and services the accounts for a fee.

(d) Weighted Average Cost of Capital (WACC) and Marginal Cost of Capital

Weighted Average Cost of Capital represents the investors' opportunity cost of taking on the risk of putting money into a company. Since every company has a capital structure i.e. what percentage of debt comes from retained earnings, equity shares, preference shares, and bonds, so by taking a weighted average, it can be seen how much interest the company has to pay for every rupee it borrows. This is the weighted average cost of capital. Thus, 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.

Whereas, the Marginal Cost of Capital, on the other hand, 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. Thus, the problem of choosing between the book value weights and the market value weights does not arise in the case of marginal cost of capital computation. 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. When a firm raises funds in proportional manner and the component's cost remains unchanged, there will be no difference between average cost of capital (of the total funds) and the marginal cost of capital.

15. (a) Benefits of Commercial Papers (CP)

From the point of the issuing company, Commercial Papers provide the following benefits:

- (i) CP is sold on an unsecured basis and does not contain any restrictive conditions.
- (ii) Maturing CP can be repaid by selling new CP and thus can provide a continuous source of funds.
- (iii) Maturity of CP can be tailored to suit the requirement of the issuing firm.
- (iv) CP can be issued as a source of fund even when money market is tight.
- (v) Generally, the cost of CP to the issuing firm is lower than the cost of commercial bank loans.

(b) Forms of Bank Credit

The bank credit will generally be in the following forms:

- **Cash Credit:** This facility will be given by the banker to the customers by giving certain amount of credit facility on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank.
- **Bank Overdraft:** It is a short-term borrowing facility made available to the companies in case of urgent need of funds. The banks will impose limits on the amount they can lend. When the borrowed funds are no longer required they can quickly and easily be repaid. The banks issue overdrafts with a right to call them in at short notice.
- **Bills Discounting:** The company which sells goods on credit, will normally draw a bill on the buyer who will accept it and sends it to the seller of goods. The seller, in turn discounts the bill with his banker. The banker will generally earmark the discounting bill limit.
- **Bills Acceptance:** To obtain finance under this type of arrangement a company draws a bill of exchange on bank. The bank accepts the bill thereby promising to pay out the amount of the bill at some specified future date.
- **Line of Credit:** Line of Credit is a commitment by a bank to lend a certain amount of funds on demand specifying the maximum amount.
- **Letter of Credit:** It is an arrangement by which the issuing bank on the instructions of a customer or on its own behalf undertakes to pay or accept or negotiate or authorizes another bank to do so against stipulated documents subject to compliance with specified terms and conditions.

- **Bank Guarantees:** Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees.

(c) **Ageing Schedule of Monitoring Receivables**

When receivables are analysed according to their age, the process is known as preparing the ageing schedules of receivables. The computation of average age of receivables is a quick and effective method of comparing the liquidity of receivables with the liquidity of receivables in the past and also comparing liquidity of one firm with the liquidity of the other competitive firm. It also helps the firm to predict collection pattern of receivables in future. This comparison can be made periodically. The purpose of classifying receivables by age groups is to have a closer control over the quality of individual accounts. It requires going back to the receivables ledger where the dates of each customer's purchases and payments are available. The ageing schedule, by indicating a tendency for old accounts to accumulate, provides a useful supplement to average collection period of receivables/sales analysis. Because an analysis of receivables in terms of associated dates of sales enables the firm to recognise the recent increases, and slumps in sales. To ascertain the condition of receivables for control purposes, it may be considered desirable to compare the current ageing schedule with an earlier ageing schedule in the same firm and also to compare this information with the experience of other firms.

(d) **Limitations of Financial Ratios**

The limitations of financial ratios are listed below:

- Diversified product lines:** Many businesses operate a large number of divisions in quite different industries. In such cases ratios calculated on the basis of aggregate data cannot be used for inter-firm comparisons.
- Financial data are badly distorted by inflation:** Historical cost values may be substantially different from true values. Such distortions of financial data are also carried in the financial ratios.
- Seasonal factors may also influence financial data.**
- To give a good shape to the popularly used financial ratios (like current ratio, debt- equity ratios, etc.):** The business may make some year-end adjustments. Such window dressing can change the character of financial ratios which would be different had there been no such change.
- Differences in accounting policies and accounting period:** It can make the accounting data of two firms non-comparable as also the accounting ratios.
- There is no standard set of ratios against which a firm's ratios can be compared:** Some times a firm's ratios are compared with the industry average. But if a firm

desires to be above the average, then industry average becomes a low standard. On the other hand, for a below average firm, industry averages become too high a standard to achieve.

- (vii) It is very difficult to generalise whether a particular ratio is good or bad: For example, a low current ratio may be said 'bad' from the point of view of low liquidity, but a high current ratio may not be 'good' as this may result from inefficient working capital management.
- (viii) Financial ratios are inter-related, not independent: Viewed in isolation one ratio may highlight efficiency. But when considered as a set of ratios they may speak differently. Such interdependence among the ratios can be taken care of through multivariate analysis.

Financial ratios provide clues but not conclusions. These are tools only in the hands of experts because there is no standard ready-made interpretation of financial ratios.