

PAPER – 3 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART I : COST ACCOUNTING

QUESTIONS

Short Answer Type Questions from Misc Chapters

1. Give brief answers to the following:
  - (i) If margin of safety is ₹ 2, 40,000 (40% of sales) and P/V ratio is 30% of Gupta Ltd, calculate its (1) Break even sales, and (2) Amount of profit on sales of ₹ 9,00,000.
  - (ii) In a period, 5640 kg of material were used at a total standard cost of ₹ 23,124. The material usage variance was ₹ 246 (Adverse). What was the standard weight of material allowed for the period?
  - (iii) What is the difference between a Cost centre and Cost unit.
  - (iv) Differentiate between Period cost and Product cost.
  - (v) How is Absorption Costing different from Marginal Costing?

Material

2. (a) The purchase department of a company has received an offer of quantity discounts on its orders of materials as under:

| Price per ton | Tons ordered              |
|---------------|---------------------------|
| ₹             |                           |
| 1,200         | less than 500             |
| 1,180         | 500 and less than 1,000   |
| 1,160         | 1,000 and less than 2,000 |
| 1,140         | 2,000 and less than 3,000 |
| 1,120         | 3,000 and above           |

The annual requirement for the material is 5,000 tons. The ordering cost per order is ₹ 1,200 and the stock holding cost is estimated at 20% of material cost per annum.

You are required to compute the most economical purchase level.

- (b) What will be your answer to the above question, if there are no discount offered and the price per ton is ₹ 1,500?

Labour

3. Three workers Sachin, Sourav, Rahul produced 80, 100 and 120 pieces respectively of a product 'X' on a particular day in May in a factory. The time allowed for 10 units of Product X is 1 hour and their hourly rate is ₹ 4. Calculate followings for each of these three workers :

- (1) Earnings for the day, and
  - (2) Effective Rate of Earnings per hour under: (a) Straight piece-rate, (b) Halsey Premium Bonus and (c) Rowan Premium Bonus methods of labour remuneration.
4. (A) Calculate the monthly remuneration of three workers X, Y and Z from the following data:
- (a) Standard production per month per worker – 4,000 units
  - (b) Actual production during the month:
 

|                 |
|-----------------|
| X – 3,400 units |
| Y – 3,000 units |
| Z – 3,800 units |
  - (c) Piece work rate is 25 paise per unit.
  - (d) Additional production bonus is Rs. 10 for each percentage of actual production exceeding 80% standard production (e.g., 79% nil, 80% nil, 81% ₹ 10, 82% ₹ 20 and so on).
  - (e) Fixed dearness allowance, ₹ 150 per month
- (B). The Cost Accountant of Rounak Ltd. has computed labour turnover rates for the quarter ended 31<sup>st</sup> March, 2011 as 10%, 5% and 3% respectively under 'Flux method', 'Replacement method' and 'Separation method'.

If the number of workers replaced during that quarter is 30, find out the number of (i) workers left and discharged and (ii) workers recruited and joined.

#### Non Integrated Accounts

5. Cost Ledger of Beta Ltd. shows the following balances as on 31<sup>st</sup> March.

|                                     | Dr.<br>₹         | Cr.<br>₹         |
|-------------------------------------|------------------|------------------|
| Stores ledger control A/c           | 6,02,870         | -                |
| Work-in-progress ledger control A/c | 2,44,730         | -                |
| Finished stock ledger control A/c   | 5,03,890         | -                |
| Manufacturing overhead control A/c  |                  | 21,050           |
| Cost ledger control A/c             | <u>-</u>         | <u>13,30,440</u> |
|                                     | <u>13,51,490</u> | <u>13,51,490</u> |

During the next three months, the transactions that took place is as follows:

|                                 | ₹        |
|---------------------------------|----------|
| Finished product (at cost)      | 4,21,670 |
| Manufacturing overhead incurred | 1,83,020 |
| Raw materials purchased         | 2,46,000 |

|                                              |          |
|----------------------------------------------|----------|
| Factory wages                                | 1,01,060 |
| Indirect labour                              | 43,330   |
| Cost of sales                                | 3,71,780 |
| Materials issued to production               | 2,54,630 |
| Sales returned at cost                       | 10,760   |
| Materials returned to suppliers              | 5,800    |
| Manufacturing overhead charged to production | 1,54,400 |

You are required to write up the accounts and schedule the balances stating what each balance represents.

### Process Costing

6. A factory has two production processes. Normal loss in each process is 10% and scrapped units sell for ₹ 0.50 each from process 1 and ₹ 3 each from process 2. Relevant information for costing purposes relating to period 5 is as follows:

|                                    | Process 1                     |          | Process 2                     |
|------------------------------------|-------------------------------|----------|-------------------------------|
| Direct materials Units             | 2,000                         |          | 1,250                         |
| Direct materials Cost              | ₹ 8,100                       |          | ₹ 1,900                       |
| Direct labour                      | ₹ 4,000                       |          | ₹ 10,000                      |
| Production overhead                | 150% of<br>direct labour cost |          | 120% of<br>direct labour cost |
| Output to process 2/finished goods | 1,750 units                   |          | 2,800 units                   |
| Actual production overhead         |                               | ₹ 17,800 |                               |

Required:

Prepare the accounts for Process 1, Process 2, Scrap, Abnormal loss or Abnormal gain and Production overhead.

### Standard Costing

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

| Direct materials:                    | ₹            |
|--------------------------------------|--------------|
| 2 units of P at ₹ 4 per unit         | 8.00         |
| 3 units of Q at ₹ 3 per unit         | 9.00         |
| 15 units of R at ₹ 1 per unit        | <u>15.00</u> |
|                                      | 32.00        |
| Direct labour 3 hours @ ₹ 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 P at ₹ 4.40 per unit

18,000 units of Q at ₹ 2.80 per unit

88,500 units of R at ₹ 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 ₹ 12 per hour while for the remaining the wages were paid at the standard rate.

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

### Budgetary Control

8. Cambridge School has a total of 150 students consisting of 5 sections with 30 students per section. The school plans for a picnic around the city during the week-end to places such as Alipur zoo, the Niko Park, Birla planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 (excluding 2 seats reserved for the teachers accompanying the students). The school will employ two teachers for each bus, paying them an allowance of ₹ 50 per teacher. It will also lease out the required number of buses. The following are the other cost estimates:

|                     | Cost per student |
|---------------------|------------------|
| Breakfast           | ₹ 5              |
| Lunch               | 10               |
| Tea                 | 3                |
| Entrance fee at zoo | 2                |

Rent ₹ 650 per bus.

Special permit fee ₹ 50 per bus.

Block entrance fee at the planetarium ₹ 250.

Prizes to students for games ₹ 250.

No cost are incurred in respect of the accompanying teachers (except the allowance of ₹ 50 per teacher).

You are required to prepare:

- A flexible budget estimating the total cost for the levels of 30, 60, 90, 120 and 150 students. Each item of cost is to be indicated separately.
- Compare the average cost per student at these levels.
- What will be your conclusions regarding the break-even level of student if the school proposes to collect ₹ 45 per student?

**Marginal Costing**

9. An Automobile manufacturing company produces different models of cars. The budget in respect of model 1000 for the month of September, 2011 is as under:

| Budgeted output       |               | 40,000 units  |
|-----------------------|---------------|---------------|
| Variable Costs:       |               | (₹ Lakhs)     |
| Materials             | 264           |               |
| Labour                | 52            |               |
| Direct expenses       | <u>124</u>    | 440           |
| Fixed costs:          |               |               |
| Specific fixed costs  | 90.00         |               |
| Allocated fixed costs | <u>112.50</u> | <u>202.50</u> |
| Total costs           |               | 642.50        |
| Add: Profit           |               | <u>57.50</u>  |
| Sales                 |               | <u>700.00</u> |

Calculate:

- Profit with 10% increase in selling price with a 10% reduction in sales volume.
- Volume to be achieved to maintain the original profit after a 10% rise in material costs, at the originally budgeted selling price per unit.

**Overheads**

10. A company has two production departments and two service departments. The data relating to a period are as under:

|                                                       | <u>Production Departments</u> |                 | <u>Service Departments</u> |                 |
|-------------------------------------------------------|-------------------------------|-----------------|----------------------------|-----------------|
|                                                       | PD <sub>1</sub>               | PD <sub>2</sub> | SD <sub>1</sub>            | SD <sub>2</sub> |
| Direct materials(₹)                                   | 80,000                        | 40,000          | 10,000                     | 20,000          |
| Direct wages(₹)                                       | 95,000                        | 50,000          | 20,000                     | 10,000          |
| Overheads(₹)                                          | 80,000                        | 50,000          | 30,000                     | 20,000          |
| Power requirement at normal capacity operations(Kwh.) | 20,000                        | 35,000          | 12,500                     | 17,500          |
| Actual power consumption during the period(Kwh.)      | 13,000                        | 23,000          | 10,250                     | 10,000          |

The power requirements of these departments are met by a power generation plant. The said plant incurred an expenditure, which is not included above, of ₹ 1,21,875 out of

which a sum of ₹ 84,375 was variable and the rest is fixed,. After apportionment of power generation plant costs to the four departments, the service department overheads are to be redistributed on the following basis:

|                 | PD <sub>1</sub> | PD <sub>2</sub> | SD <sub>1</sub> | SD <sub>2</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| SD <sub>1</sub> | 50%             | 40%             | -----           | 10%             |
| SD <sub>2</sub> | 60%             | 20%             | 20%             | ---             |

You are required to:

- Apportion the power generation plant costs to the four departments.
- Re-apportion service department costs to production departments.
- Calculate the overhead rates per direct labour hour of production departments, given that the direct wage rates of PD<sub>1</sub> and PD<sub>2</sub> are ₹ 5 and ₹ 4 per hour respectively.

### Job Costing

- From the records of a manufacturing company, the following budgeted details are available:

|                              | ₹      | ₹        |
|------------------------------|--------|----------|
| Direct Materials             |        | 1,99,000 |
| Direct Wages:                |        |          |
| Machine Shop (12,000 hours)  | 63,000 |          |
| Assembly Shop (10,000 hours) | 48,000 | 1,11,000 |
| Works Overhead:              |        |          |
| Machine Shop                 | 88,200 |          |
| Assembly Shop                | 51,800 | 1,40,000 |
| Administrative Overhead      |        | 90,000   |
| Selling Overhead             |        | 81,000   |
| Distribution Overhead        |        | 62,100   |

You are required to:

- Prepare a Schedule of Overhead Rates from the figures available stating the basis of overhead recovery rates used under the given circumstances.
- Work out a Cost Estimate for the following job based on overhead calculated on above basis.

Direct Material:

25 kg @ ₹ 16.80/kg

15 kg @ ₹ 20.00/kg

Direct labour: (On the basis of hourly rate  
For machine shop and assembly shop)

Machine shop 30 hours  
Assembly shop 42 hours

### Contract Costing

12. Deluxe Limited undertook a contract for ₹ 5, 00,000 on 1<sup>st</sup> April 2010. On 31<sup>st</sup> March 2011 when the accounts were closed, the following details about the contract were gathered:

|                            | ₹        |
|----------------------------|----------|
| Materials purchased        | 1,00,000 |
| Wages paid                 | 45,000   |
| General expenses           | 10,000   |
| Plant purchased            | 50,000   |
| Material in hand 31.3.2011 | 25,000   |
| Wages accrued 31.3.2011    | 5,000    |
| Work certified             | 2,00,000 |
| Cash received              | 1,50,000 |
| Work uncertified           | 15,000   |
| Depreciation of plant      | 5,000    |

The contract contained an escalation clause, which read as follows:

“In the event of increase(s) of prices of materials and rates of wages by more than 5%, the contract price would be increased accordingly by 25% of the rise of the cost of materials and wages beyond 5% in each case.”

It was found that since the date of signing the agreement, the prices of materials and wage rates increased by 25%. The value of the work certified does not take into account the effect of the above clause.

Prepare the contract account. The workings should form part of your answer.

### Basic Concepts of Cost Accounting

13. (a) ‘Cost Accounting has become an essential tool of Management of a business concern’. Explain the statement.
- (b) Discuss the factors which should be considered before installing a Costing system in a manufacturing firm.

## SUGGESTED ANSWERS/HINTS

1. (i) Total Sales =  $2,40,000 \times \frac{100}{40} = ₹ 6,00,000$   
 Contribution =  $6,00,000 \times 30\% = ₹ 1,80,000$   
 Profit =  $M/S \times P/V \text{ ratio} = 2,40,000 \times 30\% = ₹ 72,000$   
 Fixed cost = Contribution – Profit  
 $= 1,80,000 - 72,000 = ₹ 1,08,000$
- (1) Break-even Sales =  $\frac{F}{P/V \text{ ratio}} = \frac{1,08,000}{30\%} = ₹ 3,60,000$
- (2) Profit = (Sales  $\times$  P/V ratio) – Fixed cost  
 $= (9,00,000 \times 30\%) - 1,08,000 = ₹ 1,62,000$
- (ii) Usage must have been higher than standard because the usage variance is adverse.
- Standard price per kilogram of material:  $\frac{₹ 23,124}{₹ 5640} = ₹ 4.10$
- Usage variance is equal to the excess usage multiplied by the standard price per kg of material
- Excess usage:  $\frac{₹ 246}{₹ 4.1} = 60 \text{ kg.}$
- So, Standard usage:  $5640 \text{ kg} - 60 \text{ kg} = 5580 \text{ kg.}$
- (iii) Cost Centre may be defined as a location, person, or an item of equipment for which cost may be ascertained and used for the purpose of cost control. In such a responsibility centre, the manager is responsible for costs only. Cost Unit is a unit of product, service or time (or combination of these) in relation to whom the costs may be ascertained or expressed.
- (iv) Period costs are costs which are not assigned to products but are charged as expenses against revenue of the period in which they are incurred. All non manufacturing costs such as selling and distribution expenses, administration expenses etc are recognised as period costs. Product costs are those costs which are associated with the purchase and sale of goods (in the case of merchandise inventory). In a manufacturing scenario, inventoriable costs are known as Product Costs.
- (v) Absorption costing is a method of inventory costing in which the variable manufacturing costs and all fixed manufacturing costs are included as inventoriable costs. Marginal costing can be defined as "the ascertainment of marginal costs and



of the effect on profit of changes in volume or type of output by differentiating between fixed and variable costs" In a Marginal costing system, fixed costs are not included as inventoriable cost.

2. (a)

| Order size (tons)                                                                | 400              | 500              | 1,000            | 2,000            | 3,000            |
|----------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|------------------|
| No. of order $\frac{\text{Annual requirement}}{\text{Order size}}$<br>[see Note] | 13               | 10               | 5                | 3                | 2                |
| Average stock $\frac{\text{Order size}}{2}$                                      | 200              | 250              | 500              | 1,000            | 1,500            |
| Price per ton                                                                    | 1,200            | 1,180            | 1,160            | 1,140            | 1,120            |
| Average stock value (average stock × price per ton)                              | <u>2,40,000</u>  | <u>2,95,000</u>  | <u>5,80,000</u>  | <u>11,40,000</u> | <u>16,80,000</u> |
|                                                                                  | ₹                | ₹                | ₹                | ₹                | ₹                |
| Cost of material (5,000 × price per ton)                                         | 60,00,000        | 59,00,000        | 58,00,000        | 57,00,000        | 56,00,000        |
| Ordering cost (No. of orders × ₹1,200)                                           | 15,600           | 12,000           | 6,000            | 3,600            | 2,400            |
| Stock carrying cost (20% of average stock value)                                 | <u>48,000</u>    | <u>59,000</u>    | <u>1,16,000</u>  | <u>2,28,000</u>  | <u>3,36,000</u>  |
| Total cost                                                                       | <u>60,63,600</u> | <u>59,71,000</u> | <u>59,22,000</u> | <u>59,31,600</u> | <u>59,38,400</u> |

The above table shows that the lowest total cost is ₹ 59, 22,000, i.e., when the quantity ordered is 1,000 tons. This is, therefore, the most economical purchase level.

**Note:** When calculating the number of orders if a fraction comes, the next whole number has to be considered.

$$(b) \text{ EOQ} = \sqrt{\frac{2AS}{C_c}}$$

Where A = consumption per annum in units

S = ordering cost per order

$C_c$  = carrying cost of one unit of stock for one year

$$= \sqrt{\frac{2 \times 5,000 \times ₹1,200}{20\% \text{ of } ₹1,500}} = 200 \text{ tons.}$$

## 3. Statement of Earnings

|                                                      | Sachin   | Sourav    | Rahul     |
|------------------------------------------------------|----------|-----------|-----------|
| (i) Production (units)                               | 80       | 100       | 120       |
| (ii) Time allowed (Hours @ 10 pieces per hour)       | 8        | 10        | 12        |
| (iii) Piece rate (₹4 ÷ 10)                           | 0.40     | 0.40      | 0.40      |
| (iv) Time taken (Assumed 1 day = 8 hours)            | 8        | 8         | 8         |
| (v) Time saved (Time allowed-Time Taken)             | 0        | 2         | 4         |
| Earnings per day (₹)                                 |          |           |           |
| (a) Straight Piece Rate                              | 80 × 0.4 | 100 × 0.4 | 120 × 0.4 |
|                                                      | = 32.00  | = 40.00   | = 48.00   |
| (b) Halsey Premium Bonus (See Note)                  | 32.00    | 36.00     | 40.00     |
| (c) Rowan Premium Bonus (See Note)                   | 32.00    | 38.40     | 42.60     |
| Effective Rate of Earning per hour (Earning ÷ Hours) |          |           |           |
|                                                      | ₹        | ₹         | ₹         |
| (a) Straight Piece Rate                              | 4.00     | 5.00      | 6.00      |
| (b) Halsey Premium Bonus                             | 4.00     | 4.50      | 5.00      |
| (c) Rowan Premium Bonus                              | 4.00     | 4.80      | 5.33      |

Notes:

## 1. Halsey Premium Bonus

Wages = (Time taken + 50% of time saved) × Time rate

$$\text{Sachin} = (8 + 0) \times ₹ 4 = ₹ 32$$

$$\text{Sourav} = (8 + 1) \times ₹ 4 = ₹ 36$$

$$\text{Rahul} = (8 + 2) \times ₹ 4 = ₹ 40$$

## 2. Rowan Premium Bonus

$$\text{Wages} = \text{Time taken} \times \text{Rate} + \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken} \times \text{Rate}$$

$$\text{Sachin} = 8 \times 4 + \frac{0}{8} \times 8 \times 4 = ₹ 32$$

$$\text{Sourav} = 8 \times 4 + \frac{2}{10} \times 8 \times 4 = ₹ 38.40$$

$$\text{Rahul} = 8 \times 4 + \frac{4}{12} \times 8 \times 4 = ₹ 42.67$$

## 4. (A) Statement of Monthly Remuneration

| Worker | Standard production (units) | Actual production (units) | % of actual to standard production | Piece wages @ ₹ 0.25 | Bonus   | D.A.  | Total earnings |
|--------|-----------------------------|---------------------------|------------------------------------|----------------------|---------|-------|----------------|
| X      | 4,000                       | 3,400                     | 85%                                | 850                  | ₹ 50*   | ₹ 150 | ₹ 1,050        |
| Y      | 4,000                       | 3,000                     | 75%                                | 750                  | -       | ₹ 150 | ₹ 900          |
| Z      | 4,000                       | 3,800                     | 95%                                | 950                  | ₹ 150** | ₹ 150 | ₹ 1,250        |

\*Additional 5% (85% - 80%), So Bonus is ₹ 10 × 5 = ₹ 50.

\*\*Additional 15% (95% - 80%), So Bonus is ₹ 10 × 15 = ₹ 150.

## (B) Average number of workers on payroll:

$$\text{Labour turnover rate (Replacement method)} = \frac{\text{Number or workers replaced}}{\text{Average number on payroll}} \times 100$$

$$\text{or, } \frac{5}{100} = \frac{30}{\text{Average number on payroll}}$$

$$\text{or, Average number of workers on payroll} = \frac{30 \times 100}{5} = 600.$$

## (i) Number of workers left and discharged:

$$\text{Labour turnover rate (Separation method)} = \frac{\text{Number of workers separated}}{\text{Average number on payroll}} \times 100$$

$$\text{or, } \frac{3}{100} = \frac{\text{Number of workers separated}}{600}$$

$$\text{or, Number of workers separated (i.e., left and discharged)} = \frac{3 \times 600}{100} = 18.$$

## (ii) Number of workers recruited and joined:

$$\text{Labour turnover rate (Flux method)} = \frac{\text{Number separated} + \text{Number recruited and joined}}{\text{Average number on payroll}} \times 100$$

$$\text{or, } \frac{10}{100} = \frac{18 + \text{Number of workers recruited and joined}}{600}$$

$$\text{or, Number of workers recruited and joined} = \frac{600 \times 10}{100} - 18 = 42.$$

## 5. COST LEDGER

| Dr.                                  |                  | Cost Ledger Account                  |                  | Cr. |  |
|--------------------------------------|------------------|--------------------------------------|------------------|-----|--|
| Particulars                          | ₹                | Particulars                          | ₹                |     |  |
| To Stores ledger control A/c         | 5,800            | By Balance b/d                       | 13,30,440        |     |  |
| To Finished stock ledger control A/c | 3,71,780         | By Stores ledger control A/c         | 2,46,000         |     |  |
| To Balance c/d                       | 15,37,030        | By Wages control A/c                 | 1,01,060         |     |  |
|                                      |                  | By Works overhead control A/c        | 43,330           |     |  |
|                                      |                  | By Works overhead control A/c        | 1,83,020         |     |  |
|                                      |                  | By Finished stock ledger control A/c | 10,760           |     |  |
|                                      | <u>19,14,610</u> |                                      | <u>19,14,610</u> |     |  |
|                                      |                  | By Balance b/d                       | 15,37,030        |     |  |

| Dr.                        |                 | Stores Ledger Control Account   |                 | Cr. |  |
|----------------------------|-----------------|---------------------------------|-----------------|-----|--|
| Particulars                | ₹               | Particulars                     | ₹               |     |  |
| To Balance b/d             | 6,02,870        | By Cost ledger control A/c      | 5,800           |     |  |
| To Cost ledger control A/c | 2,46,000        | By Work-in-progress control A/c | 2,54,630        |     |  |
|                            |                 | By Balance c/d                  | 5,88,440        |     |  |
|                            | <u>8,48,870</u> |                                 | <u>8,48,870</u> |     |  |
| To Balance b/d             | 5,88,440        |                                 |                 |     |  |

| Dr.                        |                 | Manufacturing Overhead Control Account |                 | Cr. |  |
|----------------------------|-----------------|----------------------------------------|-----------------|-----|--|
| Particulars                | ₹               | Particulars                            | ₹               |     |  |
| To Cost ledger control A/c | 1,83,020        | By Balance b/d                         | 21,050          |     |  |
| To Cost ledger control A/c | 43,330          | By Work-in-progress control A/c        | 1,54,400        |     |  |
|                            |                 | By Balance c/d                         | 50,900          |     |  |
|                            | <u>2,26,350</u> |                                        | <u>2,26,350</u> |     |  |
| To Balance b/d             | 50,900          |                                        |                 |     |  |

Dr. Work-in-progress Control Account Cr.

| Particulars                   | ₹               | Particulars                          | ₹               |
|-------------------------------|-----------------|--------------------------------------|-----------------|
| To Balance b/d                | 2,44,730        | By Finished stock ledger control A/c | 4,21,670        |
| To Wages control A/c          | 1,01,060        | By Balance c/d                       | 3,33,150        |
| To Stores ledger control A/c  | 2,54,630        |                                      |                 |
| To Works overhead control A/c | <u>1,54,400</u> |                                      |                 |
|                               | <u>7,54,820</u> |                                      | <u>7,54,820</u> |
| To Balance b/d                | <u>3,33,150</u> |                                      |                 |

Dr. Finished Stock Ledger Control Account Cr.

| Particulars                | ₹               | Particulars                | ₹               |
|----------------------------|-----------------|----------------------------|-----------------|
| To Balance b/d             | 5,03,890        | By Cost ledger control A/c | 3,71,780        |
| To Work-in-progress        | 4,21,670        | By Balance c/d             | 5,64,540        |
| To Cost ledger control A/c | <u>10,760</u>   |                            |                 |
|                            | <u>9,36,320</u> |                            | <u>9,36,320</u> |
| To Balance b/d             | 5,64,540        |                            |                 |

Trial Balance

|                                       | Dr.<br>Rs.       | Cr.<br>Rs.       |
|---------------------------------------|------------------|------------------|
| Cost ledger control account           | -                | 15,37,030        |
| Stores ledger control account         | 5,88,440         | -                |
| Mfg. overhead control account         | 50,900           | -                |
| W.I.P. control account                | 3,33,150         | -                |
| Finished stock ledger control account | <u>5,64,540</u>  |                  |
|                                       | <u>15,37,030</u> | <u>15,37,030</u> |

6. Output and losses

|                            | Process 1<br>Units | Process 2<br>Units |
|----------------------------|--------------------|--------------------|
| Output                     | 1,750              | 2,800              |
| Normal loss (10% of input) | 200                | 300                |

|               |              |               |
|---------------|--------------|---------------|
| Abnormal loss | 50           | -             |
| Abnormal gain | <u>-</u>     | <u>(100)</u>  |
|               | <u>2,000</u> | <u>3,000*</u> |

\* 1,750 units from Process 1 + 1,250 units input to process.

Cost per unit of output and losses

|                                                   | Process 1<br>₹ |                   | Process 2<br>₹ |
|---------------------------------------------------|----------------|-------------------|----------------|
| Cost of input                                     |                |                   |                |
| - Material                                        | 8,100          |                   | 1,900          |
| - from process 1                                  | -              | (1,750 ´ ₹10)     | 17,500         |
| - Labour                                          | 4,000          |                   | 10,000         |
| - Overhead (150% ´ ₹ 4,000)                       | <u>6,000</u>   | (120% ´ ₹ 10,000) | <u>12,000</u>  |
|                                                   | 18,100         |                   | 41,400         |
| Less scrap value (200 ´ ₹ 0.50)<br>of normal loss | <u>(100)</u>   | (300 ´ ₹ 3)       | <u>(900)</u>   |
|                                                   | 18,000         |                   | 40,500         |
| Expected output                                   |                |                   |                |
| 90% of 2,000                                      | 1,800          |                   |                |
| 90% of 3,000                                      |                |                   | 2,700          |
| Cost per unit                                     |                |                   |                |
| ₹ 18,000 , 1,800                                  | ₹ 10           |                   |                |
| ₹ 40,500 , 2,700                                  |                |                   | ₹ 15           |

Total cost of output and losses

|                             | Process 1<br>₹ |               | Process 2<br>₹ |
|-----------------------------|----------------|---------------|----------------|
| Output (1,750 ´ ₹ 10)       | 17,500         | (2,800 ´ ₹15) | 42,000         |
| Normal loss (200 ´ ₹ 0.50)* | 100            | (300 ´ ₹ 3)*  | 900            |
| Abnormal loss (50 ´ ₹ 10)   | 500            |               | -              |
|                             | <u>18,100</u>  |               | <u>42,900</u>  |
| Abnormal gain               | -              | (100 ´ ₹ 15)  | (1,500)        |
|                             | <u>18,100</u>  |               | <u>41,400</u>  |

\* Normal loss is valued at scrap value only.

Complete accounts

## PROCESS 1 ACCOUNT

|                         | Units        | ₹             |                         | Units        | ₹             |
|-------------------------|--------------|---------------|-------------------------|--------------|---------------|
| Direct material         | 2,000        | 8,100         | Scrap a/c (normal loss) | 200          | 100           |
| Direct labour           |              | 4,000         | Process 2 a/c           | 1,750        | 17,500        |
| Production overhead a/c |              | <u>6,000</u>  | Abnormal loss a/c       | <u>50</u>    | <u>500</u>    |
|                         | <u>2,000</u> | <u>18,100</u> |                         | <u>2,000</u> | <u>18,100</u> |

## PROCESS 2 ACCOUNT

|                     | Units        | ₹             |                         | Units        | ₹             |
|---------------------|--------------|---------------|-------------------------|--------------|---------------|
| Direct materials    |              |               |                         |              |               |
| From process 1      | 1,750        | 17,500        | Scrap a/c (normal loss) | 300          | 900           |
| Added materials     | 1,250        | 1,900         | Finished goods a/c      | 2,800        | 42,000        |
| Direct labour       |              | 10,000        |                         |              |               |
| Production overhead |              | 12,000        |                         |              |               |
|                     | 3,000        | 41,400        |                         |              |               |
| Abnormal gain       | <u>100</u>   | <u>1,500</u>  |                         |              |               |
|                     | <u>3,100</u> | <u>42,900</u> |                         | <u>3,100</u> | <u>42,900</u> |

## ABNORMAL LOSS ACCOUNT

|                      | ₹          |                                                   | ₹          |
|----------------------|------------|---------------------------------------------------|------------|
| Process 1 (50 units) | 500        | Scrap a/c: sale of scrap of extra loss (50 units) | 25         |
|                      |            | Profit and loss a/c                               | <u>475</u> |
|                      | <u>500</u> |                                                   | <u>500</u> |

## ABNORMAL GAIN ACCOUNT

|                                                                         | ₹            |                                     | ₹            |
|-------------------------------------------------------------------------|--------------|-------------------------------------|--------------|
| Scrap a/c (loss of scrap revenue due to abnormal gain, 100 units @ ₹ 3) | 300          | Process 2 abnormal gain (100 units) | 1,500        |
| Profit and loss a/c                                                     | <u>1,200</u> |                                     |              |
|                                                                         | <u>1,500</u> |                                     | <u>1,500</u> |

## SCRAP ACCOUNT

|                               | ₹            |                               | ₹            |
|-------------------------------|--------------|-------------------------------|--------------|
| Scrap value of normal loss    |              | Cash a/c – cash received      |              |
| Process 1 (200 units)         | 100          | Loss in process 1(250 units)  | 125          |
| Process 2 (300 units)         | 900          | Loss in process 2 (200 units) | 600          |
| Abnormal loss a/c (process 1) | <u>25</u>    | Abnormal gain a/c (process 2) | <u>300</u>   |
|                               | <u>1,025</u> |                               | <u>1,025</u> |

## PRODUCTION OVERHEAD ACCOUNT

|                                              | ₹             |               | ₹             |
|----------------------------------------------|---------------|---------------|---------------|
| Overhead incurred                            | 17,800        | Process 1 a/c | 6,000         |
| Over-absorbed overhead a/c<br>(or P & L a/c) | <u>200</u>    | Process 2 a/c | 12,000        |
|                                              | <u>18,000</u> |               | <u>18,000</u> |

## 7. Standard Quantity of Materials for Actual Output:

|   |            |              |
|---|------------|--------------|
| P | 6,000 ´ 2  | 12,000 units |
| Q | 6,000 ´ 3  | 18,000 units |
| R | 6,000 ´ 15 | 90,000 units |

*Standard hours for Actual Output:*

|           |              |
|-----------|--------------|
| 6,000 ´ 3 | 18,000 hours |
|-----------|--------------|

*Material price Variance:*

| (Standard Price for actual output - Actual Price) ´ Actual Quantity |                            | ₹                |
|---------------------------------------------------------------------|----------------------------|------------------|
| P                                                                   | (₹ 4.00 - ₹ 4.40) ´ 12,500 | 5,000 (A)        |
| Q                                                                   | (₹ 3.00 - ₹ 2.80) ´ 18,000 | 3,600 (F)        |
| R                                                                   | (₹ 1.00 - ₹ 1.20) ´ 88,500 | <u>17,700(A)</u> |
|                                                                     |                            | <u>19,100(A)</u> |

*Material Usage Variance:*

(Standard Usage - Actual Usage) ´ Standard Price

|   |                            |                  |
|---|----------------------------|------------------|
| P | (12,000 - 12,500) ´ ₹ 4.00 | 2,000 (A)        |
| Q | (18,000 - 18,000) ´ ₹ 3.00 | Nil              |
| R | (90,000 - 88,500) ´ ₹ 1.00 | <u>1,500 (F)</u> |
|   |                            | <u>500 (A)</u>   |



*Labour Rate Variance:*

(Standard Rate - Actual Rate) ´ Actual hours

(₹ 8.00 - ₹ 12.00) ´ 2,500 10,000 (A)

(₹ 8.00 - ₹ 8.00) ´ 15,000 Nil10,000 (A)*Labour Efficiency Variance:*

(Standard hours - Actual hours) ´ Standard Rate

(18,000 - 17,500) ´ ₹ 8.00 4,000 (F)

## 8. (a) Flexible Budget for different levels

|                                  | ₹            | ₹            | ₹            | ₹            | ₹            |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|
| No. of Students                  | <u>30</u>    | <u>60</u>    | <u>90</u>    | <u>120</u>   | <u>150</u>   |
| <b><u>VARIABLE COST</u></b>      |              |              |              |              |              |
| Breakfast                        | 150          | 300          | 450          | 600          | 750          |
| Lunch                            | 300          | 600          | 900          | 1,200        | 1,500        |
| Tea                              | 90           | 180          | 270          | 360          | 450          |
| Entrance fee                     | <u>60</u>    | <u>120</u>   | <u>180</u>   | <u>240</u>   | <u>300</u>   |
| Sub-total (A)                    | <u>600</u>   | <u>1,200</u> | <u>1,800</u> | <u>2,400</u> | <u>3,000</u> |
| Variable cost/unit               | 20           | 20           | 20           | 20           | 20           |
| <b><u>SEMI-VARIABLE COST</u></b> |              |              |              |              |              |
| Bus rent                         | 650          | 1,300        | 1,300        | 1,950        | 1,950        |
| Special permit fee               | 50           | 100          | 100          | 150          | 150          |
| Allowance for teachers           | <u>100</u>   | <u>200</u>   | <u>200</u>   | <u>300</u>   | <u>300</u>   |
| Sub-total (B)                    | <u>800</u>   | <u>1,600</u> | <u>1,600</u> | <u>2,400</u> | <u>2,400</u> |
| <b><u>FIXED COST</u></b>         |              |              |              |              |              |
| Block entrance fee               | 250          | 250          | 250          | 250          | 250          |
| Prize to students                | <u>250</u>   | <u>250</u>   | <u>250</u>   | <u>250</u>   | <u>250</u>   |
| Sub total(C)                     | <u>500</u>   | <u>500</u>   | <u>500</u>   | <u>500</u>   | <u>500</u>   |
| Total cost (A + B + C)           | <u>1,900</u> | <u>3,300</u> | <u>3,900</u> | <u>5,300</u> | <u>5,900</u> |

(b) Cost per student 63.33 55.00 43.33 44.17 39.33

## (c) Break-even level

Collection per students = ₹ 45

Less Variable Cost 20Contribution 25

Since semi-fixed costs relate to a block of 50 students, the fixed and semi-variable cost for three level will be:

| Level of Student             | Upto 50 | 51–100 | 101–150 |
|------------------------------|---------|--------|---------|
| Fixed + Semi-variable cost   | ₹1,300  | 2,100  | 2,900   |
| Contribution per unit        | 25      | 25     | 25      |
| Break Even level of students | 52      | 84     | 116     |

9.

|                       |                             | ₹            |
|-----------------------|-----------------------------|--------------|
| Present selling price | (₹ 700 lakhs /40,000 units) | 1,750        |
| Add: 10% increase     | (1,750 x 10/100)            | <u>175</u>   |
| Revised selling price |                             | <u>1,925</u> |

|                      |                   | Units        |
|----------------------|-------------------|--------------|
| Present sales volume |                   | 40,000       |
| Less: 10% decrease   | (40,000 x 10/100) | <u>4,000</u> |
| Revised sales volume |                   | 36,000       |

Revised sales revenue = 36,000 unit x ₹ 1,925 = ₹ 693 lakhs

|                     |  | (₹)          |
|---------------------|--|--------------|
| Materials           |  | 660          |
| Labour              |  | 130          |
| Direct expenses     |  | <u>310</u>   |
| Total variable cost |  | <u>1,100</u> |

| Profitability Statement  |                         | (₹ Lakhs)     |
|--------------------------|-------------------------|---------------|
| Sales                    |                         | 693.00        |
| Less: Variable cost      | (36,000 units ´ ₹1,100) | <u>396.00</u> |
| Contribution             |                         | 297.00        |
| Less: Fixed cost         |                         | 202.50        |
| Profit                   |                         | 94.50         |
| Materials                | (₹ 660 + 10% of ₹ 660)  | 726           |
| Labour                   |                         | 130           |
| Direct expenses          |                         | <u>310</u>    |
| Total variable cost p.u. |                         | <u>1,166</u>  |

Calculation of sales Volume to be achieved to maintain the original profit of ₹ 57.50 lakhs.

|                     | (₹ p.u.)     |
|---------------------|--------------|
| Selling price       | 1,750        |
| Less: Variable cost | <u>1,166</u> |
| Contribution p.u.   | <u>584</u>   |

$$\text{Desired Sales} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{Contribution p.u.}} = \frac{₹ 202.50 + ₹ 57.50}{₹ 584} = 44,521 \text{ Units.}$$

10. (i) Apportionment of Power Generation Plant Costs

| Items of Expenses | Basis of Apportionment                                        | Total    | Production Departments |                 | Service Departments |                 |
|-------------------|---------------------------------------------------------------|----------|------------------------|-----------------|---------------------|-----------------|
|                   |                                                               |          | PD <sub>1</sub>        | PD <sub>2</sub> | SD <sub>1</sub>     | SD <sub>2</sub> |
|                   |                                                               | ₹        | ₹                      | ₹               | ₹                   | ₹               |
| Fixed Expenses    | Power requirements (kwh.) at normal capacity (8 : 14 : 5 : 7) | 37,500   | 8,824                  | 15,441          | 5,515               | 7,720           |
| Variable Expenses | Actual power consumption (kwh.) (13 : 23 : 10.25 : 10)        | 84,375   | 19,500                 | 34,500          | 15,375              | 15,000          |
|                   |                                                               | 1,21,875 | 28,324                 | 49,941          | 20,890              | 22,720          |

(ii) Overhead Distribution Summary and Re-apportionment to Service Department Costs

|                             | Total    | Production Departments |                 | Service Departments |                 |
|-----------------------------|----------|------------------------|-----------------|---------------------|-----------------|
|                             |          | PD <sub>1</sub>        | PD <sub>2</sub> | SD <sub>1</sub>     | SD <sub>2</sub> |
|                             | ₹        | ₹                      | ₹               | ₹                   | ₹               |
| Power Generation Cost       | 1,21,875 | 28,324                 | 49,941          | 20,890              | 22,720          |
| Direct Materials            | 30,000   | ---                    | ----            | 10,000              | 20,000          |
| Direct Wages                | 30,000   | ---                    | ----            | 20,000              | 10,000          |
| Other Overheads             | 1,80,000 | 80,000                 | 50,000          | 30,000              | 20,000          |
|                             | 3,61,875 | 1,08,324               | 99,941          | 80,890              | 72,720          |
| Reapportionment:            |          |                        |                 |                     |                 |
| SD <sub>1</sub> (5 : 4 : 1) |          | 40,445                 | 32,356          | (-)80,890           | 8,089           |
| SD <sub>2</sub> (6 : 2 : 2) |          | 48,485                 | 16,162          | 16,162              | (-)80,809       |
| SD <sub>1</sub> (5 : 4 : 1) |          | 8,081                  | 6,465           | (-) 16,162          | 1,616           |
| SD <sub>2</sub> (6 : 2 : 2) |          | 970                    | 323             | 323                 | (-)1,616        |
| SD <sub>1</sub> (5 : 4 : 1) |          | 162                    | 129             | (-) 323             | 32              |
| SD <sub>2</sub> (6 : 2)     |          | 24                     | 8               | ----                | (-) 32          |
| Total                       | 3,61,875 | 2,06,491               | 1,55,384        | ----                | -----           |

## (iii) Calculation of Overhead Rates

|                                                   |         | PD <sub>1</sub> | PD <sub>2</sub> |
|---------------------------------------------------|---------|-----------------|-----------------|
| Direct Wages                                      | (₹)     | 95,000          | 50,000          |
| Wages Rate per Hour                               | (₹)     | 5               | 4               |
| Direct Labour Hours (Direct wages , Wage rate)    | (Hours) | 19,000          | 12,500          |
| Overheads                                         | (₹)     | 2,06,431        | 1,55,384        |
| Overhead Rate per Hour (Overheads , Labour hours) | (₹)     | 10.87           | 12.43           |

## 11. (a) Job Cost Sheet for the period.....

|                         |                    |               | ₹               |
|-------------------------|--------------------|---------------|-----------------|
| Direct materials        |                    |               | 1,99,000        |
| Direct wages:           |                    |               |                 |
| Machine shop            |                    | 63,000        |                 |
| Assembly shop           |                    | <u>48,000</u> | <u>1,11,000</u> |
|                         | Prime Cost         |               | 3,10,000        |
| Works overhead:         |                    |               |                 |
| Machine shop            |                    | 88,200        |                 |
| Assembly shop           |                    | <u>51,800</u> | <u>1,40,000</u> |
|                         | Work Cost          |               | 4,50,000        |
| Administration overhead |                    |               | <u>90,000</u>   |
|                         | Cost of Production |               | 5,40,000        |
| Selling overhead        |                    |               | 81,000          |
| Distribution overhead   |                    |               | <u>62,100</u>   |
|                         | Total Cost         |               | <u>6,83,100</u> |

## Schedule of Overhead Rate

(i) Works Overhead : Hourly rate = (Overhead amount. ÷ Hours)

Machine shop =  $(88,200 \div 12,000) = ₹ 7.35$  per hourAssembly shop =  $(51,800 \div 10,000) = ₹ 5.18$  per hour

(ii) Administrative Overhead as a % of works cost

$$= \frac{90,000}{4,50,000} \times 100 = 20\%$$

(iii) Selling and distribution overhead as % of works cost

$$= \frac{81,000 + 62,100}{4,50,000} \times 100 = 31.80\%$$

Labour hour rates are calculated as under:

Machine shop = ₹ 63,000 ÷ 12,000 hrs. = ₹ 5.25

Assembly shop = ₹ 48,000 ÷ 10,000 hrs. = ₹ 4.80

(b) Cost Estimate for Job

| Direct Materials                                    | ₹             | ₹              |
|-----------------------------------------------------|---------------|----------------|
| (i) 25 kg @ ₹ 16.80 per kg                          | 420           |                |
| (ii) 15 kg @ ₹ 20 per kg                            | <u>300</u>    | 720.00         |
| Direct Labour                                       |               |                |
| Machine shop (30 hrs. @ ₹ 5.25)                     | 157.50        |                |
| Assembly shop (42 hrs. @ 4.80)                      | <u>201.60</u> | <u>359.10</u>  |
| Prime Cost                                          |               | 1079.10        |
| Works Overhead                                      |               |                |
| Machine shop (30 hours @ ₹ 7.35)                    | 220.50        |                |
| Assembly shop (42 hours @ 5.18)                     | <u>317.56</u> | <u>438.06</u>  |
| Works Cost                                          |               | 1517.16        |
| Administration overhead (20% of works cost)         |               | <u>303.43</u>  |
| Cost of Production                                  |               | 1820.59        |
| Selling and distribution cost (31.8% of works cost) |               | <u>482.46</u>  |
| Total Estimated Cost                                |               | <u>2303.05</u> |

12.

Deluxe Limited  
Contract account for the year ended 31<sup>st</sup> March 2011

| Dr.                                         |              | ₹               |                             |              | Cr.<br>₹        |
|---------------------------------------------|--------------|-----------------|-----------------------------|--------------|-----------------|
| To Materials purchased                      |              | 1,00,000        | By Work-in-progress c/d     |              |                 |
| To Wages paid                               | 45,000       |                 | Work certified              | 2,00,000     |                 |
| Add: Wages accrued                          | <u>5,000</u> | 50,000          | Work uncertified            | 15,000       |                 |
| To General expenses                         |              | 10,000          | Effect of escalation clause | <u>5,000</u> | 2,20,000        |
| To Depreciation of plant                    |              | 5,000           | By Materials in hand c/d    |              | 25,000          |
| To Notional profit c/d                      |              | <u>80,000</u>   |                             |              |                 |
|                                             |              | <u>2,45,000</u> |                             |              | <u>2,45,000</u> |
| To Profit and loss A/c                      |              | 20,000          | By Notional profit b/d      |              | 80,000          |
| To Work-in-progress c/d (Profit in reserve) |              | <u>60,000</u>   |                             |              |                 |
|                                             |              | <u>80,000</u>   |                             |              | <u>80,000</u>   |

|                             |              |          |                         |  |        |
|-----------------------------|--------------|----------|-------------------------|--|--------|
| 1.4.2011                    |              |          | 1.4.2011                |  |        |
| To Work-in-progress b/d     |              |          | By Work-in-progress b/d |  | 60,000 |
| Work certified              | 2,00,000     |          | (profit in reserve)     |  |        |
| Work uncertified            | 15,000       |          |                         |  |        |
| Effect of escalation clause | <u>5,000</u> | 2,20,000 |                         |  |        |
| To materials in hand b/d    |              | 25,000   |                         |  |        |

**Working notes****(i) Ascertainment of effect of escalation clause:**

|                                                 | Total increase<br>25%<br>₹ | Increase up<br>to 5%<br>₹ | Increase beyond<br>5%<br>₹ |
|-------------------------------------------------|----------------------------|---------------------------|----------------------------|
| Materials:                                      |                            |                           |                            |
| Effect of increased price                       |                            |                           |                            |
| $(₹ 1,00,000 - ₹ 25,000) \times \frac{25}{125}$ | 15,000                     | 3,000                     | 12,000                     |
| Wages:                                          |                            |                           |                            |
| Effect of increased wage rates:                 |                            |                           |                            |
| $₹ 50,000 \times \frac{25}{125}$                | 10,000                     | 2,000                     | 8,000                      |
| Total increase                                  | 25,000                     | 5,000                     | 20,000                     |

Increase in value of work done (certified &amp; uncertified)

to date: 25% of ₹ 20,000 = ₹ 5,000

**(ii) Profit to be transferred to the profit and loss account:**

Since the contract is between 1/4 and 1/2 complete, one-third of the notional profit, reduced by the proportion of cash received to work certified, is to be transferred as below:

$$= \frac{1}{3} \times \text{Notional profit} \times \frac{\text{Cash received}}{\text{Work certified}}$$

$$= \frac{1}{3} \times ₹ 80,000 \times \frac{₹ 1,50,000}{₹ 2,00,000} = ₹ 20,000.$$

**13. (a) Importance of Cost Accounting to the management of a business concerns**

Management of business concerns expects from Cost Accounting a detailed cost information in respect of its operations to equip their executives with relevant information required for planning, scheduling, controlling and decision making. To

be more specific, management expects from cost accounting - information and reports to help them in the discharge of the following functions :

- (a) *Control of material cost:* Cost of material usually constitute a substantial portion of the total cost of a product. Therefore, it is necessary to control it as far as possible. Such a control may be exercised by (i) Ensuring un-interrupted supply of material and spares for production. (ii) By avoiding excessive locking up of funds/capital in stocks of materials and stores. (iii) Also by the use of techniques like value analysis, standardisation etc. to control material cost.
  - (b) *Control of labour cost :* It can be controlled if workers complete their work within the standard time limit. Reduction of labour turnover and idle time too help us, to control labour cost.
  - (c) *Control of overheads :* Overheads consists of indirect expenses which are incurred in the factory, office and sales department ; they are part of production and sales cost. Such expenses may be controlled by keeping a strict check over them.
  - (d) *Measuring efficiency :* For measuring efficiency, Cost Accounting department should provide information about standards and actual performance of the concerned activity.
  - (e) *Budgeting :* Now-a-days detailed estimates in terms of quantities and amounts are drawn up before the start of each activity. This is done to ensure that a practicable course of action can be chalked out and the actual performance corresponds with the estimated or budgeted performance. The preparation of the budget is the function of Costing Department.
  - (f) *Price determination:* Cost accounts should provide information, which enables the management to fix remunerative selling prices for various items of products and services in different circumstances.
  - (g) *Curtailment of loss during the off-season:* Cost Accounting can also provide information, which may enable reduction of overhead, by utilising idle capacity during the off-season or by lengthening the season.
  - (h) *Expansion:* Cost Accounts may provide estimates of production of various levels on the basis of which the management may be able to formulate its approach to expansion.
  - (i) *Arriving at decisions:* Most of the decisions in a business undertaking involve correct statements of the likely effect on profits. Cost Accounts are of vital help in this respect. In fact, without proper cost accounting, decision would be like taking a jump in the dark, such as when production of a product is stopped.
- (b) Essential factors for installing a cost accounting system

As in the case of every other form of activity, it should be considered whether it would be profitable to have a cost accounting system. The benefits from such a system must

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

- (i) The objective of costing system, for example whether it is being introduced for fixing prices or for insisting a system of cost control.
- (ii) The areas of operation of business wherein the managements' action will be most beneficial. For instance, in a concern, which is anxious to expand its operations, increase in production would require maximum attention. On the other hand for a concern, which is not able, to sell the whole of its production the selling effort would require greater attention. The system of costing in each case should be designed to highlight, in significant areas, factors considered important for improving the efficiency of operations in that area.
- (iii) The general organisation of the business, with a view of finding out the manner in which the system of cost control could be introduced without altering or extending the organisation appreciably.
- (iv) The technical aspects of the concern and the attitude and behaviour that will be successful in winning sympathetic assistance or support of the supervisory staff and workmen.
- (v) The manner in which different variable expenses would be affected with expansion or cessation of different operations.
- (vi) The manner in which Cost and Financial accounts could be inter-locked into a single integral accounting system and in which results of separate sets of accounts, cost and financial, could be reconciled by means of control accounts.
- (vii) The maximum amount of information that would be sufficient and how the same should be secured without too much clerical labour, especially the possibility of collection of data on a separate printed form designed for each process; also the possibility of instruction as regards filling up of the forms in writing to ensure that these would be faithfully carried out.
- (viii) How the accuracy of the data collected can be verified? Who should be made responsible for making such verification in regard to each operation and the form of certificate that he should give to indicate the verification that he has carried out?
- (ix) The manner in which the benefits of introducing Cost Accounting could be explained to various persons in the concern, especially those in charge of production department and awareness created for the necessity of promptitude, frequency and regularity in collection of costing data.



**PART II : FINANCIAL MANAGEMENT**  
**QUESTIONS**

1. Answer the following, supporting the same with reasoning/working notes:
  - (a) Mr. Khanna, a retired army officer, has opened an account with a reputed bank. He is required to pay four equal annual payments of ₹ 15,000 each in his deposit account that pays 8% interest per year. Find out the future value of annuity at the end of 4 years.
  - (b) Discuss briefly the concept of bridge finance.
  - (c) Explain briefly about commercial paper. Also discuss its advantages.
  - (d) Discuss in brief Gross Profit Margin ratio and its importance.
  - (e) Suppose Rama deposited ₹ 1,000 in an account that pays 12 percent interest, compounded quarterly. How much will be in the account after eight years if she makes no withdrawals?

**Working Capital Management**

2. Sunshine Company is attempting to establish a current assets policy. Fixed assets are ₹ 6,00,000 and the company plans to maintain a 50 per cent debt-to-assets ratio. The interest rate is 10 per cent on all debt. Three alternative current asset policies are under consideration: 40, 50, and 60 per cent of projected sales. The company expects to earn 15 per cent before interest and taxes on sales of ₹ 30 lakhs. The Company's effective tax rate is 40 per cent. You are required to determine the expected return on equity under each alternative?

**Investment Decisions**

3. Mahalaxmi Limited is considering to spend ₹ 4,00,000 on a project to manufacture and sell a new product.

The unit variable cost of the product is ₹ 6. It is expected that the new product can be sold at ₹ 10 per unit. The annual fixed cost (only cash) will be ₹ 20,000. The cost of capital of the company is 15%. The only uncertain factor is the volume of sales. To start with, the company expects to sell at least 40,000 units during the first year. Ignore taxation. You are required to calculate:

- (i) Net Present value of the project based on the sales expected during the first year and on the assumption that it will continue at the same level during the remaining years.
- (ii) The minimum volume of sales required to justify the project.

**Financing Decisions**

4. Alpha Limited has the following capital structure:

|                                  |             |
|----------------------------------|-------------|
| Equity Share Capital (₹ 10 each) | ₹ 150 lakhs |
| 10% Debentures                   | ₹ 100 lakhs |
| Retained Earnings                | ₹ 50 lakhs  |

Other Information:

|                               |      |
|-------------------------------|------|
| Market Price per Equity Share | ₹ 49 |
| Price-Earnings Ratio          | 7    |
| Income Tax Rate               | 30%  |

Alpha Limited is considering an expansion plan and needs ₹ 100 lakhs. If expansion programme is undertaken, company feels that there will be 25 percent increase in present earnings before interest and tax. The company has the following alternatives available for raising funds required for expansion:

- I. Issue equity shares at ₹ 50 each.
- II. Issue 12 percent debentures for ₹ 50 lakhs and for the balance, equity shares of ₹ 50 each.
- III. Issue 9 percent preference shares for ₹ 60 lakhs and for the balance, equity shares of ₹ 50 each.

You are required to advise Alpha Limited regarding the best alternative assuming price-earnings ratio 7.50, 7.00 and 7.25 respectively for these alternatives.

**Financing Decisions**

5. The following information is given for Gamma Limited. You are required to compute the weighted average cost of capital of the company.

|                                       |                  |
|---------------------------------------|------------------|
| (i) Total capital employed            | ₹ 20,00,000      |
| (ii) Debt-Equity Mix                  | 40% /60%         |
| (iii) Cost of Debt:                   |                  |
| Upto ₹ 4,80,000                       | 10% (Before Tax) |
| Beyond ₹ 4,80,000                     | 16% (Before Tax) |
| (iv) Earning Per Share                | ₹ 6              |
| (v) Dividend Payout                   | 50% of earnings  |
| (vi) Expected Growth Rate in dividend | 10%              |
| (vii) Current Market Price Per Share  | ₹ 66             |
| (viii) Tax Rate                       | 50%              |

**Financial Analysis and Planning**

6. You are required to arrange and redraft the following Cash Flow Statement of Beta Limited in proper order keeping in mind the requirements of AS 3:

|                                       | ₹ (in lakhs) | ₹ (in lakhs)    |
|---------------------------------------|--------------|-----------------|
| Net Profit                            |              | 60,000          |
| Add: Sale of Investments              |              | 70,000          |
| Depreciation on Assets                |              | 11,000          |
| Issue of Preference Shares            |              | 9,000           |
| Loan raised                           |              | 4,500           |
| Decrease in Stock                     |              | 12,000          |
|                                       |              | 1,66,500        |
| Less : Purchase of Fixed Assets       | 65,000       |                 |
| Decrease in Creditors                 | 6,000        |                 |
| Increase in Debtors                   | 8,000        |                 |
| Exchange gain                         | 8,000        |                 |
| Profit on sale of investments         | 12,000       |                 |
| Redemption of Debenture               | 5,700        |                 |
| Dividend paid                         | 1,400        |                 |
| Interest paid                         | <u>945</u>   | <u>1,07,045</u> |
|                                       |              | 59,455          |
| Add: Opening cash and cash equivalent |              | 12,341          |
| Closing cash and cash equivalent      |              | 71,796          |

**Financing Decisions**

7. The net operating income of Ganesha Limited is ₹18,00,000. The capital structure of the company has 10 percent debentures of ₹ 32,00,000 in addition to equity share capital. Overall cost of capital of the company is 16 percent. You are required to compute:
- Value of Ganesha Limited by using Net Operating Income (NOI) Approach, and
  - Cost of Equity Share Capital.

**Investment Decisions**

8. You are a financial analyst for Samtech Electronics Limited. The director of finance has asked you to analyse two proposed capital investments, Projects X and Y. Each project has a cost of ₹ 10,000, and the cost of capital for each project is 12 per cent. The project's expected net cash flows are as follows:

| Year | Expected Net Cash flows |           |
|------|-------------------------|-----------|
|      | Project X               | Project Y |
|      | ₹                       | ₹         |
| 0    | (10,000)                | (10,000)  |
| 1    | 6,500                   | 3,500     |
| 2    | 3,000                   | 3,500     |
| 3    | 3,000                   | 3,500     |
| 4    | 1,000                   | 3,500     |

- Calculate each project's payback period, net present value (NPV), internal rate of return (IRR), and modified internal rate of return (MIRR).
- Which project or projects should be accepted if they are independent?
- Which project should be accepted if they are mutually exclusive?

#### Financial Analysis and Planning

- Using the following data of Megatech Limited, you are required to complete the given Balance-Sheet:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Gross Profit                                                   | ₹ 64,800   |
| Shareholders' fund                                             | ₹ 7,20,000 |
| Gross profit margin                                            | 20%        |
| Credit sales to Total sales                                    | 80%        |
| Total Assets Turnover                                          | 0.3 times  |
| Inventory Turnover<br>(on the basis of cost of goods sold)     | 4 times    |
| Average collection period<br>(A year may be taken as 360 days) | 20 days    |
| Current Ratio                                                  | 1.8        |
| Long Term Debt to Equity                                       | 40%        |

#### Balance Sheet

| Liabilities        | ₹ | Assets       | ₹ |
|--------------------|---|--------------|---|
| Shareholders' Fund | - | Cash         | - |
| Long-term Debt     | - | Debtors      | - |
| Creditors          | - | Inventory    | - |
|                    |   | Fixed Assets | - |
| Total (₹)          | - | Total (₹)    | - |

**Time Value of Money**

10. Finmin Limited offers a fixed deposit scheme whereby ₹ 20,000 matures to ₹ 25,250 after two years on a half yearly compounding basis. If the company desires to amend the scheme by compounding interest every quarter, you are required to determine the revised maturity value?

**Working Capital Management**

11. The following annual figures relate to Fibroplast Limited:

|                                                                                                      | ₹         |
|------------------------------------------------------------------------------------------------------|-----------|
| Sales (at 3 months credit)                                                                           | 90,00,000 |
| Materials consumed (Suppliers extend 1½ month's credit)                                              | 22,50,000 |
| Wages paid (one month in arrear)                                                                     | 18,00,000 |
| Manufacturing expenses outstanding at the end of year<br>(cash expenses are paid on month in arrear) | 2,00,000  |
| Total administration expenses (Cash expenses are paid one month in arrear)                           | 6,00,000  |
| Sales promotion expenses for the year (Paid quarterly in advance)                                    | 12,00,000 |

The company sells its products on gross profit of 25 per cent assuming depreciation as a part of cost of production. It keeps two month's stock of raw materials as inventory. It keeps cash balance of ₹ 2,50,000.

You are required to work out the working capital requirement of the company on cash-cost basis. Ignore work-in-progress.

12. Differentiate between the following:
- Investment, Financing and Dividend Decisions
  - Funds Flow Statement and Cash Flow Statement
  - Leverage Ratios and Coverage Ratios.
13. Write short notes on the following:
- Growth of Venture Capital Financing in India
  - External Commercial Borrowings
  - Forms of Bank Credit.

## SUGGESTED ANSWERS/HINTS

## 1. (a) Computation of Future Value of Annuity

$$\begin{aligned}
 \text{FVA} &= R \times \frac{(1+i)^n - 1}{i} \\
 &= ₹ 15,000 (4.507) \\
 &= ₹ 67,605
 \end{aligned}$$

- (b) **Bridge Finance:** Bridge Finance refers to loans taken by a company normally from commercial banks for a short period because of pending disbursement of loans sanctioned by financial institutions. Normally, it takes time for financial institutions to disburse loans to companies. Once the loans are approved by the lending institutions, then the companies, in order not to lose time in starting their projects, arrange short-term loans from commercial banks.

The bridge loans are repaid/adjusted out of the term loans as and when disbursed by the concerned institutions. They are secured by hypothecating movable assets, personal guarantees and demand promissory notes. The rate of interest on bridge loans is higher as compared to term loans.

- (c) **Commercial Paper (CP):** It is unsecured promissory note issued by a firm to raise funds for a short period. It enables highly rated corporate borrowers for short-term borrowings and provides an additional financial instrument to investors with freely negotiable interest rate.

Advantages of CP

- (i) It is sold on unsecured basis and there are no restrictive conditions.
  - (ii) Maturing CP can be repaid by selling new CP and hence it is continuous source of funds.
  - (iii) Maturing of CP can be tailored to suit requirement of firm.
  - (iv) It can be issued as a source of fund, even when market is tight.
  - (v) Cost of CP to the issuing firm is lower than bank loans.
- (d) **Gross Profit Margin and its Importance**

This ratio tells us about the business's ability consistently to control its production costs or to manage the margins it makes on products it buys and sells. Whilst sales value and volumes may move up and down significantly, the gross profit margin is usually quite stable (in percentage terms). However, a small increase (or decrease) in profit margin, however caused can produce a substantial change in overall profits.

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

## (e) Computation of Future Value

PV = ₹ 1,000 i = 12%/4 = 3% per quarter n = 8 x 4 = 32 quarters

$$\begin{aligned} \text{FV} &= \text{PV} (1 + i)^n \\ &= 1,000(1.03)^{32} \\ &= 2,575.10 \end{aligned}$$

The Amount after 8 years = ₹ 2,575

## 2. Balance Sheets for Sunshine Company for each Alternative Policy

|                              | <i>Restricted</i><br>(40%)<br>₹ | <i>Moderate</i><br>(50%)<br>₹ | <i>Relaxed</i><br>(60%)<br>₹ |
|------------------------------|---------------------------------|-------------------------------|------------------------------|
| Current assets               | 12,00,000                       | 15,00,000                     | 18,00,000                    |
| Fixed assets                 | <u>6,00,000</u>                 | <u>6,00,000</u>               | <u>6,00,000</u>              |
| Total assets                 | <u>18,00,000</u>                | <u>21,00,000</u>              | <u>24,00,000</u>             |
| Debt                         | 9,00,000                        | 10,50,000                     | 12,00,000                    |
| Equity                       | <u>9,00,000</u>                 | <u>10,50,000</u>              | <u>12,00,000</u>             |
| Total liabilities and equity | <u>18,00,000</u>                | <u>21,00,000</u>              | <u>24,00,000</u>             |

## Profit &amp; Loss Accounts for Sunshine Company for each Alternative Policy

|                       | <i>Restricted</i><br>(40%)<br>₹ | <i>Moderate</i><br>(50%)<br>₹ | <i>Relaxed</i><br>(60%)<br>₹ |
|-----------------------|---------------------------------|-------------------------------|------------------------------|
| Sales                 | 30,00,000                       | 30,00,000                     | 30,00,000                    |
| EBIT                  | 4,50,000                        | 4,50,000                      | 4,50,000                     |
| Interest (10%)        | <u>90,000</u>                   | <u>1,05,000</u>               | <u>1,20,000</u>              |
| Earnings before taxes | 3,60,000                        | 3,45,000                      | 3,30,000                     |
| Taxes (40%)           | <u>1,44,000</u>                 | <u>1,38,000</u>               | <u>1,32,000</u>              |
| Net income            | <u>2,16,000</u>                 | <u>2,07,000</u>               | <u>1,98,000</u>              |
| ROE                   | <u>24.0%</u>                    | <u>19.7%</u>                  | <u>16.5%</u>                 |

## 3. (i) Computation of Net Present Value of the Project

|                                                 | ₹               |
|-------------------------------------------------|-----------------|
| Selling price per unit                          | 10              |
| Less: Variable Cost per unit                    | <u>6</u>        |
| Contribution per unit                           | <u>4</u>        |
| Total Annual Contribution (40,000 units × 4)    | 1,60,000        |
| Less: Fixed cost                                | <u>20,000</u>   |
| Net Annual Cash Inflow                          | 1,40,000        |
| Annuity factor of ₹ 1 for 6 years               | 3.7845          |
| \ Total present value of net cash inflow        | 5,29,830        |
| Add: Present value of scrap (₹ 20,000 × 0.4323) | <u>8,646</u>    |
| Present value of total cash inflow              | 5,38,476        |
| Less: Initial Investment                        | <u>4,00,000</u> |
| Net Present Value                               | <u>1,38,476</u> |

## (ii) Calculation of Minimum Volume of Sales Required to Justify the Project

Let the number of units to be sold be "x"

At this level, NPV should be zero.

$$\backslash (4x - 20,000) \times 3.7845 + 8,646 - \text{Rs. } 4,00,000 = 0$$

$$\backslash 15.138x - 75,690 + 8,646 - 4,00,000 = 0$$

$$\backslash 15.138x = 4,67,044$$

$$\backslash x = 30,853 \text{ units}$$

Minimum Volume of Sales Required to Justify the Project = 30,853 units

## 4. Evaluation of Different Alternatives and Advice to the Company

|                                                |                                                                    |
|------------------------------------------------|--------------------------------------------------------------------|
| Market price per day                           | ₹ 49                                                               |
| Price Earnings Ratio                           | 7                                                                  |
| Earnings Per Share (MPS/ Price Earnings Ratio) | $\frac{49}{7} = ₹ 7$                                               |
| Total Earnings after tax                       | = Number of equity shares × EPS<br>15,00,000 × 7 = Rs. 1,05,00,000 |



$$\begin{aligned}
 \text{Earnings before tax} &= \frac{\text{EAT}}{1 - t} \\
 &= \frac{1,05,00,000}{(1 - 0.30)} \\
 \text{Earnings before tax} &= ₹ 1,50,00,000 \\
 \text{EBIT} &= \text{EBT} + \text{Interest on Debentures} \\
 &= ₹ 1,50,00,000 + ₹ 10,00,000 \\
 \text{Earnings before Interest \& Tax} &= ₹ 1,60,00,000
 \end{aligned}$$

#### Evaluation of Different Alternatives

|                                           | Equity Shares | 12% Debentures & Equity shares | 9% of Preference Shares & Equity Shares |
|-------------------------------------------|---------------|--------------------------------|-----------------------------------------|
|                                           | I             | II                             | III                                     |
| EBIT (Present plus 25% increase)          | 2,00,00,000   | 2,00,00,000                    | 2,00,00,000                             |
| Less: Interest on Debentures              | 10,00,000     | 16,00,000                      | 10,00,000                               |
| Earnings before tax                       | 1,90,00,000   | 1,84,00,000                    | 1,90,00,000                             |
| Tax                                       | 57,00,000     | 55,20,000                      | 57,00,000                               |
| Earnings after tax                        | 1,33,00,000   | 1,28,80,000                    | 1,33,00,000                             |
| Less: Preference Dividend                 |               |                                | 5,40,000                                |
| Earnings available to equity shareholders | 1,33,00,000   | 1,28,80,000                    | 1,27,60,000                             |
| Number of Equity Shares                   | 17,00,000     | 16,00,000                      | 15,80,000                               |
| Earnings per share                        | 7.82          | 8.05                           | 8.08                                    |
| Price Earnings Ratio                      | 7.5           | 7                              | 7.25                                    |
| Market Price Per Share                    | 58.65         | 56.35                          | 58.58                                   |

Advise: Alpha Limited should choose Alternative-I i.e., Issue of Equity shares because market price per share of this Alternative is highest.

#### 5. Calculation of Weighted Average Cost of Capital (WACC)

$$\begin{aligned}
 \text{Equity : } 60\% \text{ of ₹ } 20,00,000 &= ₹ 12,00,000 \\
 \text{Debt : } 40\% \text{ of ₹ } 20,00,000 &= ₹ \underline{8,00,000} \\
 \text{Total Capital} &= ₹ \underline{20,00,000}
 \end{aligned}$$

## (i) Determination of Post-tax Average Cost of Debt

$$\begin{aligned}
 \text{Debt at interest 10\% p.a.} &= ₹ 4,80,000 \\
 \text{and debt at interest 16\% p.a.} &= 8,00,000 - 4,80,000 = ₹ 3,20,000 \\
 \text{Cost of Debt (kd)} &= I (1-T) \\
 \text{on ₹ 4,80,000, kd} &= 10\% (1- 0.5) = 5\% \text{ or } 0.05 \\
 \text{on ₹ 3,20,000, kd} &= 16\% (1- 0.5) = 8\% \text{ or } 0.08 \\
 \text{Average Cost of Debt} &= \frac{4,80,000 \times .05 + 3,20,000 \times .08}{8,00,000} \times 100 \\
 &= 6.2\%
 \end{aligned}$$

## (ii) Determination of Cost of Equity

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

$D_0$  = Dividend payout = 50% of ₹ 6 = ₹ 3

$G$  = Growth rate = 10%

$P_0$  = Current market price per share = ₹ 66

$$\begin{aligned}
 K_e &= \frac{₹ 3(1.1)}{66} + 10\% \\
 &= 5\% + 10\% = 15\%
 \end{aligned}$$

## (iii) Calculation of Overall Weighted Cost of Capital

|        | ₹         | Weights | Cost of Capital |
|--------|-----------|---------|-----------------|
| Equity | 12,00,000 | 0.60    | 15%             |
| Debt   | 8,00,000  | 0.40    | 6.2%            |

$$\begin{aligned}
 \text{WACC} &= 15\% \times 0.60 + 6.2\% \times 0.40 \\
 &= 9\% + 2.48\% \\
 \text{WACC} &= 11.48\%
 \end{aligned}$$

6.

## Beta Limited

## Cash Flow Statement

| <i>Cash flows from operating activities</i>      |                 | <i>(₹ in lakhs)</i> |
|--------------------------------------------------|-----------------|---------------------|
| Net profit                                       |                 | 60,000              |
| Less: Exchange gain                              |                 | (8,000)             |
| Less: Profit on sale of investments              |                 | <u>(12,000)</u>     |
|                                                  |                 | 40,000              |
| Add: Depreciation on assets                      |                 | <u>11,000</u>       |
| Change in current assets and current liabilities |                 | 51,000              |
| (-) Increase in debtors                          | (8,000)         |                     |
| (+) Decrease in stock                            | 12,000          |                     |
| (-) Decrease in creditors                        | <u>(6,000)</u>  | <u>(2,000)</u>      |
| Net cash from operating activities               |                 | 49,000              |
| <i>Cash flows from investing activities</i>      |                 |                     |
| Sale of investments                              | 70,000          |                     |
| Purchase of fixed assets                         | <u>(65,000)</u> |                     |
| Net cash from Investing activities               |                 | 5,000               |
| <i>Cash flows from financing activities</i>      |                 |                     |
| Issue of preference shares                       | 9,000           |                     |
| Loan raised                                      | 4,500           |                     |
| Redemption of Debentures                         | (5,700)         |                     |
| Interest paid                                    | (945)           |                     |
| Dividend paid                                    | <u>(1,400)</u>  |                     |
| Net cash from financing activities               |                 | <u>5,455</u>        |
| Net increase in cash & cash equivalents          |                 | 59,455              |
| Add: Opening cash and cash equivalents           |                 | <u>12,341</u>       |
| Closing cash and cash equivalents                |                 | <u>71,796</u>       |

## 7. (i) Computation of Value of the Company by using NOI Approach

| EBIT                                      |                  | 18,00,000        |
|-------------------------------------------|------------------|------------------|
| Less: Interest on Debentures              |                  | <u>3,20,000</u>  |
| Earnings available to equity shareholders |                  | <u>14,80,000</u> |
| Total Cost of Capital                     |                  | 16%              |
| Value of the Firm                         | <u>18,00,000</u> |                  |
|                                           | 0.16             |                  |
|                                           | =                | 1,12,50,000      |
| Value of Debt                             | =                | <u>32,00,000</u> |
| Value of Equity                           | =                | <u>80,50,000</u> |

## (ii) Computation of Cost of Equity Share Capital (Ke)

$$\begin{aligned}
 K_e &= K_o \frac{V}{V+D} - K_d \frac{D}{V+D} \\
 &= 0.16 \frac{1,12,50,000}{1,12,50,000 + 32,00,000} - 0.10 \frac{32,00,000}{1,12,50,000 + 32,00,000} \\
 &= (0.16 \times 1.3975) - (0.10 \times 0.3975) \\
 &= 0.2236 - 0.03975 \\
 &= 0.18385 = 18.39\%
 \end{aligned}$$

## 8. (a) Payback Period Method

The cumulative cash flows for each project are as follows:

| Year | Cumulative Cash Flows |                |
|------|-----------------------|----------------|
|      | Project X<br>₹        | Project Y<br>₹ |
| 0    | (10,000)              | (10,000)       |
| 1    | (3,500)               | (6,500)        |
| 2    | (500)                 | (3,000)        |
| 3    | 2,500                 | 500            |
| 4    | 3,500                 | 4,000          |

$$\text{Payback}_x = 2 + \frac{\text{₹ } 500}{\text{₹ } 3,000} = 2.17 \text{ years.}$$

$$\text{Payback}_y = 2 + \frac{\text{₹ } 3,000}{\text{₹ } 3,500} = 2.86 \text{ years.}$$

Net Present Value (NPV)

$$\begin{aligned} \text{NPV}_x &= -\text{₹ } 10,000 + \frac{\text{₹ } 6,500}{(112)^1} + \frac{\text{₹ } 3,000}{(112)^2} + \frac{\text{₹ } 3,000}{(112)^3} + \frac{\text{₹ } 1,000}{(112)^4} \\ &= \text{₹ } 966.01. \end{aligned}$$

$$\begin{aligned} \text{NPV}_y &= -\text{₹ } 10,000 + \frac{\text{₹ } 3,500}{(112)^1} + \frac{\text{₹ } 3,500}{(112)^2} + \frac{\text{₹ } 3,500}{(112)^3} + \frac{\text{₹ } 3,500}{(112)^4} \\ &= \text{₹ } 630.72. \end{aligned}$$

Internal Rate of Return (IRR)

To solve for each project's IRR, find the discount rates that equate each NPV to zero:

$$\text{IRR}_x = 18.0\%.$$

$$\text{IRR}_y = 15.0\%.$$

Modified Internal Rate of Return (MIRR)

To obtain each project's MIRR, begin by finding each project's terminal value (TV) of cash inflows:

$$\begin{aligned} \text{TV}_x &= \text{₹ } 6,500(1.12)^3 + \text{₹ } 3,000 (1.12)^2 + \text{₹ } 3,000 (1.12)^1 + \text{₹ } 1,000 \\ &= \text{₹ } 17,255.23. \end{aligned}$$

$$\begin{aligned} \text{TV}_y &= \text{₹ } 3,500(1.12)^3 + \text{₹ } 3,500 (1.12)^2 + \text{₹ } 3,500 (1.12)^1 + \text{₹ } 3,500 \\ &= \text{₹ } 16,727.65. \end{aligned}$$

Now, each project's MIRR is that discount rate that equates the present value of the terminal value to each project's cost, ₹ 10,000:

$$\text{MIRR}_x = 14.61\%.$$

$$\text{MIRR}_y = 13.73\%.$$

(b) The following table summarizes the project rankings by each method:

|         | <i>Project that ranks higher</i> |
|---------|----------------------------------|
| Payback | X                                |
| NPV     | X                                |

|      |   |
|------|---|
| IRR  | X |
| MIRR | X |

**Analysis:** All methods rank Project X over Project Y. In addition, both projects are acceptable under the NPV, IRR, and MIRR criteria. Thus, both projects should be accepted if they are independent.

- (c) If the projects are mutually exclusive, then the project with the higher NPV at  $k = 12\%$ , or Project X would be accepted.

9. Working Notes:

- (i) Gross Profit = ₹ 64,800

Gross Profit Margin = 20%

$$\backslash \text{ Sales} = \frac{\text{Gross Profit}}{\text{Gross Profit Margin}} = \frac{64,800}{0.20} = ₹ 3,24,000$$

- (ii) Credit Sales to Total Sales = 80%

$$\backslash \text{ Credit Sales} = 3,24,000 \times 0.80 = ₹ 2,59,200$$

- (iii) Cost of Goods Sold (COGS) = Sales – Gross Profit

$$= 3,24,000 - 64,800$$

$$= ₹ 2,59,200$$

Inventory turnover = 4 times of COGS

$$\backslash \text{ Inventory} = \frac{\text{COGS}}{4} = \frac{2,59,200}{4} = ₹ 64,800$$

- (iv) Average collection period = 20 days

$$\backslash \text{ Debtors turnover} = \frac{360}{\text{Average collection Period i.e. 20}} = 18$$

$$\backslash \text{ Debtors} = \frac{\text{Credit sales}}{18} = \frac{2,59,200}{18} = ₹ 14,400$$

- (v) Long term debt to Equity = 40%

$$\text{Shareholders Fund} = ₹ 7,20,000$$

$$\backslash \text{ Long term debt} = ₹ 7,20,000 \times 0.40 = ₹ 2,88,000$$

- (vi) Total Assets Turnover = 0.3 times

$$\backslash \text{ Total Assets} = \frac{\text{Sales}}{0.3} = \frac{3,24,000}{0.3} = ₹ 10,80,000$$

(vii) Total Assets = Total Liabilities = Shareholder Funds + Long-term Debt + Creditors

$$\backslash \text{ Creditors} = 10,80,000 - 7,20,000 - 2,88,000 = ₹ 72,000$$

(viii) Current Ratio =  $\frac{\text{Debtors} + \text{Inventory} + \text{Cash}}{\text{Creditors}}$

$$\backslash 1.8 = \frac{14,400 + 64,800 + \text{Cash}}{72,000}$$

$$\backslash \text{Cash} = 1.8 \times 72,000 - 14,400 - 64,800 \\ = ₹ 50,400$$

Balance Sheet of Megatech Limited

| Liabilities       | Rs.              | Assets                          | Rs.              |
|-------------------|------------------|---------------------------------|------------------|
| Creditors         | 72,000           | Cash                            | 50,400           |
| Long-term debt    | 2,88,000         | Debtors                         | 14,400           |
| Shareholders fund | 7,20,000         | Inventory                       | 64,800           |
|                   |                  | Fixed assets (Balancing Figure) | <u>9,50,400</u>  |
|                   | <u>10,80,000</u> |                                 | <u>10,80,000</u> |

#### 10. Computation of Revised Maturity Value

$$A = P(1+i)^n$$

Where,

$$\text{Amount (A)} = ₹ 25,250$$

$$\text{Principal (P)} = ₹ 20,000$$

i = rate of interest half yearly

n = 2 years on half yearly basis i.e.,  $2 \times 2 = 4$

$$\backslash 25,250 = 20,000 (1+i)^4$$

$$\backslash (1+i)^4 = 1.2625$$

$$\backslash 1+i = 1.06$$

$$\backslash i = 0.06 \text{ i.e., } 6\% \text{ rate half yearly and } 12\% \text{ rate yearly.}$$

$$\begin{aligned}
 \text{If compounded quarterly, revised maturity value} &= 20,000 \left( 1 + \frac{12}{100} \times \frac{1}{4} \right)^4 \\
 &= 20,000 (1.03)^8 \\
 &= 20,000 \times 1.267 = ₹ 25,340
 \end{aligned}$$

# 11. Estimation of Working Capital Requirement based on Cash Cost basis

## Working Notes:

|       |                                                     | ₹                |
|-------|-----------------------------------------------------|------------------|
| (i)   | Calculation of Total Manufacturing Expenses         |                  |
|       | Sales                                               | 90,00,000        |
|       | Less: Gross Profit 25%                              | <u>22,50,000</u> |
|       | Total manufacturing cost                            | 67,50,000        |
|       | Less: Materials 22,50,000                           |                  |
|       | Wages <u>18,00,000</u>                              | <u>40,50,000</u> |
|       | Total manufacturing expenses                        | 27,00,000        |
| (ii)  | Calculation of Depreciation                         |                  |
|       | Total manufacturing expenses                        | 27,00,000        |
|       | Less: Cash manufacturing expenses (₹ 2,00,000 × 12) | <u>24,00,000</u> |
|       | Depreciation                                        | <u>3,00,000</u>  |
| (iii) | Calculation of Total Cash Cost                      |                  |
|       | Total manufacturing cost                            | 67,50,000        |
|       | Less: Depreciation                                  | <u>3,00,000</u>  |
|       |                                                     | 64,50,000        |
|       | Add: Adm. expenses                                  | 6,00,000         |
|       | Add: Sales promotion expenses                       | <u>12,00,000</u> |
|       | Total Cash Cost                                     | <u>82,50,000</u> |



|                                                                                 |                  |
|---------------------------------------------------------------------------------|------------------|
| <b>Estimation of Current Assets</b>                                             |                  |
| Debtors (3 months of total cash cost) = $82,50,000 \times \frac{3}{12}$         | 20,62,500        |
| Raw material stock (1 month of material cost) = $22,50,000 \times \frac{1}{12}$ | 1,87,500         |
| Finished goods stock (2 months of cash cost) = $82,50,000 \times \frac{2}{12}$  | 13,75,000        |
| Pre-paid sales promotion expenses $12,00,000 \times \frac{1}{4}$                | 3,00,000         |
| Cash Balance                                                                    | <u>2,50,000</u>  |
| Total Current Assets =                                                          | <u>41,75,000</u> |
| <b>Estimation of Current Liabilities</b>                                        |                  |
| Sundry Creditors (1.5 months material cost) = $22,50,000 \times \frac{1.5}{12}$ | 2,81,250         |
| Manufacturing expenses outstanding                                              | 2,00,000         |
| Wages outstanding = $18,00,000 \times \frac{1}{12}$                             | 1,50,000         |
| Adm. Expenses outstanding = $6,00,000 \times \frac{1}{12}$                      | <u>50,000</u>    |
| Total Current Liabilities                                                       | <u>6,81,250</u>  |
| Working Capital = CA – CL                                                       | 34,93,750        |

12. (a) **Investment, Financing and Dividend Decisions:** The finance functions are divided into three major decisions, viz., investment, financing and dividend decisions. These decisions are inter-related because the underlying objective of these three decisions is the same, i.e. maximisation of shareholders' wealth. The decision to invest in a new project needs finance for the investment. The financing decision, in turn, is influenced by and influences dividend decision because retained earnings used in internal financing deprive shareholders of their dividends. An efficient financial management can ensure optimal joint decisions. This is possible by evaluating each decision in relation to its effect on the shareholders' wealth.

*Investment decision:* The investment of long-term funds is made after a careful assessment of the various projects through capital budgeting and uncertainty

analysis. However, only that investment proposal is to be accepted which is expected to yield at least so much return as is adequate to meet its cost of financing. This has an influence on the profitability of the company and ultimately on its wealth.

*Financing decision:* Funds can be raised from various sources. Each source of funds involves different issues. The finance manager has to maintain a proper balance between long-term and short-term funds. With the total volume of long-term funds, he has to ensure a proper mix of loan funds and owner's funds. The optimum financing mix will increase return to equity shareholders and thus maximise their wealth.

*Dividend decision:* The finance manager is also concerned with the decision to pay or declare dividend. He assists the top management in deciding as to what portion of the profit should be paid to the shareholders by way of dividends and what portion should be retained in the business. An optimal dividend pay-out ratio maximises shareholders' wealth.

(b) Funds Flow Statement vs. Cash Flow Statement

| Cash Flow Statement                                                              | Funds Flow Statement                                                                      |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| (i) It ascertains the changes in balance of cash- in-hand and bank               | (i) It ascertains the changes in financial position between two accounting periods.       |
| (ii) It analyses the reasons for changes in balance of cash-in-hand and at bank. | (ii) It analyses the reasons for change in financial position between two balance sheets. |
| (iii) It shows the inflows and outflows of cash.                                 | (iii) It reveals the sources and application of funds.                                    |
| (iv) It is an important tool for short-term analysis.                            | (iv) It helps to test whether working capital has been effectively used or not.           |

(c) Leverage Ratios and Coverage Ratios: The capital structure/leverage ratios may be defined as those financial ratios which measure the long term stability and structure of the firm. These ratios indicate the mix of funds provided by owners and lenders and assure the lenders of the long term funds with regard to:

- (i) Periodic payment of interest during the period of the loan; and
- (ii) Repayment of principal amount on maturity.

Whereas on the other hand, Coverage ratios, measure the firm's ability to service the fixed liabilities. These ratios establish the relationship between fixed claims and what is normally available out of which these claims are to be paid. The fixed claims consist of:

- (i) Interest on loans;
- (ii) Preference dividend; and
- (iii) Amortisation of principal or repayment of the instalment of loans or redemption of preference capital on maturity.

13. (a) **Growth of Venture Capital Financing in India:** In India, Venture Capital financing was first the responsibility of developmental financial institutions such as the Industrial Development Bank of India (IDBI), the Technical Development and Information Corporation of India (now known as ICICI) and the State Finance Corporations (SFCs). In the year 1988, the Government of India took a policy initiative and announced guidelines for Venture Capital Funds (VCFs). In the same year, a Technology Development Fund (TDF) financed by the levy on all payments for technology imports was established. This fund was meant to facilitate the financing of innovative and high risk technology programmes through the IDBI.

A major development in venture capital financing in India was in the year 1996 when the Securities and Exchange Board of India (SEBI) issued guidelines for venture capital funds to follow. These guidelines described a venture capital fund as a fund established in the form of a company or trust, which raises money through loans, donations, issue of securities or units and makes or proposes to make investments in accordance with the regulations. This move was instrumental in the entry of various foreign venture capital funds to enter India. The guidelines were further amended in April 2000 with the objective of fuelling the growth of Venture Capital activities in India. A few venture capital companies operate as both investment and fund management companies; others set up funds and function as asset management companies.

It is hoped that the changes in the guidelines for the implementation of venture capital schemes in the country would encourage more funds to be set up to give the required momentum for venture capital investment in India.

- (b) **External Commercial Borrowings (ECBs) :** ECBs refer to commercial loans (in the form of bank loans, buyers credit, suppliers credit, securitised instruments ( e.g. floating rate notes and fixed rate bonds) availed from non-resident lenders with minimum average maturity of 3 years. Borrowers can raise ECBs through internationally recognised sources like (i) international banks, (ii) international capital markets, (iii) multilateral financial institutions such as the IFC, ADB, etc, (iv) export credit agencies, (v) suppliers of equipment, (vi) foreign collaborators and (vii) foreign equity holders.

External Commercial Borrowings can be accessed under two routes viz (i) Automatic route and (ii) Approval route. Under the Automatic route there is no need to take the RBI/Government approval whereas such approval is necessary under the Approval route. Company's registered under the Companies Act and NGOs

engaged in micro-finance activities are eligible for the Automatic Route whereas Financial Institutions and Banks dealing exclusively in infrastructure or export finance and the ones which had participated in the textile and steel sector restructuring packages as approved by the government are required to take the Approval Route.

(c) **Forms of Bank Credit:** The bank credit will generally be in the following forms:

- Ø **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.
- Ø **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.
- Ø **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.
- Ø **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.
- Ø **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.
- Ø **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.
- Ø **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.