



PAPER – 4: COST AND MANAGEMENT ACCOUNTING



QUESTIONS

Division A: Case Scenario

Material Cost

1. 'Axe Trade', an unregistered supplier under GST, purchased material from Vye Ltd. which is registered supplier under GST. During the month of June 2024, the Axe Traders has purchased a lot of 5,000 units on credit from Vye Ltd. The information related to the purchase are as follows:

| | |
|---|---------------------------|
| Listed price of one lot of 5,000 units | - ₹ 2,50,000 |
| Trade discount | - @ 10% on listed price |
| CGST and SGST (Credit available) | - 18% (9% CGST + 9% SGST) |
| Cash discount | - @ 10% |
| (Will be given only if payment is made within 30 days.) | |
| Toll Tax paid | ₹ 5,000 |
| Freight and Insurance | ₹ 17,220 |
| Demurrage paid to transporter | ₹ 5,000 |
| Commission and brokerage on purchases | ₹ 10,000 |
| Amount deposited for returnable containers | ₹ 30,000 |
| Amount of refund on returning the container | ₹ 20,000 |
| Other Expenses | @ 2% of total cost |

A 20% shortage in material on receipt is expected considering the nature of the raw material.

The payment to the supplier was made within 21 days of the purchases.

- (i) If Axe Traders pays the supplier within 30 days of purchase, then, what is the total amount of cash discount received from the supplier and how it is treated to calculate material cost?
- (a) ₹ 25,000 & it will not be deducted from the material cost
 - (b) ₹ 26,550 & it will be deducted from the material cost
 - (c) ₹ 26,550 & it will not be deducted from the material cost
 - (d) ₹ 22,500 & it will not be deducted from the material cost
- (ii) What will be the amount of other expenses and how it is treated in material cost?
- (a) ₹ 6,154.40 & it will be added with the material cost
 - (b) ₹ 6,280.00 & it will be added with the material cost
 - (c) ₹ 5,344.40 & it will be added with the material cost
 - (d) ₹ 5,453.47 & it will not be added with the material cost
- (iii) What is the amount of GST and how will it be treated in cost sheet of Axe Traders?
- (a) ₹ 40,500 & it will not be added with material cost
 - (b) ₹ 40,500 & it will be added with material cost
 - (c) ₹ 45,000 & it will not be added with material cost
 - (d) ₹ 45,000 & it will be added with material cost
- (iv) What is the total material cost chargeable in the cost sheet of Axe Traders?
- (a) ₹ 3,14,000
 - (b) ₹ 2,73,500
 - (c) ₹ 2,72,673
 - (d) ₹ 3,13,874

- (v) The number of good units and cost per unit of the materials received are:
- (a) 5,000 units & ₹ 62.80
 - (b) 5,000 units & ₹ 54.70
 - (c) 4,000 units & ₹ 78.50
 - (d) 4,000 units & ₹ 68.38

Standard Costing

2. ABC Pvt Ltd is engaged in the manufacture of a Product Q. The product has the following standard production requirements determined by the technical team of the company post satisfactory completion of test run.

Raw Material Z – 2 units @ ₹ 2 per unit

Skilled labour of – 2.5 hours @ ₹ 5 per hour

Fixed Overheads – ₹ 7.5 per unit

The input of Raw material Z has a yield of 80% everytime when infused into production. The actual quantity of Raw material Z consumed for production during the year was 24,000 units. The Usage variance of Material Z was 2,000 Favourable. Further the actual amount of material cost for the material consumed amounted to ₹ 45,000.

During the said year, the actual working hours were 30,000 for which the labour cost paid by the company amounted to ₹1,20,000. The idle time variance amounted to 10,000 Adverse.

The actual fixed overheads incurred for the year amounted to ₹ 1,50,000 and the expenditure variance was ₹25,000 Favourable.

In the context of the above, the following needs to be determined:

- (i) The Actual output of Product Q produced during the year is:
- (a) 10,000 units
 - (b) 12,500 units
 - (c) 25,000 units
 - (d) 15,000 units

- (ii) The Material price and material cost variance are:
- (a) Price variance – 3,000 Adverse, Cost Variance – 5,000 Adverse
 - (b) Price variance – 3,000 Favourable, Cost Variance – 5,000 Favourable
 - (c) Price variance – 3,000 Favourable, Cost Variance – 8,000 Adverse
 - (d) Price variance – 5,000 Adverse, Cost Variance – 3,000 Favourable
- (iii) The Standard Hours, Net Actual hours and the idle time are:
- (a) Standard Hours – 27,500 Net Actual Hours – 28,000 hours Idle Time – 2,000 hours
 - (b) Standard Hours – 22,500 Net Actual Hours – 28,500 hours Idle Time – 1,500 hours
 - (c) Standard Hours – 24,000 Net Actual Hours – 29,000 hours Idle Time – 1,000 hours
 - (d) Standard Hours – 25,000 hours Net Actual Hours – 28,000 hours Idle Time – 2,000 hours
- (iv) Labour Efficiency variance and Labour rate variance are:
- (a) Labour Efficiency Variance – 30,000 Favourable Labour rate Variance – 25,000 Adverse
 - (b) Labour Efficiency Variance – 25,000 Favourable, Labour rate Variance – 30,000 Adverse
 - (c) Labour Efficiency Variance – 25,000 Adverse, Labour rate Variance – 30,000 Favourable
 - (d) Labour Efficiency Variance – 30,000 Adverse Labour rate Variance – 25,000 Favourable
- (v) Fixed Overhead volume variance is:
- (a) Fixed Overhead volume variance – 1,00,000 Favourable
 - (b) Fixed Overhead volume variance – 50,000 Adverse

- (c) Fixed Overhead volume variance – 1,00,000 Adverse
- (d) Fixed Overhead volume variance – 50,000 Favourable

Overheads: Absorption Costing Method

3. The accountant for Brilliant Tools Ltd applies overhead based on machine hours. The budgeted overhead and machine hours for the year are ₹ 1,30,000 and 8,000 hours, respectively. The actual overhead and machine hours incurred were ₹ 1,37,500 and 10,000 hours. The cost of goods sold and inventory data compiled for the year is as follows:

Direct Material ₹ 25,000

Cost of Goods Sold ₹ 2,25,000

Units: WIP 50,000 and Finished Goods 75,000

What is the amount of over/under absorbed overhead for the year?

- (a) Over absorbed by ₹ 25,000
- (b) Under absorbed by ₹ 25,000
- (c) Over a absorbed by ₹ 32,500
- (d) Under absorbed by ₹ 32,500

Process Costing

4. The following information is available in respect of Process I: Raw material purchased and introduced 10,000 units @ 5 per unit Raw Material received from store 4000 units @ 6 per unit Direct Labour 40,000 Overheads 28,000 Output of Process is 13,500 units, Normal wastage 5% of inputs Scrap value of wastage 4 per unit The value of Abnormal Gain is:

- (a) ₹ 2062.68
- (b) ₹ 2135.34
- (c) ₹ 2103.70
- (d) ₹ 2093.2

Service Costing

5. A hotel has 200 rooms (120 Deluxe rooms and 80 Premium rooms). The normal occupancy in summer is 80% and winter 60%. The period of summer and winter is taken as 8 months and 4 months respectively. Assume 30 days in each month. Room rent of Premium room will be double of Deluxe room. Hotel is expecting a profit of 20% on total revenue, total cost for the year is 2,66,11,200. Calculate the room rent to be charged for Premium room.
- (a) ₹ 450 per room day
 - (b) ₹ 900 per room day
 - (c) ₹ 380 per room day
 - (d) ₹ 760 per room day
6. ALC Ltd. is a insurance company. It launched a new term insurance policy Names as Protection Plus. The total cost for the policy during the year is ₹ 1,60,00,000. Total number of policies sold is 410 and total insured value of policies is ₹ 920 crore.
- What is the cost per rupee of insured value?
- (a) ₹ 0.0017
 - (b) ₹ 0.18
 - (c) ₹ 575
 - (d) ₹ 2.24

Budget and Budgetary Control

7. A business manufactures a single product and is preparing its production budget for the year ahead. It is estimated that 2,00,000 units of the product can be sold in the year and the opening inventory is currently 25,000 units. The inventory level is to be reduced by 40% by the end of the year. What is production budget in units?
- (a) 1,95,000 units
 - (b) 1,90,000 units
 - (c) 1,84,000 units

(d) 1,75,000 units

Employee Cost

8. The labour turnover rates for the quarter ended 30th June, 2024 are computed as 14%, 8% and 6% under Flux method, Replacement method and Separation method respectively. If the number of workers replaced during 1st quarter of the financial year 2024-25 is 36, COMPUTE the following:
- (i) The number of workers recruited and joined; and
 - (ii) The number of workers left and discharged.

Overheads: Absorption Costing Method

9. From the details furnished below you are required to compute a comprehensive machine-hour rate:

| | |
|--|-------------------------------|
| Original purchase price of the machine (subject to depreciation at 10% per annum on original cost) | ₹ 12,96,000 |
| Normal working hours for the month (The machine works for only 75% of normal capacity) | 200 hours |
| Wages to Machine-man | ₹ 800 per day (of 8 hours) |
| Wages to Helper (machine attendant) | ₹ 500 per day (of 8 hours) |
| Power cost for the month for the time worked | ₹ 1,30,000 |
| Supervision charges apportioned for the machine centre for the month | ₹ 18,000 |
| Electricity & Lighting (fixed in nature) for the month | ₹ 9,500 |
| Repairs & maintenance (machine) including consumable stores per month | ₹ 17,500 |
| Insurance of Plant & Building (apportioned) for the year | ₹ 18,000 |
| Other general expense per annum | ₹ 18,000 |

The workers are paid a fixed dearness allowance of ₹ 4,500 per month. Production bonus payable to workers in terms of an award is equal to 10% of basic wages and dearness allowance. Add 10% of the basic wage and dearness allowance against leave wages and holidays with pay to arrive at a comprehensive labour-wage for debit to production.

Activity Based Costing

10. SOFTHUG is a global brand created by Green-lush Ltd. The company manufactures three range of beauty soaps i.e. SOFTHUG- Gold, SOFTHUG- Pearl, and SOFTHUG- Diamond. The budgeted costs and production for the month of May, 2024 are as follows:

| | SOFTHUG- Gold | | SOFTHUG- Pearl | | SOFTHUG- Diamond | |
|------------------------------------|---------------|--------------|----------------|--------------|------------------|--------------|
| Production of soaps (Units) | 4,000 | | 3,000 | | 2,000 | |
| Resources per Unit: | Qty | Rate | Qty | Rate | Qty | Rate |
| - Essential Oils | 60 ml | ₹ 200/100 ml | 55 ml | ₹ 300/100 ml | 65 ml | ₹ 300/100 ml |
| - Cocoa Butter | 20 g | ₹ 200/100 g | 20 g | ₹ 200/100 g | 20 g | ₹ 200/100 g |
| - Filtered Water | 30 ml | ₹ 15/100 ml | 30 ml | ₹ 15/100 ml | 30 ml | ₹ 15/100 ml |
| - Chemicals | 10 g | ₹ 30/100 g | 12 g | ₹ 50/100 g | 15 g | ₹ 60/100 g |
| - Direct Labour | 30 minutes | ₹ 10/hour | 40 minutes | ₹ 10/hour | 60 minutes | ₹ 10 / hour |

Green-lush Ltd. followed an Absorption Costing System and absorbed its production overheads, to its products using direct labour hour rate, which were budgeted at ₹ 1,98,000.

Now, Green-lush Ltd. is considering adopting an Activity Based Costing system. For this, additional information regarding budgeted overheads and their cost drivers is provided below:

| Particulars | (₹) | Cost drivers |
|------------------|--------|------------------------------|
| Forklifting cost | 58,000 | Weight of material lifted |
| Supervising cost | 60,000 | Direct labour hours |
| Utility cost | 80,000 | Number of Machine operations |

The number of machine operators per unit of production are 5, 5, and 6 for SOFTHUG- Gold, SOFTHUG- Pearl, and SOFTHUG- Diamond respectively.

(Consider (i) Mass of 1 litre of Essential Oils and Filtered Water equivalent to 0.8 kg and 1 kg respectively (ii) Mass of output produced is equivalent to the mass of input materials taken together.)

You are required to:

- (i) PREPARE a statement showing the unit costs and total costs of each product using the absorption costing method.
- (ii) PREPARE a statement showing the product costs of each product using the ABC approach.
- (iii) STATE what are the reasons for the different product costs under the two approaches?

Cost Sheet

11. From the following data of Appu Ltd., CALCULATE (i) Material Consumed; (ii) Prime Cost and (iii) Cost of production.

| | | Amount (₹) |
|--------|---|------------|
| (i) | Repair & maintenance paid for plant & machinery | 9,80,500 |
| (ii) | Insurance premium paid for inventories | 26,000 |
| (iii) | Insurance premium paid for plant & machinery | 96,000 |
| (iv) | Raw materials purchased | 64,00,000 |
| (v) | Opening stock of raw materials | 2,88,000 |
| (vi) | Closing stock of raw materials | 4,46,000 |
| (vii) | Wages paid | 23,20,000 |
| (viii) | Value of opening Work-in-process | 4,06,000 |
| (ix) | Value of closing Work-in-process | 6,02,100 |

| | | |
|--------|---|-----------|
| (x) | Quality control cost for the products in manufacturing process | 86,000 |
| (xi) | Research & development cost for improvement in production process | 92,600 |
| (xii) | Administrative cost for: | |
| | - Factory & production | 9,00,000 |
| | - Others | 11,60,000 |
| (xiii) | Amount realised by selling scrap generated during the manufacturing process | 9,200 |
| (xiv) | Packing cost necessary to preserve the goods for further processing | 10,200 |
| (xv) | Salary paid to Director (Technical) | 8,90,000 |

Cost Accounting System

12. A manufacturing company disclosed a net loss of ₹ 3,47,000 as per their cost accounts for the year ended March 31,2024. The financial accounts however disclosed a net loss of ₹ 5,10,000 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of accounts.

| | (₹) |
|---|----------|
| (i) Factory Overheads under-absorbed | 40,000 |
| (ii) Administration Overheads over-absorbed | 60,000 |
| (iii) Depreciation charged in Financial Accounts | 3,25,000 |
| (iv) Depreciation charged in Cost Accounts | 2,75,000 |
| (v) Interest on investments not included in Cost Accounts | 96,000 |
| (vi) Income-tax provided | 54,000 |
| (vii) Interest on loan funds in Financial Accounts | 2,45,000 |
| (viii) Transfer fees (credit in financial books) | 24,000 |
| (ix) Stores adjustment (credit in financial books) | 14,000 |
| (x) Dividend received | 32,000 |

PREPARE a memorandum Reconciliation Account

Batch Costing

13. A jobbing factory has undertaken to supply 300 pieces of a component per month for the ensuing six months. Every month a batch order is opened against which materials and labour hours are booked at actual. Overheads are levied at a rate per labour hour. The selling price contracted for is ₹ 8 per piece. From the following data CALCULATE the cost and profit per piece of each batch order and overall position of the order for 1,800 pieces.

| Month | Batch Output | Material cost | Direct wages | Direct labour |
|----------|--------------|---------------|--------------|---------------|
| | | (₹) | (₹) | hours |
| January | 310 | 1150 | 120 | 240 |
| February | 300 | 1140 | 140 | 280 |
| March | 320 | 1180 | 150 | 280 |
| April | 280 | 1130 | 140 | 270 |
| May | 300 | 1200 | 150 | 300 |
| June | 320 | 1220 | 160 | 320 |

The other details are:

| Month | Chargeable expenses | Direct labour |
|----------|---------------------|---------------|
| | (₹) | (Hours) |
| January | 12,000 | 4,800 |
| February | 10,560 | 4,400 |
| March | 12,000 | 5,000 |
| April | 10,580 | 4,600 |
| May | 13,000 | 5,000 |
| June | 12,000 | 4,800 |

Process Costing

14. The following data are available in respect of Process-I for June 2024:
- (1) Opening stock of work in process: 600 units at a total cost of ₹ 4,20,000.

- (2) Degree of completion of opening work in process:
- | | |
|-----------|------|
| Material | 100% |
| Labour | 60% |
| Overheads | 60% |
- (3) Input of materials at a total cost of ₹ 55,20,000 for 9,200 units.
- (4) Direct wages incurred ₹ 18,60,000
- (5) Production overhead ₹ 8,63,000.
- (6) Units scrapped 200 units. The stage of completion of these units was:
- | | |
|-----------|------|
| Materials | 100% |
| Labour | 80% |
| Overheads | 80% |
- (7) Closing work in process; 700 units. The stage of completion of these units was:
- | | |
|-----------|------|
| Material | 100% |
| Labour | 70% |
| Overheads | 70% |
- (8) 8,900 units were completed and transferred to the next process.
- (9) Normal loss is 4% of the total input (opening stock plus units put in)
- (10) Scrap value is ₹ 60 per unit.

You are required to:

- (i) COMPUTE equivalent production,
- (ii) CALCULATE the cost per equivalent unit for each element.
- (iii) CALCULATE the cost of abnormal loss (or gain), closing work in process and the units transferred to the next process using the FIFO method.

Joint Products & By-Products

15. Three products X, Y and Z alongwith a byproduct B are obtained again in a crude state which require further processing at a cost of ₹ 5 for X; ₹ 4 for Y; and ₹ 2.50 for Z per unit before sale. The byproduct is however saleable as such to a nearby factory. The selling prices for the three main products and byproduct, assuming they should yield a net margin of 25 percent of cost, are fixed at ₹ 13.75 ₹ 8.75 and ₹ 7.50 and ₹ 1.00 respectively – all per unit quantity sold.

During a period, the joint input cost including the material cost was ₹ 90,800 and the respective outputs were:

| | |
|---|-------------|
| X | 8,000 units |
| Y | 6,000 units |
| Z | 4,000 units |
| B | 1,000 units |

By product should be credited to the joint cost and only the net joint costs are to be allocated to the main products.

CALCULATE the joint cost per unit of each product and the margin available as a percentage on cost.

Service Costing

16. BK Infra Ltd. built and operates a 110 k.m. long highway on the basis of Built-Operate-Transfer (BOT) model for a period of 25 year. A traffic assessment has been carried out to estimate the traffic flow per day. The details are as below:

| Sl. No. | Type of vehicle | Daily traffic volume |
|---------|---------------------------|----------------------|
| 1. | Two wheelers | 44,500 |
| 2. | Car and SUVs | 3,450 |
| 3. | Bus and LCV | 1,800 |
| 4. | Heavy commercial vehicles | 816 |

The following is the estimated cost of the project:

| Sl. No. | Activities | Amount (₹ in lakh) |
|---------|--|-----------------------|
| 1 | Site clearance | 170.70 |
| 2 | Land development and filling work | 9,080.35 |
| 3 | Sub base and base courses | 10,260.70 |
| 4 | Bituminous work | 35,070.80 |
| 5 | Bridge, flyovers, underpasses, Pedestrian subway, footbridge, etc. | 29,055.60 |
| 6 | Drainage and protection work | 9,040.50 |
| 7 | Traffic sign, marking and road appurtenance | 8,405.00 |
| 8 | Maintenance, repairing and rehabilitation | 12,429.60 |
| 9 | Environmental management | 982.00 |
| | Total Project cost | 114,495.25 |

An average cost of ₹ 1,120 lakh has to be incurred on administration and toll plaza operation.

On the basis of the vehicle specifications (i.e. weight, size, time saving etc.), the following weights has been assigned to the passing vehicles:

| Sl. No. | Type of vehicle | |
|---------|---------------------------|-----|
| 1. | Two wheelers | 5% |
| 2. | Car and SUVs | 20% |
| 3. | Bus and LCV | 30% |
| 4. | Heavy commercial vehicles | 45% |

Required:

- (i) CALCULATE the total project cost per day of concession period.
- (ii) COMPUTE toll fee to be charged for per vehicle of each type, if the company wants to earn a profit of 15% on total cost.

[Note: Concession period is a period for which an infrastructure is allowed to operate and recovers its investment]

Marginal Costing

17. RS Ltd. manufactures and sells a single product X whose selling price is ₹ 100 per unit and the variable cost is ₹ 60 per unit.
- (i) If the Fixed Costs for this year are ₹ 24,00,000 and the annual sales are at 60% margin of safety, CALCULATE the rate of net return on sales, assuming an income tax level of 40%
 - (ii) For the next year, it is proposed to add another product line Y whose selling price would be ₹ 150 per unit and the variable cost ₹ 100 per unit. The total fixed costs are estimated at ₹ 28,00,000. The sales mix of X : Y would be 5 : 3. COMPUTE the break-even sales in units for both the products.

Budget and Budgetary Control

18. Raja Ltd manufactures and sells a single product and has estimated sales revenue of ₹ 302.4 lakh during the year based on 20% profit on selling price. Each unit of product requires 6 kg of material A and 3 kg of material B and processing time of 4 hours in machine shop and 2 hours in assembly shop. Factory overheads are absorbed at a blanket rate of 20% of direct labour. Variable selling & distribution overheads are ₹ 60 per unit sold and fixed selling & distribution overheads are estimated to be ₹ 69,12,000.

The other relevant details are as under:

| | | |
|-----------------|---------------|----------------|
| Purchase Price: | Material A | ₹ 160 per kg |
| | Materials B | ₹ 100 per kg |
| Labour Rate: | Machine Shop | ₹ 140 per hour |
| | Assembly Shop | ₹ 70 per hour |

| | Finished Stock | Material A | Material B |
|---------------|----------------|------------|------------|
| Opening Stock | 2,500 units | 7,500 kg | 4,000 kg |
| Closing Stock | 3,000 units | 8,000 kg | 5,500 kg |

Required

- (i) CALCULATE number of units of product proposed to be sold and selling price per unit,
- (ii) PREPARE Production Budget in units and
- (iii) PREPARE Material Purchase Budget in units.

Miscellaneous

19. (a) DISCUSS the Net Realisable Value (NRV) method of apportioning joint costs to by-products.
- (b) DIFFERENTIATE between Service costing and Product costing.
- (c) DISCUSS the Controllable and un-controllable variances.
- (d) DISCUSS the Standard and Discretionary Cost Centres.

**SUGGESTED ANSWERS/HINTS**

1. (i) (d) Cash discount is received when credit amount is paid within the stipulated period of 30 days. The amount of cash discount to be received from the supplier is:

| | Particulars | Amount (₹) |
|----|---|-----------------|
| A. | Listed price | 2,50,000 |
| B. | Less: Trade Discount @10% | (25,000) |
| C. | Taxable value (A-B) | 2,25,000 |
| D. | Add: GST@18% (18% of C) | 40,500 |
| E. | Total amount payable to the supplier | 2,65,500 |
| F. | Cash discount @10% (10% of C) | (22,500) |
| G. | Net amount to be paid to the supplier (E-F) | 2,43,000 |

(ii) (b)

| Particulars | Units | (₹) |
|--|-------|----------|
| Listed Price of Materials | 5,000 | 2,50,000 |
| Less: Trade discount @ 10% on invoice price | | (25,000) |
| | | 2,25,000 |
| Add: GST @ 18% of ₹ 2,25,000 | | 40,500 |
| | | 2,65,500 |
| Add: Toll Tax | | 5,000 |
| Freight and Insurance | | 17,220 |
| Commission and Brokerage Paid | | 10,000 |
| Add: Cost of returnable containers: Amount deposited ₹ 30,000 Less: Amount refunded ₹ 20,000 | | 10,000 |
| | | 3,07,720 |
| Add: Other Expenses @ 2% of Total Cost $\left(\frac{₹ 3,07,720}{98} \times 2\right)$ | | 6,280 |
| Total cost of material | | 3,14,000 |
| Less: Shortage material due to normal reasons @ 20% | 1,000 | - |
| Total cost of material of good units | 4,000 | 3,14,000 |
| Cost per unit (₹ 3,14,000/4,000 units) | | 78.5 |

(iii) (b) Axe Traders is an unregistered supplier in the GST; thus, GST credit is not applicable for it. GST paid on the purchase of the material will be the part of the material cost.

(iv) (a) Please refer the solution above

(v) (c) Please refer the solution above

2. (i) (a) 10,000 units
- Usage variance of Material Z = 2,000 F
- Usage Variance = $SQ \times SP - AQ \times SP$
- SP = ₹ 2
- AQ = 24,000 units
- $2 \times (SQ - 24,000) = 2,000$
- 2SQ = 50,000
- Therefore SQ = 25,000
- No of units of Input required per output = 2
- Yield of input = 80%
- = $(25000/2) \times 80\% = 10,000$ units.
- (ii) (b) Price variance – 3,000 Favourable,
Cost Variance – 5,000 Favourable
- Price variance = $AQ \times (SP-AP)$
- $24,000 \times (2-1.875) = 3,000$ Favourable.
- Cost variance = $SQ \times SP - AQ \times AP$
- = $50,000 - 45,000 = 5,000$ Favourable.
- (iii) (d) Standard Hours – 25,000 hours Net Actual Hours – 28,000 hours
Idle Time – 2,000 hours
- Actual output = 10,000 units
- Standard hours per unit = 2.5
- Therefore standard hours = $10,000 \times 2.5 = 25,000$ hours.
- Idle time variance = $SR \times (Net\ AH - AH)$
- $5 \times (Net\ AH - 30,000) = 10,000$ Adverse
- $5\ Net\ AH - 1,50,000 = -10,000$
- $5\ Net\ AH = 1,40,000$

Net AH = 28,000 hours

Idle time = 2,000 hours

(iv) (c) Labour Efficiency Variance – 25,000 Adverse,

Labour rate Variance – 30,000 Favourable

Efficiency Variance = SR x (SH-AH)

= 5 x (25,000 – 30,000)

= 25,000 Adverse

Rate Variance = AH x (SR – AR)

= 30,000 (5 – 4) [1,20,000/30,000]

= 30,000 Favourable.

(v) (c) Fixed Overhead Volume variance – 1,00,000 Adverse

Overhead Volume variance = Actual Output x SR per unit – Budgeted FOH

Budgeted FOH = Actual FOH (+/-) Expenditure variance

1,50,000 + 25,000 = 1,75,000

AO x SR = 10,000 x 7.5 = 75,000

Therefore volume variance = 75,000 – 1,75,000

= 1,00,000 Adverse.

3. (a) Overabsorbed by ₹ 25,000

Predetermined Overhead Rate = Budgeted Overhead / Budgeted hours i.e. 130,000 / 8,000 = ₹ 16.25 per hour.

Hence, absorbed overhead = 10,000 X 16.25 = ₹ 1,62,500.

Since actual overhead incurred were ₹ 1,37,500

Hence the overhead were over absorbed by 1,62,500 – 1,37,500 = ₹ 25,000.

4. (d) ₹ 2093.2

Process a/c

| Particulars | Units | Amount | Particulars | units | Amount |
|----------------------|--------|------------|-------------------|--------|------------|
| Raw material | 10,000 | 50,000 | Normal loss | 700 | 2,800 |
| Stores | 4,000 | 24,000 | Units transferred | 13,500 | 1,41,293.2 |
| Direct Wages | | 40,000 | | | |
| Production overheads | | 28,000 | | | |
| Abnormal gain | 200 | 2,093.2 | | | |
| | | 1,44,093.2 | | | 1,44,093.2 |

$$\text{Cost per unit} = \frac{1,42,000 - 2,800}{14,000 - 700} = 10.466 \text{ per unit}$$

5. (b) ₹ 900 per room day

Total Revenue (2,66,11,200/80%) = 3,32,64,000

Calculation of Room Days:

| | Deluxe | Premium |
|------------------------|---|--|
| Summer | 120 rooms x 80% x 30 days x 8 months = 23,040 | 80 rooms x 80% x 30 days x 8 months = 15,360 |
| Winter | 120 rooms x 60% x 30 days x 4 months = 8,640 | 80 rooms x 60% x 30 days x 4 months = 5,760 |
| Total room days | 31,680 | 21,120 |

Let's assume the room rent of Deluxe room be 'x'

Then rent of Premium room will be '2x'

Therefore: 31,680x + 42,240x = 3,32,64,000

X = 450

Rent of Premium room will be $450 \times 2 = ₹ 900$ per room day

6. (a) ₹ 0.0017

Cost per rupee of insured value

= Total Cost/ Total Insured Value

= $1.6 \text{ cr}/920 \text{ cr} = ₹ 0.0017$

7. (b) 1,90,000 units

| | Units |
|---------------------------------------|----------|
| Sales budget | 2,00,000 |
| Add: Closing Inventory (25,000 x 0.6) | 15,000 |
| Less: Opening Inventory | (25,000) |
| Production Budget | 1,90,000 |

8. Labour Turnover Rate (Replacement method) = $\frac{\text{No. of workers replaced}}{\text{Average No. of workers}}$

$$\text{Or, } \frac{8}{100} = \frac{36}{\text{Average No. of workers}}$$

$$\text{Or, Average No. of workers} = 450$$

Labour Turnover Rate (Separation method) = $\frac{\text{No. of workers separated}}{\text{Average No. of workers}}$

$$\text{Or, } \frac{6}{100} = \frac{\text{No. of workers separated}}{450}$$

$$\text{Or, No. of workers separated} = 27$$

Labour Turnover Rate (Flux Method) = $\frac{\text{No. of Separations} + \text{No. of accession (Joinings)}}{\text{Average No. of workers}}$

$$\text{Or, } \frac{14}{100} = \frac{27 + \text{No. of accessions (Joinings)}}{450}$$

$$\text{Or, } 100 (27 + \text{No. of Accessions}) = 6,300$$

$$\text{Or, No. of Accessions} = 36$$

(i) The No. of workers recruited and Joined = 36

(ii) The No. of workers left and discharged = 27

9. Effective machine hours = 200 hours × 75% = 150 hours

Computation of Comprehensive Machine Hour Rate

| | Per month (₹) | Per hour (₹) |
|--|------------------|-----------------|
| Fixed cost | | |
| Supervision charges | 18,000.00 | |
| Electricity and lighting | 9,500.00 | |
| Insurance of Plant and building (₹ 18,000 ÷ 12) | 1,500.00 | |
| Other General Expenses (₹ 18,000 ÷ 12) | 1,500.00 | |
| Depreciation (₹ 1,29,600 ÷ 12) | 10,800.00 | |
| | 41,300.00 | 275.33 |
| Direct Cost | | |
| Repairs and maintenance | 17,500.00 | 116.67 |
| Power | 1,30,000.00 | 866.67 |
| Wages of machine man | | 196.00 |
| Wages of Helper | | 136.00 |
| Machine Hour rate (Comprehensive) | | 1,590.67 |

Wages per machine hour

| | Machine man | Helper |
|--------------------------|-------------|-------------|
| Wages for 200 hours | | |
| Machine-man (₹ 800 × 25) | ₹ 20,000.00 | --- |
| Helper (₹ 500 × 25) | --- | ₹ 12,500.00 |
| Dearness Allowance (DA) | ₹ 4,500.00 | ₹ 4,500.00 |
| | ₹ 24,500.00 | ₹ 17,000.00 |

| | | |
|---|---------------|---------------|
| Production bonus (10% of Basic and DA) | 2,450.00 | 1,700.00 |
| Leave wages (10% of Basic and DA) | 2,450.00 | 1,700.00 |
| | 29,400.00 | 20,400.00 |
| Effective wage rate per machine hour | 196.00 | 136.00 |

10. (i) **Traditional Absorption Costing**

| | SOFTHUG-Gold | SOFTHUG - Pearl | SOFTHUG - Diamond | Total |
|--|---------------------|------------------------|--------------------------|--------------|
| (a) Production of soaps (Units) | 4,000 | 3,000 | 2,000 | 9,000 |
| (b) Direct labour (minutes) | 30 | 40 | 60 | - |
| (c) Direct labour hours (a × b)/60 minutes | 2,000 | 2,000 | 2,000 | 6,000 |

Overhead rate per direct labour hour:

= Budgeted overheads ÷ Budgeted labour hours

= ₹ 1,98,000 ÷ 6,000 hours

= ₹ 33 per direct labour hour

Unit Costs:

| | SOFTHUG-Gold (₹) | SOFTHUG-Pearl (₹) | SOFTHUG-Diamond (₹) |
|--|--|--|---|
| Direct Costs: | | | |
| - Direct Labour | 5.00 $\left(\frac{10 \times 30}{60}\right)$ | 6.67 $\left(\frac{10 \times 40}{60}\right)$ | 10.00 $\left(\frac{10 \times 60}{60}\right)$ |
| - Direct Material (Refer working note 1) | 167.50 | 215.50 | 248.50 |

| | | | |
|----------------------|---|---|---|
| Production Overhead: | 16.50 $\left(\frac{33 \times 30}{60}\right)$ | 22.00 $\left(\frac{33 \times 40}{60}\right)$ | 33.00 $\left(\frac{33 \times 60}{60}\right)$ |
| Total unit costs | 189.00 | 244.17 | 291.50 |
| Number of units | 4,000 | 3,000 | 2,000 |
| Total costs | 7,56,000 | 7,32,510 | 5,83,000 |

Working note -1

Calculation of Direct material cost

| | SOFTHUG - Gold (₹) | SOFTHUG - Pearl (₹) | SOFTHUG - Diamond (₹) |
|--------------------|--|--|--|
| Essential oils | 120.00 $\left(\frac{200 \times 60}{100}\right)$ | 165.00 $\left(\frac{300 \times 55}{100}\right)$ | 195.00 $\left(\frac{300 \times 65}{100}\right)$ |
| Cocoa Butter | 40.00 $\left(\frac{200 \times 20}{100}\right)$ | 40.00 $\left(\frac{200 \times 20}{100}\right)$ | 40.00 $\left(\frac{200 \times 20}{100}\right)$ |
| Filtered water | 4.50 $\left(\frac{15 \times 30}{100}\right)$ | 4.50 $\left(\frac{15 \times 30}{100}\right)$ | 4.50 $\left(\frac{15 \times 30}{100}\right)$ |
| Chemicals | 3.00 $\left(\frac{30 \times 10}{100}\right)$ | 6.00 $\left(\frac{50 \times 12}{100}\right)$ | 9.00 $\left(\frac{60 \times 15}{100}\right)$ |
| Total costs | 167.50 | 215.50 | 248.50 |

(ii) Activity Based Costing

| | SOFTHUG- Gold | SOFTHUG- Pearl | SOFTHUG- Diamond | Total |
|-------------------------|---|---|---|--------------|
| Quantity (units) | 4,000 | 3,000 | 2,000 | - |
| Weight per unit (grams) | 108 $\{(60 \times 0.8) + 20 + 30 + 10\}$ | 106 $\{(55 \times 0.8) + 20 + 30 + 12\}$ | 117 $\{(65 \times 0.8) + 20 + 30 + 15\}$ | - |

| | | | | |
|-----------------------------|--|--|--|----------|
| Total weight (grams) | 4,32,000 | 3,18,000 | 2,34,000 | 9,84,000 |
| Direct labour (minutes) | 30 | 40 | 60 | - |
| Direct labour hours | 2,000 $\left(\frac{4,000 \times 30}{60}\right)$ | 2,000 $\left(\frac{3,000 \times 40}{60}\right)$ | 2,000 $\left(\frac{2,000 \times 60}{60}\right)$ | 6,000 |
| Machine operations per unit | 5 | 5 | 6 | - |
| Total operations | 20,000 | 15,000 | 12,000 | 47,000 |

Forklifting rate per gram = ₹ 58,000 ÷ 9,84,000 grams = ₹ 0.06 per gram

Supervising rate per direct labour hour = ₹ 60,000 ÷ 6,000 hours = ₹ 10 per labour hour

Utilities rate per machine operations = ₹ 80,000 ÷ 47,000 machine operations
= ₹ 1.70 per machine operations

Unit Costs under ABC:

| | SOFTHUG - Gold (₹) | SOFTHUG - Pearl (₹) | SOFTHUG - Diamond (₹) |
|------------------------------|-------------------------------|--------------------------------|----------------------------------|
| Direct Costs: | | | |
| - Direct Labour | 5.00 | 6.67 | 10.00 |
| - Direct material | 167.50 | 215.50 | 248.50 |
| Production Overheads: | | | |
| Forklifting cost | 6.48 (0.06 × 108) | 6.36 (0.06 × 106) | 7.02 (0.06 × 117) |

| | | | |
|--------------------|--|--|---|
| Supervising cost | 5.00 $\left(\frac{10 \times 30}{60}\right)$ | 6.67 $\left(\frac{10 \times 40}{60}\right)$ | 10.00 $\left(\frac{10 \times 60}{60}\right)$ |
| Utilities | 8.50 (1.70 × 5) | 8.50 (1.70 × 5) | 10.20 (1.70 × 6) |
| Total unit costs | 192.48 | 243.70 | 285.72 |
| Number of units | 4,000 | 3,000 | 2,000 |
| Total costs | 7,69,920 | 7,31,100 | 5,71,440 |

(iii) **Comments:** The difference in the total costs under the two systems is due to the differences in the overheads borne by each of the products. The Activity Based Costs appear to be more precise.

11. Calculation of Cost of Production of Appu Ltd.

| Particulars | Amount (₹) |
|--|--------------------|
| Raw materials purchased | 64,00,000 |
| Add: Opening stock | 2,88,000 |
| Less: Closing stock | (4,46,000) |
| Material consumed | 62,42,000 |
| Wages paid | 23,20,000 |
| Prime cost | 85,62,000 |
| Repair and maintenance cost of plant & machinery | 9,80,500 |
| Insurance premium paid for inventories | 26,000 |
| Insurance premium paid for plant & machinery | 96,000 |
| Quality control cost | 86,000 |
| Research & development cost | 92,600 |
| Administrative overheads related with factory and production | 9,00,000 |
| | 1,07,43,100 |

| | |
|--|--------------------|
| Add: Opening value of W-I-P | 4,06,000 |
| Less: Closing value of W-I-P | (6,02,100) |
| | 1,05,47,000 |
| Less: Amount realised by selling scrap | (9,200) |
| Add: Primary packing cost | 10,200 |
| Cost of Production | 1,05,48,000 |

Notes:

- (i) Other administrative overhead does not form part of cost of production.
- (ii) Salary paid to Director (Technical) is an administrative cost.

12. Memorandum Reconciliation Accounts

| Dr. | (₹) | Cr. | (₹) |
|--|----------|---|----------|
| To Net Loss as per Costing books | 3,47,000 | By Administration overheads over recovered in cost accounts | 60,000 |
| To Factory overheads under absorbed in Cost Accounts | 40,000 | By Interest on investment not included in Cost Accounts | 96,000 |
| To Depreciation under charged in Cost Accounts | 50,000 | By Transfer fees in financial books | 24,000 |
| To Income-Tax not provided in Cost Accounts | 54,000 | By Stores adjustment (Credit in financial books) | 14,000 |
| To Interest on Loan Funds in Financial Accounts | 2,45,000 | By Dividend received in financial books | 32,000 |
| | | By Net loss as per financial books | 5,10,000 |
| | 7,36,000 | | 7,36,000 |

13. Statement of Cost and Profit per batch

| Particulars | Jan. | Feb. | March | April | May | June | Total |
|--------------------------|-------|-------|-------|-------|-------|-------|--------|
| Batch output (in units) | 310 | 300 | 320 | 280 | 300 | 320 | 1,830 |
| Sale value (₹) | 2,480 | 2,400 | 2,560 | 2,240 | 2,400 | 2,560 | 14,640 |
| Material cost (₹) | 1,150 | 1,140 | 1,180 | 1,130 | 1,200 | 1,220 | 7,020 |
| Direct wages (₹) | 120 | 140 | 150 | 140 | 150 | 160 | 860 |
| Chargeable expenses* (₹) | 600 | 672 | 672 | 621 | 780 | 800 | 4,145 |
| Total cost (₹) | 1,870 | 1,952 | 2,002 | 1,891 | 2,130 | 2,180 | 12,025 |
| Profit per batch (₹) | 610 | 448 | 558 | 349 | 270 | 380 | 2,615 |
| Total cost per unit (₹) | 6.03 | 6.51 | 6.26 | 6.75 | 7.10 | 6.81 | 6.57 |
| Profit per unit (₹) | 1.97 | 1.49 | 1.74 | 1.25 | 0.90 | 1.19 | 1.43 |

Overall position of the order for 1,800 units

| | |
|---|-----------------|
| Sales value of 1,800 units @ ₹ 8 per unit | ₹ 14,400 |
| Total cost of 1,800 units @ ₹ 6.57 per unit | ₹ <u>11,826</u> |
| Profit | ₹ <u>2,574</u> |

* $\frac{\text{Chargeable expenses}}{\text{Direct labour hour for the month}} \times \text{Direct labour hours for batch}$

14. (i) Statement of Equivalent Production (FIFO Method)

| Input | | Output | | Equivalent Production | | | | | |
|---------------|-------|--------------------|-------|-----------------------|-------|--------|-------|---------------------|-------|
| | | | | Materials | | Labour | | Production Overhead | |
| Details | Units | Details | Units | % | Units | % | Units | % | Units |
| Opening Stock | 600 | From opening stock | 600 | - | - | 40 | 240 | 40 | 240 |

| | | | | | | | | | |
|--------------|---------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Fresh inputs | 9,200 | - From fresh materials | 8,300 | 100 | 8,300 | 100 | 8,300 | 100 | 8,300 |
| | | Closing W-I-P | 700 | 100 | 700 | 70 | 490 | 70 | 490 |
| | | Normal loss | 392 | - | - | - | - | - | - |
| | | | 9,992 | | 9,000 | | 9,030 | | 9,030 |
| | Less: Abnormal Gain | (192) | 100 | (192) | 100 | (192) | 100 | (192) | |
| | 9,800 | | 9,800 | | 8,808 | | 8,838 | | 8,838 |

(ii) Statement of Cost per equivalent units

| Elements | (₹) | Cost (₹) | Equivalent units (EU) | Cost per EU (₹) |
|--|-----------|-----------|-----------------------|-----------------|
| Material Cost | 55,20,000 | | | |
| Less: Scrap realisation 392 units @ ₹ 60/- p.u. | (23,520) | 54,96,480 | 8,808 | 624.03 |
| Labour cost | | 18,60,000 | 8,838 | 210.45 |
| Production OH Cost | | 8,63,000 | 8,838 | 97.65 |
| Total Cost | | 82,19,480 | | 932.13 |

(iii) Cost of Abnormal Gain – 192 Units

| | (₹) | (₹) |
|---|-------------|-------------|
| Material cost of 192 units @ ₹ 624.03 p.u. | 1,19,813.76 | |
| Labour cost of 192 units @ ₹ 210.45 p.u. | 40,406.40 | |
| Production OH cost of 192 units @ ₹ 97.65 p.u. | 18,748.80 | 1,78,968.96 |
| Cost of closing WIP – 700 Units | | |
| Material cost of 700 equivalent units @ ₹ 624.03 p.u. | 4,36,821.00 | |
| Labour cost of 490 equivalent units @ ₹ 210.45 p.u. | 1,03,120.50 | |
| Production OH cost of 490 equivalent @ ₹ 97.65 p.u. | 47,848.50 | 5,87,790.00 |

| Cost of 8,900 units transferred to next process | ₹ |
|--|---------------------|
| (i) Cost of opening W-I-P Stock b/f – 600 units | 4,20,000.00 |
| (ii) Cost incurred on opening W-I-P stock | |
| Material cost | — |
| Labour cost 240 equivalent units @ ₹ 210.45 p.u. | 50,508.00 |
| Production OH cost 240 equivalent units @ ₹ 97.65 p.u. | <u>23,436.00</u> |
| | <u>4,93,944.00</u> |
| (iii) Cost of 8,300 completed units | |
| 8,300 units @ ₹ 932.13 p.u. | <u>77,36,679.00</u> |
| Total cost [(i) + (ii) + (iii)] | <u>82,30,623.00</u> |

15. Working Notes:

(i) Computation of Allocation Ratio for Joint Costs

| | Products | | |
|---|----------|--------|--------|
| | X | Y | Z. |
| | ₹ | ₹ | ₹ |
| Selling Price | 13.75 | 8.75 | 7.50 |
| Less: anticipated margin@ 25% on cost of 20% on sales | 2.75 | 1.75 | 1.50 |
| Cost of sales | 11.00 | 7.00 | 6.00 |
| Less: post split off cost | 5.00 | 4.00 | 2.50 |
| Joint cost per unit | 6.00 | 3.00 | 3.50 |
| Output (units) | 8,000 | 6,000 | 4,000 |
| Total output cost | 48,000 | 18,000 | 14,000 |
| Allocation ratio for joint costs | 24 | 9 | 7 |

(ii) Computation of net allocable joint costs

| | ₹ | ₹ |
|--|-------|--------|
| Joint input cost including material cost | | 90,800 |
| Less: Credit for realization from by-product B: Sales revenue (1,000 × Re. 1) | 1,000 | |
| Less: profit @ 25% on cost or 20% on sales | 200 | 800 |
| Net joint costs to be allocated | | 90,000 |

Determination of joint cost per unit of each product

| Product | Net joint costs allocation ₹ | Output (units) ₹ | Joint cost per unit ₹ |
|---------|---------------------------------|---------------------|--------------------------|
| X | 54,000 (Note: 1) | 8,000 | 6.75 |
| Y | 20,250 | 6,000 | 3.38 |
| Z | 15,750 | 4,000 | 3.94 |
| | 90,000 | | |

Profit margin available on each product as a percentage on cost

| Product | Joint Cost ₹ | Post spilt-off cost ₹ | Total Cost ₹ | Selling Price ₹ | Margin ₹ | Margin % on cost ₹ |
|---------|-----------------|--------------------------|-----------------|--------------------|-------------|-----------------------|
| X | 6.75 | 5.00 | 11.75 | 13.75 | 2.00 | 17.02 |
| Y | 3.38 | 4.00 | 7.38 | 8.75 | 1.37 | 18.56 |
| Z | 3.94 | 2.50 | 6.44 | 7.50 | 1.06 | 16.46 |

Note: 1

$$X = \frac{24}{40} \times 90,000 = 54,000$$

$$Y = \frac{9}{40} \times 90,000 = 20,250$$

$$Z = \frac{7}{40} \times 90,000 = \frac{15,750}{90,000}$$

16. (i) Calculation of total project cost per day of concession period:

| Activities | Amount (₹ in lakh) |
|--|-----------------------|
| Site clearance | 170.70 |
| Land development and filling work | 9,080.35 |
| Sub base and base courses | 10,260.70 |
| Bituminous work | 35,070.80 |
| Bridge, flyovers, underpasses, Pedestrian subway, footbridge, etc. | 29,055.60 |
| Drainage and protection work | 9,040.50 |
| Traffic sign, marking and road appurtenance | 8,405.00 |
| Maintenance, repairing and rehabilitation | 12,429.60 |
| Environmental management | 982.00 |
| Total Project cost | 114,495.25 |
| Administration and toll plaza operation cost | 1,120.00 |
| Total Cost | 115,615.25 |
| Concession period in days (25 years × 365 days) | 9,125 |
| Cost per day of concession period (₹ in lakh) | 12.67 |

(ii) Computation of toll fee:

$$\begin{aligned} \text{Cost to be recovered per day} &= \text{Cost per day of concession period} + 15\% \text{ profit on cost} \\ &= ₹ 12,67,000 + ₹ 1,90,050 \\ &= ₹ 14,57,050 \end{aligned}$$

$$\begin{aligned} \text{Cost per equivalent vehicle} &= \frac{₹ 14,57,050}{76,444 \text{ units (Refer working note)}} \\ &= ₹ 19.06 \text{ per equivalent vehicle} \end{aligned}$$

Vehicle type-wise toll fee:

| Sl. No. | Type of vehicle | Equivalent cost [A] | Weight [B] | Toll fee per vehicle [A×B] |
|---------|---------------------------|---------------------|------------|----------------------------|
| 1. | Two wheelers | ₹ 19.06 | 1 | 19.06 |
| 2. | Car and SUVs | ₹ 19.06 | 4 | 76.24 |
| 3. | Bus and LCV | ₹ 19.06 | 6 | 114.36 |
| 4. | Heavy commercial vehicles | ₹ 19.06 | 9 | 171.54 |

Working Note:

The cost per day has to be recovered from the daily traffic. Each type of vehicle is to be converted into equivalent unit. Let's convert all vehicle types equivalent to Two-wheeler

| Sl. No. | Type of vehicle | Daily traffic volume [A] | Weight | Ratio [B] | Equivalent Two-wheeler [A×B] |
|---------|---------------------------|--------------------------|--------|-----------|------------------------------|
| 1. | Two wheelers | 44,500 | 0.05 | 1 | 44,500 |
| 2. | Car and SUVs | 3,450 | 0.20 | 4 | 13,800 |
| 3. | Bus and LCV | 1,800 | 0.30 | 6 | 10,800 |
| 4. | Heavy commercial vehicles | 816 | 0.45 | 9 | 7,344 |
| | Total | | | | 76,444 |

17. (i) Contribution per unit = Selling price – Variable cost
 = ₹ 100 – ₹ 60
 = ₹ 40
- Break-even Point = $\frac{₹ 24,00,000}{₹ 40}$
 = 60,000 units
- Percentage Margin of Safety = $\frac{\text{Actual Sales} - \text{Break - even Sales}}{\text{Actual Sales}}$

$$\text{Or, } 60\% = \frac{\text{Actual Sales} - 60,000 \text{ units}}{\text{Actual Sales}}$$

$$\therefore \text{Actual Sales} = 1,50,000 \text{ units}$$

| (₹) | |
|---|-------------|
| Sales Value (1,50,000 units × ₹ 100) | 1,50,00,000 |
| Less: Variable Cost (1,50,000 units × ₹ 60) | (90,00,000) |
| Contribution | 60,00,000 |
| Less: Fixed Cost | (24,00,000) |
| Profit | 36,00,000 |
| Less: Income Tax @ 40% | (14,40,000) |
| Net Return | 21,60,000 |

$$\text{Rate of Net Return on Sales} = 14.40\% \left(\frac{₹ 21,60,000}{₹ 1,50,00,000} \times 100 \right)$$

(ii) Products

| | X (₹) | Y (₹) |
|-------------------------------|-------|-------|
| Selling Price <i>per unit</i> | 100 | 150 |
| Variable Cost <i>per unit</i> | 60 | 100 |
| Contribution <i>per unit</i> | 40 | 50 |

Composite contribution will be as follows:

$$\text{Contribution per unit} = \left(\frac{40}{8} \times 5 \right) + \left(\frac{50}{8} \times 3 \right)$$

$$= 25 + 18.75 = ₹ 43.75$$

$$\text{Break-even Sale} = 64,000 \text{ units} \left(\frac{₹ 28,00,000}{₹ 43.75} \right)$$

Break-even Sales Mix:

$$X (64,000 \text{ units} \times 5/8) = 40,000 \text{ units}$$

$$Y (64,000 \text{ units} \times 3/8) = 24,000 \text{ units}$$

18. Workings

Statement Showing "Total Variable Cost for the year"

| Particulars | Amount (₹) |
|--|-------------|
| Estimated Sales Revenue | 3,02,40,000 |
| Less: Desired Profit Margin on Sale @ 20% | 60,48,000 |
| Estimated Total Cost | 2,41,92,000 |
| Less: Fixed Selling and Distribution Overheads | 69,12,000 |
| Total Variable Cost | 1,72,80,000 |

Statement Showing "Variable Cost per unit"

| Particulars | Variable Cost p.u. (₹) |
|---|------------------------|
| Direct Materials: | |
| A: 6 Kg. @ ₹ 160 per kg. | 960 |
| B: 3 Kg. @ ₹ 100 per kg. | 300 |
| Labour Cost: | |
| Machine Shop: 4 hrs @ ₹ 140 per hour | 560 |
| Assembly Shop: 2 hrs @ ₹ 70 per hour | 140 |
| Factory Overheads: 20% of (₹ 560 + ₹ 140) | 140 |
| Variable Selling & Distribution Expenses | 60 |
| Total Variable Cost per unit | 2,160 |

(i) Calculation of number of units of product proposed to be sold and selling price per unit:

$$\begin{aligned}
 \text{Number of Units Sold} &= \text{Total Variable Cost} / \text{Variable Cost per unit} \\
 &= ₹ 1,72,80,000 / ₹ 2,160 \\
 &= 8,000 \text{ units} \\
 \\
 \text{Selling Price per unit} &= \text{Total Sales Value} / \text{Number of Units Sold} \\
 &= ₹ 3,02,40,000 / 8,000 \text{ units} \\
 &= ₹ 3,780
 \end{aligned}$$

(ii) **Production Budget (units)**

| Particulars | Units |
|----------------------------|---------|
| Budgeted Sales | 8,000 |
| <i>Add:</i> Closing Stock | 3,000 |
| Total Requirements | 11,000 |
| <i>Less:</i> Opening Stock | (2,500) |
| Required Production | 8,500 |

(iii) **Materials Purchase Budget (Kg.)**

| Particulars | Material | |
|-----------------------------------|---------------------------------|---------------------------------|
| | A | B |
| Requirement for Production | 51,000 (8,500 units × 6 Kg.) | 25,500 (8,500 units × 3 Kg.) |
| <i>Add:</i> Desired Closing Stock | 8,000 | 5,500 |
| Total Requirements | 59,000 | 31,000 |
| <i>Less:</i> Opening Stock | (7,500) | (4,000) |
| Quantity to be purchased | 51,500 | 27,000 |

19. (a) **Net Realisable Value method:** The realisation on the disposal of the by-product may be deducted from the total cost of production so as to arrive at the cost of the main product. For example, the amount realised by the sale of molasses in a sugar factory goes to reduce the cost of sugar produced in the factory.

When the by-product requires some additional processing and expenses are incurred in making it saleable to the best advantage of the concern, the expenses so incurred should be deducted from the total value realised from the sale of the by-product and only the net realisations should be deducted from the total cost of production to arrive at the cost of production of the main product. Separate accounts should be maintained for collecting additional expenses incurred on:

- (i) further processing of the by-product, and

- (ii) selling, distribution and administration expenses attributable to the by-product.
- (b) Service costing differs from product costing (such as job or process costing) in the following ways due to some basic and peculiar nature.
 - (i) Unlike products, services are intangible and cannot be stored, hence, there is no inventory for the services.
 - (ii) Use of Composite cost units for cost measurement and to express the volume of outputs.
 - (iii) Unlike a product manufacturing, employee (labour) cost constitutes a major cost element than material cost.
 - (iv) Indirect costs like administration overheads are generally have a significant proportion in total cost of a service as unlike manufacturing sector, service sector heavily depends on support services and traceability of costs to a service may not economically feasible

- (c) **Controllable and un-controllable variances:** The purpose of the standard costing reports is to investigate the reasons for significant variances so as to identify the problems and take corrective action.

Variances are broadly of two types, namely, controllable and uncontrollable. Controllable variances are those which can be controlled by the departmental heads whereas uncontrollable variances are those which are beyond their control. Responsibility centres are answerable for all adverse variances which are controllable and are appreciated for favourable variances. Controllability is a subjective matter and varies from situation to situation. If the uncontrollable variances are of significant nature and are persistent, the standard may need revision.

- (d) (i) **Standards Cost Centres:** Cost Centre where output is measurable and input required for the output can be specified. Based on a well-established study, an estimate of standard units of input to produce a unit of output is set. The actual cost for inputs is compared with the standard cost. Any deviation

(variance) in cost is measured and analysed into controllable and uncontrollable cost. The manager of the cost centre is supposed to comply with the standard and held responsible for adverse cost variances. The input-output ratio for a standard cost centre is clearly identifiable.

- (ii) **Discretionary Cost Centre:** The cost centre whose output cannot be measured in financial terms, thus input-output ratio cannot be defined. The cost of input is compared with allocated budget for the activity. Example of discretionary cost centres are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co-related with cost incurred on inputs.