## MOCK TEST PAPER – 1
## INTERMEDIATE (NEW) COURSE: GROUP – I
## PAPER – 3: COST AND MANAGEMENT ACCOUNTING
## SUGGESTED ANSWERS/HINTS

**1.** **(a)** Labour Turnover Rate (Replacement method) = $\dfrac{\text{No. of workers replaced}}{\text{Average No. of workers}}$

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

Or, Average No. of workers = 450

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

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

Or, No. of workers separated = 27

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

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

Or, 100 (27 + No. of Accessions) = 6,300

Or, No. of Accessions = 36

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

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

**(b)**

**Statement of Reconciliation**

| Particulars | Amount (Rs.) | Amount (Rs.) |
|---|---|---|
| Net profit as per Cost accounts | | 10,20,000 |
| **Add:** | | |
| Administration Overheads over-absorbed | 1,20,000 | |
| Interest on investments | 1,92,000 | |
| Transfer fees | 48,000 | |
| Stores adjustment | 28,000 | |
| Dividend received | 64,000 | 4,52,000 |
| **Less:** | | |
| Factory Overheads under-absorbed | 80,000 | |
| Depreciation under charged | 1,00,000 | |
| Income-tax provided | 1,08,000 | |
| Interest on loan funds | 4,90,000 | (7,78,000) |
| Net profit as per Financial accounts | | 6,94,000 |

1

**(c)** **(i)** **Reorder Quantity(ROQ)** = 1,691 kg. *(Refer to working note)*

**(ii)** **Reorder level (ROL)** = Maximum usage × Maximum re-order period

= 900 kg. × 8 weeks = 7,200 kg.

**(iii)** **Maximum level** = ROL + ROQ – (Min. usage × Min. re-order period)

= 7,200 kg. + 1,691 kg. – (200 kg.× 4 weeks)

= 8,091 kg.

**(iv)** **Minimum level** = ROL –  (Normal usage × Normal re-order period)

= 7,200 kg. – (550 kg. × 6 weeks)

= 3,900 kg.

**(v)** **Average stock level** = $\frac{1}{2}$ (Maximum level + Minimum level)

= $\frac{1}{2}$ (8,091 kg. + 3,900 kg.) =  5,995.5 kg.

OR

= Minimum level  + $\frac{1}{2}$ ROQ

= 3,900 kg. + $\frac{1}{2}$ × 1,691 kg.        = 4,745.5 kg.

**Working Note:**

Annual consumption of raw material (A) =  (550 kg. × 52 weeks)  = 28,600 kg.

Cost of placing an order (O) = Rs. 200

Carrying cost per kg. per annum (C) = Rs. 20 × 20% = Rs. 4

Economic order quantity (EOQ)   = $\sqrt{\dfrac{2AO}{C}}$

= $\sqrt{\dfrac{2 \times 28,600 \text{ kgs.} \times \text{Rs.200}}{\text{Rs.4}}}$ = 1,691 Kg. (Approx)

**(d)** Budgeted Production 30,000 hours ÷ 6 hours per unit = 5,000 units

Budgeted Fixed Overhead Rate = Rs. 45,00,000 ÷ 5,000 units =  Rs. 900 per unit Or

= Rs. 45,00,000 ÷ 30,000 hours = Rs. 150 per hour.

**(i)** Material Cost Variance = (Std. Qty. × Std. Price) – (Actual Qty. × Actual Price)

= (4,800 units × 10 kg. × Rs.100) - Rs. 52,50,000

= Rs. 48,00,000 – Rs. 52,50,000

= Rs. 4,50,000 (A)

**(ii)** Labour Cost Variance = (Std. Hours × Std. Rate) – (Actual Hours × Actual rate)

= (4,800 units × 6 hours × Rs. 55) – Rs. 15,50,000

= Rs. 15,84,000 – Rs. 15,50,000

= Rs. 34,000 (F)

(iii) Fixed Overhead Cost Variance   = (Budgeted Rate × Actual Qty) – Actual Overhead

                                                    = (Rs. 900 × 4,800 units) – Rs.47,00,000

                                                    = Rs. 3,80,000 (A)

                                                    OR

                                                    = (Budgeted Rate × Std. Hours) – Actual Overhead

                                                    = (Rs. 150 × 4,800 units × 6 hours) – Rs. 47,00,000

                                                    = Rs. 3,80,000 (A)

(iv) Variable Overhead Cost Variance   = (Std. Rate × Std. Hours) – Actual Overhead

                                                    = (4,800 units × 6 hours × Rs. 100) - Rs. 29,30,000

                                                    = Rs. 28,80,000 - Rs. 29,30,000

                                                    = Rs. 50,000 (A)

**2. (a) Total direct wages**

= Rs. 42,000 + Rs. 54,000 + Rs. 48,000 = Rs. 1,44,000

**Percentage absorption of production overhead on the basis of direct wages**

$= \dfrac{2,88,000}{1,44,000}$ x 100= 200%

**(i)**                           **Process-I A/c**

| Particulars | Units | Amt. (Rs.) | Particulars | Units | Amt. (Rs.) |
|---|---|---|---|---|---|
| To Materials | 7,000 | 1,40,000 | By Normal loss (5% of 7,000 units) | 350 | 3,500 |
| To Other materials | - | 62,000 | By Process-II* | 6,600 | 3,35,955 |
| To Direct wages | - | 42,000 | By Abnormal loss* | 50 | 2,545 |
| To Direct expenses | - | 14,000 | | | |
| To Production OH (200% of Rs.42,000) | - | 84,000 | | | |
| | 7,000 | 3,42,000 | | 7,000 | 3,42,000 |

* Cost per unit = $\dfrac{\text{Rs.}(3,42,000 - 3,500)}{(7,000 - 350)\,\text{units}}$ = Rs. 50.9022

**Process-II A/c**

| Particulars | Units | Amt.(Rs.) | Particulars | Units | Amt.(Rs.) |
|---|---|---|---|---|---|
| To Process-I A/c | 6,600 | 3,35,955 | By Normal loss (10% of 6,600 units) | 660 | 6,600 |
| To Other materials | - | 1,36,000 | By Process-III** | 5,200 | 5,63,206 |
| To Direct wages | - | 54,000 | By Abnormal loss** | 740 | 80,149 |
| To Direct expenses | - | 16,000 | | | |
| To Production OH (200% of Rs.54,000) | - | 1,08,000 | | | |
| | 6,600 | 6,49,955 | | 6,600 | 6,49,955 |

**3**

$$\text{** Cost per unit} = \frac{\text{Rs.}(6,49,955 - 6,600)}{(6,600 - 660)\,\text{units}} = \text{Rs. 108.3089}$$

**Process-III A/c**

| Particulars | Units | Amt. (Rs.) | Particulars | Units | Amt. (Rs.) |
|---|---|---|---|---|---|
| To Process-I A/c | 5,200 | 5,63,206 | By Normal loss (5% of 5,200 units) | 260 | 2,600 |
| To Other materials | - | 84,200 | By Product-X*** | 4,800 | 8,64,670 |
| To Direct wages | - | 48,000 | | | |
| To Direct expenses | - | 14,000 | By Product-Z# (Rs.35 × 600 units) | 600 | 21,000 |
| To Production OH (200% of Rs.48,000) | - | 96,000 | | | |
| To Abnormal gain*** | 460 | 82,864 | | | |
| | 5,660 | 8,88,270 | | 5,660 | 8,88,270 |

$$\text{*** Cost per unit} = \frac{\text{Rs.}(8,05,406 - 2,600 - 21,000)}{(5,200 - 260 - 600)\,\text{units}} = \text{Rs. 180.1396}$$

# Realisable value = Rs. 135 – (85+15) = Rs. 35

**(ii)**                    **By-Product Process A/c**

| Particulars | Units | Amt. (Rs.) | Particulars | Units | Amt. (Rs.) |
|---|---|---|---|---|---|
| To Process-III A/c | 600 | 21,000 | By Product-Z | 600 | 81,000 |
| To Processing cost | - | 51,000 | | | |
| To Selling expenses | - | 9,000 | | | |
| | 600 | 81,000 | | 600 | 81,000 |

**(b)  Primary Distribution of Overheads**

| Item | Basis | Total Amount (Rs.) | Production Departments | | | Service Departments | |
|---|---|---|---|---|---|---|---|
| | | | X (Rs.) | Y (Rs.) | Z (Rs.) | A (Rs.) | B (Rs.) |
| Indirect Material | Actual | 2,50,000 | 40,000 | 60,000 | 90,000 | 50,000 | 10,000 |
| Indirect Labour | Actual | 5,20,000 | 90,000 | 1,00,000 | 1,40,000 | 1,20,000 | 70,000 |
| Supervisor's Salary | Actual | 1,92,000 | - | - | 1,92,000 | - | - |
| Fuel & Heat | Radiator Sections {2:4:6:5:3} | 30,000 | 3,000 | 6,000 | 9,000 | 7,500 | 4,500 |
| Power | Kilowatt Hours {7:8:6:3:-} | 3,60,000 | 1,05,000 | 1,20,000 | 90,000 | 45,000 | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Rent & Rates | Area (Sq. ft.) {22:20:15:12:6} | 3,00,000 | 88,000 | 80,000 | 60,000 | 48,000 | 24,000 |
| Insurance | Capital Value of Assets {4:6:5:1:2} | 36,000 | 8,000 | 12,000 | 10,000 | 2,000 | 4,000 |
| Canteen Charges | No. of Employees {6:7:12:3:2} | 1,20,000 | 24,000 | 28,000 | 48,000 | 12,000 | 8,000 |
| Depreciation | Capital Value of Assets {4:6:5:1:2} | 5,40,000 | 1,20,000 | 1,80,000 | 1,50,000 | 30,000 | 60,000 |
| Total overheads | | 23,48,000 | 4,78,000 | 5,86,000 | 7,89,000 | 3,14,500 | 1,80,500 |

**Re-distribution of Overheads of Service Department A and B**

Total overheads of Service Departments may be distributed by simultaneous equation.

Let, the total overheads of A = a and the total overheads of B = b

a = 3,14,500 + 0.10 b          (i)

    or, 10a - b = 31,45,000          [(i) x10]

b = 1,80,500 + 0.20 a          (ii)

    or, -0.20a + b =     1,80,500

Solving equation (i) & (ii)

10a - b = 31,45,000

-0.20a + b =   1,80,500

 9.8a   = 33,25,500

a = Rs. 3,39,337

Putting the value of 'a' in equation (ii), we get

b = 1,80,500 + 0.20 × 3,39,337

b = Rs. 2,48,367

**Secondary Distribution of Overheads**

| | Production Departments | | |
|---|---|---|---|
| | X (Rs.) | Y (Rs.) | Z (Rs.) |
| Total overhead as per primary distribution | 4,78,000 | 5,86,000 | 7,89,000 |
| Service Department A (80% of Rs.3,39,337) | 1,01,801 | 1,01,801 | 67,867 |
| Service Department B (90% of Rs.2,48,367) | 62,092 | 99,347 | 62,092 |
| Total | 6,41,893 | 7,87,148 | 9,18,959 |

3.  (a)  (i)  **Product-wise Profitability Statement for the FY 2020-21:**

| Particulars | Product-X (Rs.) | Product-Y (Rs.) | Total (Rs.) |
|---|---|---|---|
| Output (units) | 8,000 | 4,000 | |
| Selling price per unit | 600 | 550 | |
| Sales value | 48,00,000 | 22,00,000 | 70,00,000 |

| Particulars | Product-X | Product-Y | Total |
|---|---|---|---|
| Direct material | 11,20,000 (Rs.140 × 8,000 units) | 6,30,000 (Rs.157.50 × 4,000 units) | 17,50,000 |
| Direct wages | 7,20,000 (Rs.90 × 8,000 units) | 5,30,000 (Rs.132.5 × 4,000 units) | 12,50,000 |
| Variable factory overheads* | 5,47,200 (76% of Rs. 7,20,000) | 4,02,800 (76% of Rs. 5,30,000) | 9,50,000 |
| Other variable costs | 3,20,000 (Rs.40 × 8,000 units) | 2,80,000 (Rs.70 × 4,000 units) | 6,00,000 |
| Contribution | 20,92,800 | 3,57,200 | 24,50,000 |
| Fixed factory overheads | - | - | 12,00,000 |
| Other fixed costs | - | - | 4,00,000 |
| **Profit** | | | **8,50,000** |

\* Percentage absorption of variable factory overhead on the basis of direct wages
$= \dfrac{9,50,000}{12,50,000} \times 100 = 76\%$

## (ii) Preparation of Budget for the FY 2021-22:

| Particulars | Product-X (Rs.) | Product-Y (Rs.) | Total (Rs.) |
|---|---|---|---|
| Output (units) | 6,400 (8,000 units × 80%) | 3,600 (4,000 units × 90%) | |
| Selling price per unit | 480 (Rs.600 × 80%) | 440 (Rs.550 × 80%) | |
| Sales value | 30,72,000 | 15,84,000 | 46,56,000 |
| Direct material | 8,96,000 (Rs.140 × 6,400 units) | 5,67,000 (Rs.157.50 × 3,600 units) | 14,63,000 |
| Direct wages per unit | 6,91,200 (Rs.108 × 6,400 units) | 5,72,400 (Rs.159 × 3,600 units) | 12,63,600 |
| Variable factory overheads | 5,25,312 (76% of Rs.6,91,200) | 4,35,024 (76% of Rs.5,72,400) | 9,60,336 |
| Other variable costs | 2,56,000 (Rs.40 × 6,400 units) | 2,52,000 (Rs.70 × 3,600 units) | 5,08,000 |
| Contribution | 7,03,488 | (2,42,424) | 4,61,064 |
| Fixed factory overheads | - | - | 12,00,000 |
| Other fixed costs (110% of Rs.4,00,000) | - | - | 4,40,000 |
| Profit/ (Loss) | | | (11,78,936) |

**(b) (i) Calculation of Operating Cost per month for each vehicle**

| | Ramgarh (Rs.) | Pratapgarh (Rs.) | Devgarh (Rs.) | Total (Rs.) |
|---|---|---|---|---|
| **A. Running Costs:** | | | | |
| - Cost of diesel (Working Note- 2) | 1,68,480 | 95,472 | 2,49,600 | 5,13,552 |
| - Servicing cost (Working Note- 3) | 45,000 | - | 45,000 | 90,000 |
| | 2,13,480 | 95,472 | 2,94,600 | 6,03,552 |
| **B. Fixed Costs:** | | | | |
| - Salary to drivers | 96,000 (4 drivers × Rs. 24,000) | 72,000 (3 drivers × Rs. 24,000) | 1,20,000 (5 drivers × Rs. 24,000) | 2,88,000 |
| - Salary to cleaners | 48,000 (4 cleaners × Rs. 12,000) | 36,000 (3 cleaners × Rs. 12,000) | 60,000 (5 cleaners × Rs. 12,000) | 1,44,000 |
| - Allocated garage parking fee | 16,800 (4 vehicles × Rs.4,200) | 12,600 (3 vehicles × Rs.4,200) | 21,000 (5 vehicles × Rs.4,200) | 50,400 |
| - Depreciation (Working Note- 4) | 36,733 | 32,800 | 38,542 | 1,08,075 |
| - Fess & taxes | 5,600 | 6,400 | --- | 12,000 |
| | 2,03,133 | 1,59,800 | 2,39,542 | 6,02,475 |
| Total [A + B] | 4,16,613 | 2,55,272 | 5,34,142 | 12,06,027 |
| Operating Cost per vehicle | 1,04,153 (Rs.4,16,613 ÷ 4 vehicles) | 85,091 (Rs.2,55,272 ÷ 3 vehicles) | 1,06,828 (Rs.5,34,142 ÷ 5 vehicles) | 1,00,502 (Rs.12,06,027 ÷ 12 vehicles) |

**(ii) Vehicle operating cost per litre of milk**

$$\frac{\text{Total Operating Cost per month}}{\text{Total milk carried a month}} = \frac{\text{Rs.12,06,027}}{79,80,000\,\text{Litres (Working Note - 5)}} = \text{Rs. 0.15}$$

**Working Notes:**

1. **Distance covered by the vehicles in a month**

| Route | | Total Distance (in K.M.) |
|---|---|---|
| Ramgarh | (4 vehicles × 3 trips × 2 × 24 km. × 30 days) | 17,280 |
| Pratapgarh | (3 vehicles × 2 trips × 2 × 34 km. × 30 days) | 12,240 |
| Devgarh | (5 vehicles × 4 trips × 2 × 16 km. × 30 days) | 19,200 |

2. **Cost of diesel consumption**

| | Ramgarh | Pratapgarh | Devgarh |
|---|---|---|---|
| Total distance travelled (K.M.) | 17,280 | 12,240 | 19,200 |
| Mileage per litre of diesel | 8 kmpl | 10 kmpl | 6 kmpl |
| Diesel consumption (Litre) | 2,160 | 1,224 | 3,200 |

7

| | | (17,280 ÷ 8)<br>1,68,480 | (12,240 ÷ 10)<br>95,472 | (19,200 ÷ 6)<br>2,49,600 |
|---|---|---|---|---|
| Cost of diesel consumption @ Rs. 78 per litre (Rs.) | | | | |

3. **Servicing Cost**

| | Ramgarh | Pratapgarh | Devgarh |
|---|---|---|---|
| Total distance travelled (K.M.) | 17,280 | 12,240 | 19,200 |
| Covered under free service warranty | No | Yes | No |
| No. of services required | 3<br>(17,280 k.m. ÷ 5,000 k.m.) | 2<br>(12,240 k.m. ÷ 5,000 k.m.) | 3<br>(19,200 k.m. ÷ 5,000 k.m.) |
| Total Service Cost (Rs.) | 45,000<br>(Rs. 15,000 × 3) | --- | 45,000<br>(Rs. 15,000 × 3) |

4. **Calculation of Depreciation**

| | Ramgarh | Pratapgarh | Devgarh |
|---|---|---|---|
| No. of vehicles | 4 | 3 | 5 |
| Cost of a vehicle (Rs.) | 11,02,000 | 13,12,000 | 9,25,000 |
| Total Cost of vehicles (Rs.) | 44,08,000 | 39,36,000 | 46,25,000 |
| Depreciation per month (Rs.) | 36,733<br>$\left(\dfrac{Rs.\,44,08,000\times10\%}{12\,months}\right)$ | 32,800<br>$\left(\dfrac{Rs.\,39,36,000\times10\%}{12\,months}\right)$ | 38,542<br>$\left(\dfrac{Rs.\,46,25,000\times10\%}{12\,months}\right)$ |

5. **Total volume of Milk Carried**

| Route | | Milk Qty. (Litre) |
|---|---|---|
| Ramgarh | (10,000 ltr. × 0.7 × 4 vehicles × 3 trips × 30 days) | 25,20,000 |
| Pratapgarh | (10,000 ltr. × 0.7 × 3 vehicles × 2 trips × 30 days) | 12,60,000 |
| Devgarh | (10,000 ltr. × 0.7 × 5 vehicles × 4 trips × 30 days) | 42,00,000 |
| | | 79,80,000 |

4. **(a)** **Statement of Cost of A Ltd. for the year ended 31st March, 2021:**

| Sl. No. | Particulars | Amount (Rs.) | Amount (Rs.) |
|---|---|---|---|
| (i) | Material Consumed: | | |
| | - Raw materials purchased | 10,00,00,000 | |
| | - Freight inward | 11,20,600 | |
| | Add: Opening stock of raw materials | 18,00,000 | |
| | Less: Closing stock of raw materials | (9,60,000) | 10,19,60,600 |
| (ii) | Direct employee (labour) cost: | | |
| | - Wages paid to factory workers | | 29,20,000 |
| (iii) | Direct expenses: | | |
| | - Royalty paid for production | 1,72,600 | |
| | - Amount paid for power & fuel | 4,62,000 | |

| | | | |
|---|---|---|---|
| | - Job charges paid to job workers | 8,12,000 | 14,46,600 |
| | **Prime Cost** | | 10,63,27,200 |
| (iv) | Works/ Factory overheads: | | |
| | - Stores and spares consumed | 1,12,000 | |
| | - Repairs & Maintenance paid for plant & machinery | 48,000 | |
| | - Insurance premium paid for plant & machinery | 31,200 | |
| | - Insurance premium paid for factory building | 18,100 | |
| | - Expenses paid for pollution control and engineering & maintenance | 26,600 | 2,35,900 |
| | Gross factory cost | | 10,65,63,100 |
| | Add: Opening value of W-I-P | | 9,20,000 |
| | Less: Closing value of W-I-P | | (8,70,000) |
| | **Factory Cost** | | 10,66,13,100 |
| (v) | Quality control cost: | | |
| | - Expenses paid for quality control check activities | | 19,600 |
| (vi) | Research & development cost paid for improvement in production process | | 18,200 |
| (vii) | Less: Realisable value on sale of scrap and waste | | (86,000) |
| (viii) | Add: Primary packing cost | | 96,000 |
| | **Cost of Production** | | 10,66,60,900 |
| | Add: Opening stock of finished goods | | 11,00,000 |
| | Less: Closing stock of finished goods | | (18,20,000) |
| | **Cost of Goods Sold** | | 10,59,40,900 |
| (ix) | Administrative overheads: | | |
| | - Depreciation on office building | 56,000 | |
| | - Salary paid to General Manager | 12,56,000 | |
| | - Fee paid to independent directors | 2,20,000 | 15,32,000 |
| (x) | Selling overheads: | | |
| | - Repairs & Maintenance paid for sales office building | 18,000 | |
| | - Salary paid to Manager- Sales & Marketing | 10,12,000 | |
| | - Performance bonus paid to sales staffs | 1,80,000 | 12,10,000 |
| (xi) | Distribution overheads: | | |
| | - Packing cost paid for re-distribution of finished goods | | 1,12,000 |
| | **Cost of Sales** | | 10,87,94,900 |

9

**(b)** **(i)** Total Overhead = Rs. (2,52,000 + 80,000 + 60,000 + 40,000 + 10,368) = Rs. 4,42,368

Total machine hours = 1,440 × 4 + 1,200 × 3 + 960 × 2 + 1,008 × 1

= 5,760 + 3,600 + 1,920 + 1,008 = 12,288 M. Hrs.

∴ Overhead recovery rate / M.H. = $\dfrac{\text{Rs. 4,42,368}}{\text{12,288 M.Hrs.}}$ = Rs. 36

**Cost Statement when overheads are absorbed on machine hours rate basis**

| Product | A | B | C | D |
|---|---|---|---|---|
| Output in units | 1,440 | 1,200 | 960 | 1,008 |
| | **(Rs.)** | **(Rs.)** | **(Rs.)** | **(Rs.)** |
| Cost per unit: | | | | |
| Direct material | 84 | 90 | 80 | 96 |
| Direct labour | 20 | 18 | 14 | 16 |
| Overhead (@ Rs. 36) | 144 (4 × Rs.36) | 108 (3 × Rs.36) | 72 (2 × Rs.36) | 36 (1× Rs.36) |
| Total cost per unit | 248 | 216 | 166 | 148 |
| Total cost | 3,57,120 | 2,59,200 | 1,59,360 | 1,49,184 |

**(ii)** (1) Machine department costs of Rs. 2,52,000 to be apportioned to set-up cost, store receiving and inspection in 4 : 3 : 2 i.e. Rs. 1,12,000, Rs. 84,000 and Rs. 56,000 respectively.

(2) One production run = 48 units. Hence, the number of production runs of different products:

A = $\dfrac{1,440}{48}$ = 30, B = $\dfrac{1,200}{48}$ = 25, C = $\dfrac{960}{48}$ = 20, D = $\dfrac{1,008}{48}$ = 21 or total 96 runs.

(3) One batch order is of 24 units. So the number of batches of different products:

A = $\dfrac{1,440}{24}$ = 60, B = $\dfrac{1,200}{24}$ = 50, C = $\dfrac{960}{24}$ = 40, D = $\dfrac{1,008}{24}$ = 42 or total 192 batches.

(4) Computation of Cost driver rates

| Activity | Activity Cost (Rs.) | Cost driver | Quantity | Cost driver rate |
|---|---|---|---|---|
| Set-up | 80,000 + 1,12,000 = 1,92,000 | No. of production run | 96 | Rs. 2,000 per production run |
| Store-receiving | 60,000 + 84,000 = 1,44,000 | Requisition raised | 50 × 4 = 200 | Rs. 720 per requisition |
| Inspection | 40,000 + 56,000 = 96,000 | No. of production run | 96 | Rs. 1,000 per production run |
| Material handling | 10,368 | Orders executed (No. of batches) | 192 | Rs. 54 per batch |

(5) **Cost statement under Activity Based Costing:**

| Product | A | B | C | D |
|---|---|---|---|---|
| Output in units | 1,440 | 1,200 | 960 | 1,008 |

|  | (Rs.) | (Rs.) | (Rs.) | (Rs.) |
|---|---|---|---|---|
| Material | 1,440 × 84<br>= 1,20,960 | 1,200 × 90<br>= 1,08,000 | 960 × 80<br>= 76,800 | 1,008 × 96<br>= 96,768 |
| Labour | 1,440 × 20<br>= 28,800 | 1,200 × 18<br>= 21,600 | 960 × 14<br>= 13,440 | 1,008 × 16<br>= 16,128 |
|  | 1,49,760 | 1,29,600 | 90,240 | 1,12,896 |
| Overhead cost: |  |  |  |  |
| Set up | 2,000 × 30<br>= 60,000 | 2,000 × 25<br>= 50,000 | 2,000 × 20<br>= 40,000 | 2,000 × 21<br>= 42,000 |
| Store receiving | 720 × 50<br>= 36,000 | 720 × 50<br>= 36,000 | 720 × 50<br>= 36,000 | 720 × 50<br>= 36,000 |
| Inspection | 1,000 × 30<br>= 30,000 | 1,000 × 25<br>= 25,000 | 1,000 × 20<br>= 20,000 | 1,000 × 21<br>= 21,000 |
| Material handling | 54 × 60<br>= 3,240 | 54 × 50<br>= 2,700 | 54 × 40<br>= 2,160 | 54 × 42<br>= 2,268 |
| Total overhead cost | 1,29,240 | 1,13,700 | 98,160 | 1,01,268 |
| Total cost | 2,79,000 | 2,43,300 | 1,88,400 | 2,14,164 |
| Total cost per unit (Total cost / Output) | 193.75 | 202.75 | 196.25 | 212.46 |

**5. (a) Workings:**

(1) Contribution per unit = Selling price per unit – Variable cost per unit

= Rs. 50 – {Rs. (16,00,000 + 4,00,000 + 8,00,000) ÷ 80,000 units}

= Rs. 50 – Rs. 35 = Rs. 15

(2) Profit-Volume (P/V) Ratio = $\dfrac{\text{Contribution per unit}}{\text{Selling price per unit}} \times 100 = \dfrac{\text{Rs.15}}{\text{Rs.50}} \times 100 = 30\%$

**Calculations:**

**(i) The number of units to be sold for neither loss nor gain i.e. Break-even units:**

= $\dfrac{\text{Fixed Overheads}}{\text{Contribution per unit}} = \dfrac{\text{Rs.7,20,000}}{\text{Rs.15}}$ = 48,000 units

**(ii) The sales needed to earn a profit of 20% on sales:**

As we know

S = V + F + P

(S = Sales; V = Variable Cost; F = Fixed Cost; P = Profit)

Suppose Sales units are *x* then

Rs. 50*x* = Rs. 35 *x* + Rs. 7,20,000 + Rs. 10*x*

Rs. 50*x* – Rs. 45*x* = Rs. 7,20,000

Or, $x = \dfrac{\text{Rs.7,20,000}}{\text{Rs.5}}$ = 1,44,000 units

Therefore, Sales needed = 1,44,000 units × Rs. 50 = Rs. 72,00,000 to earn a profit of 20% on sales.

**(iii) Calculation of extra units to be sold to earn present profit of Rs.4,80,000 under the following proposed selling price:**

| | | When selling price is reduced by | |
|---|---|---|---|
| | | 20%<br>(Rs.) | 25%<br>(Rs.) |
| | Selling price per unit | 40.00<br>(Rs. 50 × 80%) | 37.50<br>(Rs. 50 × 75%) |
| | *Less:* Variable Cost per unit | 35.00 | 35.00 |
| | Contribution per unit | 5.00 | 2.50 |
| | Desired Contribution: | | |
| | Fixed Overheads | 7,20,000 | 7,20,000 |
| | Desired Profit | 4,80,000 | 4,80,000 |
| | | 12,00,000 | 12,00,000 |
| (a) | Sales unit for desired contribution $\left[\dfrac{\text{Desired Contribution}}{\text{Contribution per unit}}\right]$ | 2,40,000 units<br>$\left[\dfrac{\text{Rs.12,00,000}}{\text{Rs. 5}}\right]$ | 4,80,000 units<br>$\left[\dfrac{\text{Rs.12,00,000}}{\text{Rs. 2.5}}\right]$ |
| (b) | Units presently sold | 80,000 units | 80,000 units |
| (c) | Extra units to be sold {(a) – (b)} | 1,60,000 units | 4,00,000 units |

**(iv) Sales price to bring down BEP to 10,000 units:**

$$\text{B.E.P (Units)} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{Or, Contribution per unit} = \frac{\text{Rs.7,20,000}}{\text{10,000 units}} = \text{Rs. 72}$$

So, Sales Price (per unit) = Variable Cost + Contribution

= Rs. 35 + Rs. 72 = Rs. 107

**(b) (i) Calculation of Direct expenses**

| Particulars | Job A (Rs.) | Job B (Rs.) | Job C (Rs.) |
|---|---|---|---|
| Product blueprint cost | 2,80,000 | -- | -- |
| Hire charges paid for machinery | -- | 80,000 | -- |
| License fee paid for software | -- | -- | 1,00,000 |
| **Total Direct expenses** | 2,80,000 | 80,000 | 1,00,000 |

**(ii)**

| Particulars | Jan. (Rs.) | Feb. (Rs.) | March (Rs.) | April (Rs.) | May (Rs.) | June (Rs.) | Total (Rs.) |
|---|---|---|---|---|---|---|---|
| Batch output (in pieces) | 210 | 200 | 220 | 180 | 200 | 220 | 1,230 |
| Sale value @ Rs.80 | 16,800 | 16,000 | 17,600 | 14,400 | 16,000 | 17,600 | 98,400 |
| Material cost | 6,500 | 6,400 | 6,800 | 6,300 | 7,000 | 7,200 | 40,200 |
| Direct wages | 1,200 | 1,400 | 1,500 | 1,400 | 1,500 | 1,600 | 8,600 |
| Chargeable expenses* | 6,000 | 6,720 | 6,720 | 6,210 | 7,800 | 8,000 | 41,450 |
| Total cost | 13,700 | 14,520 | 15,020 | 13,910 | 16,300 | 16,800 | 90,250 |
| Profit per batch | 3,100 | 1,480 | 2,580 | 490 | (300) | 800 | 8,150 |
| Total cost per piece | 65.2 | 72.6 | 68.3 | 77.3 | 81.5 | 76.4 | 73.4 |
| Profit per piece | 14.8 | 7.4 | 11.7 | 2.7 | (1.5) | 3.6 | 6.6 |

**Overall position of the order for 1,200 pieces**

Sales value of 1,200 pieces @ Rs. 80 per piece      Rs. 96,000

Total cost of 1,200 pieces @ Rs. 73.4 per piece      Rs. 88,080

Profit      Rs. 7,920

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

6. (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.

13

(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 Centre:** 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.