## PAPER 3 : COST ACCOUNTING

Answer to questions are to be given only in English except in the case of candidates who have opted for Hindi Medium. If a candidate who has not opted for Hindi Medium. His/her answer in Hindi will not be valued.

Question No. 1 is compulsory.
Candidates are also required to answer any Four questions from the remaining Five Questions.
In case, any candidate answers extra question(s)/sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.
Wherever necessary, suitable assumptions may be made and disclosed by way of note.

## Answer: 1

(a) (i) Efficiency Ratio $\left.=\frac{\text { Actual Prodcution in terms of standard hours }}{\text { Actual hours worked }} \times 100\right\} \mathbf{1 M}$

$$
\left.=\frac{750 \text { units } \times 10 \text { hours }}{6,000} \times 100=125 \%\right\} 1 / 2 M
$$

(ii) Activity ratio

$$
\left.=\frac{\text { Actual Production in terms of standard hours }}{\text { Budgeted production in terms of standard hours }} \times 100\right\} \mathbf{1 M}
$$

$$
\left.=\frac{7,500}{880 \times 10} \times 100=85.23 \%\right\} 1 / 2 M
$$

(iii) Capacity Ratio

$$
\left.\begin{array}{ll}
\text { Capacity Ratio } & \left.=\frac{\text { Actual hours worked }}{\text { Maximum hours in a budget period }} \times 100\right\} \\
& \left.=\frac{6,000}{8,800} \times 100=68.19 \%\right\} 1 / 2 M \\
\text { Activity ratio } & =\text { Efficiency Ratio } \times \text { Capacity Ratio } \\
\text { Or, } 85.23 & =125 \% \times 68.19
\end{array}\right\} 1 / 2 \mathbf{M}
$$

$$
\text { Or, } 85.23
$$

(b) Working Notes:

1. $\left.\begin{array}{rl}\text { Depreciation per annum } & =\frac{\text { Purchase price - Scrap value }}{\text { Estimated life }} \\ & =\frac{\text { Rs. } 4,00,000-\text { Rs. } 10,000}{5 \text { years }}=\text { Rs. } 78,000\end{array}\right\} 1 / 2 \mathrm{M}$
2. Total distance travelled by mini-bus in 25 days:
$=$ Length of the route (two -sides) $\times$ No. of trips per day $\times$ No. of days $\} 1 / 2 \mathbf{M}$
$=60 \mathrm{~km} \times 6$ trips $\times 25$ days $=9,000 \mathrm{~km}$
3. Total Passenger-Km:
$=$ Total distance travelled by mini-bus in 25 days $\times$ No. of seats
$=9,000 \mathrm{~km} \times 20$ seats $=1,80,000$ passenger- km
Statement suggesting fare per passenger-km


| Particulars | Costperann <br> um <br> Rs. | Costpermon <br> th <br> Rs. |
| :--- | ---: | ---: |
| Fixed expenses: | 15,000 |  |
| Insurance | 9,000 |  |
| Garage rent | 3,000 |  |
| Road tax | 78,000 |  |
| Administrative charges | 10,000 | 10,000 |
| Depreciation | $1,20,000$ | 2 |
| Interest on loan | 15,000 | 1,250 |
|  | 3,600 | 300 |
| Running expenses: |  | 45,000 |
| Repair and maintenance | - | 5,000 |
| Replacement of tyre-tube |  | $61,550.00$ |
| Diesel and oil cost (9,000 km $\times$ Rs. 5) |  | $15,387.50$ |
| Driver and conductor's salary |  | $76,937.50$ |
| Total cost (per month) |  |  |
| Add: Profit 20\% of total revenue cost or $25 \%$ of |  |  |
| total cost |  |  |
| Total revenue |  |  |

Rate per passenger-km Rs. 76,937.50/1,80,000 passenger km $=0.42743$ i.e., $=$
(c) (1) Comparative Profitability Statements

| Particulars | Process- A <br> (Rs.) | Process- B <br> (Rs.) |
| :--- | ---: | ---: |
| Selling Price per unit | 20.00 | 20.00 |
| Less: Variable Cost per unit | 12.00 | 14.00 |
| Contribution per unit | 8.00 | 6.00 |
| Total Contribution | (Rs. $8 \times 4,00,000)$ | $24,00,000$ <br> (Rs. $6 \times 4,00,000)$ |
| Less: Total fixed costs | $30,00,000$ | $21,00,000$ |
| Profit | $2,00,000$ | $3,00,000$ |
| *Capacity (units) | $4,30,000$ | $5,00,000$ |
| Total Contribution at full capacity | $34,40,000$ | $30,00,000$ |
| Fixed Cost | (Rs. $8 \times 4,30,000)$ | (Rs. $6 \times 5,00,000)$ |
| Profit | $30,00,000$ | $21,00,000$ |

Process- B should be chosen as it gives more profit as compared to Process-A.
(2)

| Particulars | Process- A (Rs.) | Process- B <br> (Rs.) |
| :--- | ---: | ---: |
| *Capacity (units) | $6,00,000$ | $5,00,000$ |
| Total contribution | $48,00,000$ | $30,00,000$ |
|  | (Rs. $8 \times 6,00,000)$ | (Rs. $6 \times 5,00,000)$  <br> Fixed Cost $30,00,000$ |
| Profit | $21,00,000$ |  |

If the capacity of the Process $A$ and $B$ is $6,00,000$ units and $5,00,000$ units respectively then Process-A is giving double profit than Process C. Thus Process A be chosen.
*Note: It is assumed that capacity produced equals sales
(d) Statement of cost per batch and perorder

No. of batch $=600$ units $\div 50$ units $=12$ batches

|  | Particulars | Cost perbatch (Rs.) | $\begin{gathered} \text { TotalCost } \\ \text { (Rs.) } \end{gathered}$ |
| :---: | :---: | :---: | :---: |
|  | Direct Material Cost | - 5,000.00 | 60,000 |
|  | Direct Wages | 500.00 | 6,000 |
|  | Oven set-up cost | 750.00 | 9,000 |
| I | Add: Production Overheads (20\% of Direct wages) | 100.00 | 1,200 |
|  | Total Production cost | 6,350.00 | 76,200 |
| IT | Add: S\&D and Administration overheads (10\% of Total production cost) | - 635.00 | 7,620 |
| I | Total Cost | -6,985.00 | - 83,820 |
|  | Add: Profit ( $1 / 3 \mathrm{rd}_{\text {of total }}$ cost) | 2,328.33 | 27,940 |
| (i) | Sales price | 1M\}9,313.33 | 1,11,760 |
|  | No. of units in batch | 50 units |  |
| (ii) | Cost per unit (Rs.6,985 $\div 50$ units) | 139.70 |  |
|  | Selling price per unit $(9,313.33 \div 50$ units) | 1M\} 186.27 |  |

(iii) Iftheorderisfor605cakes,thensellingpricepercakewouldbeasbelow:

| Particulars | Total Cost <br> (Rs.) |
| :--- | ---: |
| Direct Material Cost | 60,500 |
| Direct Wages | 6,050 |
| Oven set-up cost | 9,750 |
| Add: Production Overheads (20\% of Direct wages) | 1,210 |
| Total Production cost | $\mathbf{7 M}, 510$ |


| Add: S\&D and Administration overheads <br> (10\% of Total production cost) | 7,751 |
| :--- | ---: |
| Total Cost | 85,261 |
| Add: Profit ( $1 / 3^{\text {rd }}$ of total cost) | 28,420 |
| Sales price | $\mathbf{1 , 1 3 , 6 8 1}$ |
| No. of units | 605 units |
| Selling price per unit (Rs.1,13,681 $\div 605$ units) | $\mathbf{1 8 7 . 9 0}$ |

## Answer: 2

(a) Calculation of cost and amount chargeable by the Contractor

| Particulars | Veg. | Non-Veg |
| :---: | :---: | :---: |
| No of Meals per Day | 180 | 120 |
| No of Meals per Month | $180 \times 25=4,500$ | $120 \times 25=3,000$ |
| Variable Cost: | Rs. | Rs. |
| Cereals | 8 per plate | - |
| Veg items | 5 per plate |  |
| Cooking Oil \|4.11 | 4 per plate |  |
| Spices | 1 per plate |  |
| Total Variable Cost | $18 \times 7500(4500+3000)$ | 1,35,000 |
| Additional variable cost of Non-veg meal | $15 \times 3000$ | 45,000 |
| Total Variable Cost $\square^{\text {a }}$ |  | 1,80,000 |
| Fixed Cost: $\quad$ L |  |  |
| Salary of Cook | 13,000 |  |
| Salary of Helpers (7,000 $\times 3$ ) | - 21,000 |  |
| Fuel | 2,000 | 36,000 |
| Total Cost |  | 2,16,000 |
| Profit 20\% on his takings or 25\% on Cost |  | 54,000 |
| Total amounts chargeable by the Contractor | c | 2,70,000 |
| (i) $\begin{array}{ll}\text { No. of Non-Veg Meals 3,000 } \\ \text { Equivalent No. of Veg Meals }= \\ & \text { No. of Non Veg Meals } \\ & \text { Total } \\ & \text { Price per Veg Meal }=\frac{\text { Rs. } 2,70,00}{\text { Rs. } 9,0} \\ & \text { Price per Non Veg. Meal }=\text { Rs. }\end{array}$ | H-4.3 |  |
|  | $3,000 \times 1.5=4,500$ |  |
|  | $=4,500$ |  |
|  | 9,000 | 2.5M |
|  | 000 = Rs. 30 |  |
|  |  |  |
|  | $30 \times 1.5=$ Rs. $45 /-$ |  |
| (ii) Price per meal when a worker | will have to pay |  |
| Veg meal Rs. 30 - Subsidy (60 | \% of Rs. 30) |  |
| = Rs. 30 - Rs. 27 = Rs. 12/- |  |  |
| Non-Veg Meal Rs. 45 - Subsid | (60\% of Rs. 45) |  |
| Rs. 45 - Rs. 27 = Rs. 18/- |  |  |
| Note: Cost of Veg and non-veg meal calculated separately and then profit of $20 \%$ on overall takings and $25 \%$ profit on overall Cost is added to determine the total price to be charged. |  |  |

(b) Step 1 : Let $X$ be the cost of material and $Y$ be the normal rate of wages per hour.

Step 2 :Factory Cost of Workman 'A'

|  | (Rs.) |
| :--- | :--- |
|  |  |

A. Material Cost
B. Wages
C. Bonus $=\frac{30}{50} \times(50-30) \times Y$
D. Overheads (30 Rs.5)

150
E. Factory Cost

3,490
Or,, X + 42 Y = Rs. 3,490 (Given) - Rs. 150 = Rs.3,340 .equation (i)
Step 3 :Factory Cost of Workman ' ${ }^{\prime}$ '

| (Rs.) |  |
| :--- | ---: |
| A. Material Cost | X |
| B.Wages | 40 Y |
| C. Bonus $=50 \%$ of $(\mathrm{SH}-\mathrm{AH}) \times \mathrm{R}$ | 5 Y |
| $50 \%$ of $(50-40) \times \mathrm{R}$ |  |
| D. Overheads $(40 \times$ Rs.5) | 200 |
|  |  |
| E. Factory Cost | 3,600 |
| Or, X $+45 \mathrm{Y}=$ Rs.3,600 (Given) - Rs. $200=$ Rs.3,400................... equation(ii) |  |

Step 4 :Subtracting equation (i) from equation (ii) $3 Y=$ Rs. 60

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

(a) The normal rate of wages: Rs. 20 perhour
(b) The cost of material: $\mathrm{X}+45 \times$ Rs. $20=$ Rs. 3,400 or,

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

(c) ComparativeStatementoftheFactoryCostoftheproductmadebythetwo workmen.


## Answer: 3

(a) Workings:

Monthly Production of $X=30,000 \mathrm{kgs}$.
Raw Material Required $=\frac{30,000}{3} \times 5=50,000 \mathrm{kgs}$.
Material $A=\frac{50,000}{5} \times 3=30,000 \mathrm{~kg}$.

Material $B=\frac{50,000}{5} \times 2=20,000 \mathrm{~kg}$.

$$
\begin{aligned}
& \text { (i) } \left.\begin{array}{rl}
\text { Calculation of Economic Order Quantity (EOQ): } \\
\left.\begin{array}{rl}
\text { Material A } & =\sqrt{\frac{2 \times \text { Annual consumption } \times \text { Order cost }}{\text { Carrying cost per unit p.a. }}}
\end{array}\right\} \mathbf{1 M} \\
& =\sqrt{\frac{2 \times(30,000 \mathrm{~kg} \cdot \times 12 \mathrm{months}) \times \text { Rs. } 120}{(15 \% \text { of Rs.15) }}} \\
& =\sqrt{\frac{8,64,00,000}{2.25}}=6,196.77 \mathrm{~kg} . \text { or } 6,197 \mathrm{~kg} .
\end{array}\right\} \mathbf{1 M} \\
& \\
& \left.\begin{array}{rl}
\text { Material B } & =\sqrt{\frac{2 \times(20,000 \mathrm{~kg} . \times 12 \text { months }) \times \text { Rs. } 120}{(5 \% \text { of Rs. } 22.44 *)}} \\
& =\sqrt{\frac{5,76,00,000}{1.122}}=7,164.97 \text { or } 7,165 \mathrm{~kg} . \\
\text { *Purchase price }+2 \% \mathrm{CST}=\text { Rs. } 22+2 \% \text { of Rs. } 22=\text { Rs. } 22.44
\end{array}\right\} \mathbf{1 M}
\end{aligned}
$$

(ii) Calculation of Maximum Stock level: Since, the Material A is perishable in nature and it required to be used within 5 days, hence, the Maximum Stock Level shall be lower of two:
(a) Stock equal to 5 days consumption
$=\frac{30,000 \mathrm{~kg}}{25 \text { days }} \times 5$ days $=6,000 \mathrm{~kg}$.
(a) Maximum Stock Level for Material A:

Re-order Quantity + Re-order level - (Min consumption* $\times$ Min. lead time) Where, Re-order Quantity $=8,000 \mathrm{~kg}$.

Re-order level = Max. Consumption* $\times$ Max. Lead time

$$
=30,000 / 25 \times 2 \text { days }=2,400 \mathrm{~kg} .
$$

Maximum stock Level $\quad=8,000 \mathrm{~kg} .+2,400 \mathrm{~kg} .-(30,000 / 25 \times 1$ day $)$ $=10,400-1,200=9,200 \mathrm{~kg}$.
Stock required for 5 days consumption is lower than the maximum stock level kg.
(*Since, production is processed evenly throughout the month hence material consumption will also be even.)
(iii) Calculation of Savings/ loss in Material A if purchase quantity equals to EOQ.

|  | $\begin{gathered} \hline \text { Purchase Quantity = } \\ 8,000 \mathrm{~kg} . \end{gathered}$ | Purchase Quantity = EOQ i.e. 6,197 kg. |
| :---: | :---: | :---: |
| Annual consumption | $\begin{gathered} 3,60,000 \mathrm{~kg} . \\ (30,000 \times 12 \text { months }) \end{gathered}$ | $\begin{gathered} 3,60,000 \mathrm{~kg} \\ (30,000 \times 12 \text { months }) \end{gathered}$ |
| No. of orders [Note- (i)] | $\begin{gathered} 60 \\ (3,60,000 \div 6,000) \end{gathered}$ | $\begin{gathered} 60 \\ (3,60,000 \div 6,000) \end{gathered}$ |
| Ordering Cost (a) | $\begin{gathered} \text { Rs. } 7,200 \\ (\mathrm{Rs} .120 \times 60) \end{gathered}$ | $\begin{gathered} \text { Rs. } 7,200 \\ (\text { Rs. } 120 \times 60) \end{gathered}$ |
| Carrying Cost (b) <br> [Note- (ii)] | $\begin{gathered} \text { Rs. } 8,100 \\ (15 \% \text { of Rs. } 13.50 \times 4,000) \end{gathered}$ | $\left\{\begin{array}{l} \text { 2M } \quad \text { Rs. } 6,972 \\ (15 \% \text { of Rs. } 15 \times 3,098.5) \end{array}\right.$ |
| Purchase Cost (c) <br> (for good portion) | $\begin{gathered} \text { Rs. } 48,60,000 \\ \text { (Rs. } 13.50 \times 3,60,000) \end{gathered}$ | $\begin{gathered} \text { Rs. } 54,00,000 \\ \text { (Rs. } 15 \times 3,60,000) \end{gathered}$ |
| Loss due to obsolescence <br> (d) [Note- (iii)] | $\begin{gathered} \text { Rs. } 16,20,000 \\ {[\text { Rs. } 13.5 \times(60 \times 2,000)]} \end{gathered}$ | $\begin{gathered} \text { Rs. } 1,77,300 \\ {[\text { Rs. } 15 \times(60 \times 197)]} \end{gathered}$ |
| Total Cost $[(a)+(b)+$ (c) + (d)] | Rs. 64,95,300 | Rs. 55,91,472 |

If purchase quantity equals to EOQ, there will be a saving of Rs. 9,03,828 i.e. Rs. 64,95,300-Rs. 55,91,472.
Notes: (i) As after 5 days of purchase the Material A gets obsolete, the quantity in excess of 5 days consumption i.e. $6,000 \mathrm{~kg}$. are wasted. Hence, after $6,000 \mathrm{~kg}$. a fresh order needs to be given.
(ii) Carrying cost is incurred on average stock of Materials purchased.
(iii) the excess quantity of material gets obsolete and loss has to be incurred.

## Answer: 3

(b) (i)

Calculation of Absolute Ton-km for the next month:]

| Journey | Distanc e in km | Weight <br> - Up(in MT) | Ton-km | WeightDown (in MT) | Ton-km | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | (a) | (b) | $\begin{gathered} (c)= \\ (a) \times(b) \end{gathered}$ | (d) | $\begin{gathered} (e)= \\ (\mathrm{a}) \times(\mathrm{d}) \end{gathered}$ | (c) $+(\mathrm{e})$ |
| Delhi to Kochi | 2,700 | 14 | 37,800 | 6 | 16,200 | 54,000 |
| Delhi to Guwahati | 1,890 | 12 | 22,680 | 0 | 0 | 22,680 |
| Delhi to Vijayawada | 1,840 | 15 | 27,600 | 0 | 0 | 27,600 |
| Delhi to Varanasi | 815 | 10 | 8,150 | 0 | 0 | 8,150 |
| Delhi to Asansol | 1,280 | 12 | 15,360 | 4 | 5,120 | 20,480 |
| Delhi to Chennai | 2,185 | 10 | 21,850 | 8 | 17,480 | 39,330 |
| Total | 10,710 | 73 | 1,33,440 | 18 | 38,800 | 1,72,240 |

Total Ton-Km = 1,72,240 ton-km
(ii) Calculation of cost per ton-km:

| Particulars | Amount (Rs.) | Amount (Rs.) |
| :---: | :---: | :---: |
| A. Running cost: |  |  |
| - Diesel Cost \{Rs. $13.75 \times(10,710 \times 2)\}$ | 2,94,525.00 |  |
| - Engine Oil Cost $\left(\frac{\mathrm{Rs} .4,200}{13,000 \mathrm{~km}} \times 21,420 \mathrm{~km}\right)$ | 6,920.31 |  |
| - Cost of loading of goods \{Rs. $150 \times(73+18)\}$ | 13,650.00 |  |
| - Depreciation $\left(\frac{\mathrm{Rs.20,00,000}}{7,20,000 \mathrm{~km}} \times 21,420 \mathrm{~km}\right)$ | 59,500.00 | 3,74,595.31 |
| B. Repairs \& Maintenance Cost $\left(\frac{\text { Rs. } 12,000}{10,000 \mathrm{~km}} \times 21,420 \mathrm{~km}\right)$ |  | 25,704 |
| C. Standing Charges |  |  |
| - Drivers' salary (Rs.18,000 $\times 4$ trucks) | 72,000 |  |
| - Cleaners' salary (Rs. $7,500 \times 4$ trucks) | 30,000 |  |
| - Supervision and other general exp. | 12,000 | 1,14,000 |
| Total Cost ( $\mathrm{A}+\mathrm{B}+\mathrm{C}$ ) |  | 5,14,299.31 |
| Total ton-km |  | 1,72,240 |
| Cost per ton-km |  | 2.99 |

## Answer: 4

(a)
(i)

|  | Rs. |
| :--- | ---: |
| Sales 50,000 units at Rs. 7 | $3,50,000$ |
| Variable cost $50,000 \times 3$ | $1,50,000$ |
| Contribution $50,000 \times 4$ | $2,00,000$ |
| Fixed costs | $1,20,000$ |
| Profit | 80,000 |

$P / V$ ratio $=\frac{S-V}{S} \times 100=\frac{7-3}{7} \times 100=\frac{4}{7} \times 100=57.14 \%$
$B E P$ (units) $=\frac{F}{\text { contribution per unit }}=\frac{1,20,000}{4}=30,000$ units.
BEP (Value) $=30,000$ Units $\times 7=$ Rs. 2,10,000
Profit Rs. 80,000 (as calculated above)
(ii) with a $10 \%$ increase in output \& sales i.e., $50,000+5,000=55,000$ units

| Contribution $55,000 \times$ Rs. 4 per unit | Rs. $2,20,000$ |
| :--- | :--- |
| Fixed costs | Rs. $1,20,000$ |
| Profit | Rs. $1,00,000$ |

(iii) with a 10\% increase in FixedCost
$\left.\begin{array}{|l|r|}\hline \text { Contribution }(50,000 \times \text { Rs. } 4 \text { per unit) } & \text { Rs. 2,00,000 } \\ \hline \text { Fixed cost }(1,20,000+12,000) & \text { Rs. } 1,32,000 \\ \hline \text { Profit } & \text { Rs. } 68,000 \\ \hline\end{array}\right\} \mathbf{1 ⁄ 2 / 2 M}$
(iv) with a $10 \%$ increase in variablecosts

| Selling price per unit | 7.00 |
| :--- | ---: |
| Less: variable cost $(3+0.30)$ | 3.30 |
| Contribution per unit | 3.70 |
| Total contribution $50,000 \times 3.70$ | $1,85,000$ |
| Fixed costs | $1,20,000$ |
| Profit | 65,000 |

(v) with a $10 \%$ increase in sellingprice

| Selling price per unit $(7.00+0.70)$ | 7.70 |
| :--- | ---: |
| Variable cost per unit | 3.00 |
| Contribution per unit | 4.70 |
| Total contribution $50,000 \times$ Rs. 4.70 | $2,35,000$ |
| Fixed costs | $1,20,000$ |
| Profit | $1,15,000$ |

(vi) Effect of all the four above:-

| Sales $55,000 \times$ Rs. 7.70 per unit | Rs. $4,23,500$ |
| :--- | ---: |
| Variable cost $55,000 \times 3.30$ | Rs. $1,81,500$ |
| Contribution $55,000 \times 4.40$ | Rs. $2,42,000$ |
| Fixed cost $1,20,000+12,000$ | Rs. $1,32,000$ |
| Profit | Rs. $1,10,000$ |
| $\mathbf{2 1 ⁄ 2} \mathbf{M}$ |  |

Note: It is assumed that the increased output of 55,000 units has been sold.

## Answer (4)

(b) WorkingNotes:Standard Costs


## Missing Figures

1. Actual Direct Labour Hours(DLH)

We can find out this through Variable overhead efficiency variance of Rs. 1,500 adverse VOH Efficiency Variance $=$ SR (SH - AH)
$\left.\begin{array}{|l|r|r|}\hline 1,500 \mathrm{~A} & = & 3(6,000-\mathrm{AH}) \\ \hline-1,500 & = & 18,000-3 \mathrm{AH} \\ 3 \mathrm{AH} & = & 18,000+1,500=19,500 \\ \mathrm{AH}=19,500 / 3 & = & 6,500 \text { Actual Hours i.e. Actual DLH. } \\ \hline\end{array}\right\} \mathbf{1} 1 / 2 \mathrm{M}$
2. Actual Labour Rate per hour $=\frac{\text { Rs. } 27,950}{6,500 \text { DLH }}=$ Rs. 4.30

Relevant Variances:
1 Material Variances:
(a) $\mathrm{MCV}=\mathrm{SC}-\mathrm{AC}=72,000-72,219=$
(b) $\mathrm{MPV}=\mathrm{AQ}(\mathrm{SR}-\mathrm{AR})=12,670(6-5.70)=$ or $\quad=19,000(6-5.70)=$
(c) $\mathrm{MUV}=\mathrm{SR}(\mathrm{SQ}-\mathrm{AQ})=6(6,000 \times 2-12,670)$

$$
=6(12,000-12,670)=
$$

2. Labour Variances:
(a) $L C V=S C-A C=26,400-27,950=$
(b) $\operatorname{LRV}=\mathrm{AHP}(\mathrm{SR}-\mathrm{AR})=6,500(4.40-4.30)=$
(c) $\mathrm{LEV}=\mathrm{SR}(\mathrm{SH}-\mathrm{AHP})=4.40(6,000-6,500)=$
3. Variable Overhead Variances: (Output Basis)
(a) VOH Variance $=\mathrm{SVO}-\mathrm{AVO}=18,000-20,475$
(b) Efficiency Variance $=\mathrm{SR}(\mathrm{SQ}-\mathrm{AQ})($ Note1)

$$
=3(6,500-6,000)=
$$

(c) Expenditure Variance $=($ SVOSP - AVO $)($ Note2 $)$

$$
=(19,500-20,475)=
$$

Rs. 219 (A)
Rs. 3,801 (F)
Rs. 5,700(F)

Rs. 4,020 (A)

Rs. 1,550 (A)
Rs. 650 ( F )
Rs. 2,200 (A)

Rs. 2,475 (A)

Rs. 1,500 (A)

Rs. 975 (A)

## Note:

1. One unit of production in one hour. For 6,500 DLH, 6,500 units should have been produced
(SQ).ButAQ=6,000units.i.e.lessthanSQ.Hence,itisadversevarianceofRs.1,500.
1M
2. StandardVariableOverheadonStandardProduction $=6,500 \times 3=$ Rs. 19,500

Answer: 5
(a) WorkingNotes:
(i) Computation of Allocation Ratio for JointCosts

|  | Products |  |  |
| :--- | ---: | ---: | ---: |
|  | $\mathbf{X}$ <br> Rs. | $\mathbf{Y}$ <br> Rs. | Z. <br> Rs. |
| Selling Price | 13.75 | 8.75 | 7.50 |
| Less: Anticipated margin@ 25\% on cost or <br> 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

|  | Rs. | Rs. |
| :--- | ---: | ---: |
| Joint input cost including material cost |  | 90,800 |
| Less: Credit for realization from by-product B: <br> Sales revenue (1,000 $\times$ 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 <br> allocation Rs. | Output(units) <br> Rs. | Joint cost perunit <br> Rs. |
| :---: | :---: | :---: | :---: |
| 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 <br> Cost <br> Rs. | Post spilt <br> off cost <br> Rs. | Total <br> Cost Rs. | Selling <br> Price Rs. | Margin | Margin \% on <br> cost <br> Rs. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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 |
| $\mathbf{2 ½} \mathbf{M}$ |  |  |  |  |  |  |

## Note: 1

$$
\left.\begin{array}{rl}
X=\frac{24}{40} \times 90,000 & =54,000 \\
Y=\frac{9}{40} \times 90,000 & =20,250 \\
Z=\frac{7}{40} \times 90,000 & =\underline{15,750} \\
\underline{90,000}
\end{array}\right\} 1 \mathrm{M}
$$

(b) WorkingNotes:

1. (i) Effectivehoursforstandingcharges(208hours-8hours)=200hours \} 1⁄2M
2. (ii) Effective hours for variable costs (208 hours -28 hours) $=180$ hours $\} 1 / 2 \mathrm{M}$
$\left.\begin{array}{|l|r|r|}\hline & \begin{array}{c}\text { Cost per } \\ \text { month(Rs.) }\end{array} & \begin{array}{r}\text { Cost per hour (Rs.) (Cost } \\ \text { per month } \div 200 \text { hours) }\end{array} \\ \hline \text { Supervisor's salary }\left(\frac{\text { Rs. } 6,000}{3 \text { machines }}\right) & 2,000 & 10.00 \\ \hline \text { Rent of building }\left(\frac{1}{6} \times \frac{\text { Rs. } 7,000}{12 \text { machines }}\right) & 1,000 & 5.00 \\ \hline \text { General lighting } & - & 5.00 \\ \hline \text { Total Standing Charges } & 4,000 & 20.00\end{array}\right\} \mathbf{2 M}$
3. Standing Charges perhour

|  | Cost per month (Rs.) | Cost per hour (Rs.) |
| :---: | :---: | :---: |
| Depreciation $\left(\frac{\text { Rs. }(5,00,000-20,000)}{10 \text { years }} \times \frac{1}{12 \text { months }}\right)$ | $4,000$ | $\begin{array}{r} 20.00 \\ \left(\frac{\text { Rs. } 4000}{200 \text { hours }}\right) \end{array}$ |
| Wages | $2,500$ | $\begin{array}{r} 12.50 \\ \left(\frac{\text { Rs. } 2,500}{200 \text { hours }}\right) \end{array}$ |
| Repairs \& Maintenance ( $\left.\frac{\text { Rs. } 60,480}{12 \text { months }}\right)$ | 5,040 | $\begin{array}{r} 28.00 \\ \left(\frac{\text { Rs. } 5,040}{180 \text { hours }}\right) \end{array}$ |
| Consumable stores |  | $\begin{array}{r} \text { Rs. } 22.00 \\ \left(\frac{\text { Rs. } 3,960}{180 \text { hours }}\right) \end{array}$ |
| Power ( 25 units $\times$ Rs. $2 \times 180$ hours) | 9,000 | 50.00 |
| Total Machine Expenses | 24,500 | 132.50 |

Computation of Two - tier machine hour rate

|  | Set up <br> timerateperma <br> chinehour(Rs.) | Running time <br> ratepermachineho <br> ur <br> (Rs.) |
| :--- | ---: | ---: |
| Standing Charges | 20.00 | 20.00 |
| Machine expenses : | 20.00 | 20.00 |
| Depreciation | - | 28.00 |
| Repair and maintenance | - | 22.00 |
| Consumable stores | - | 50.00 |
| Power | 40.00 | 140.00 |
| Machine hour rate of overheads | 12.50 | 12.50 |
| Wages | 52.50 | 152.50 |
| Comprehensive machine hour rate | $\mathbf{2 M}$ |  |

## Answer: 6

## (a) Just in Time (JIT) Inventory Management

JIT is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.
JIT is based on two principles
(i) Produce goods only when it is required and
(ii) the products should be delivered to customers at the time only when they want. It is also known as 'Demand pull' or 'Pull through' system of production. In this system, production process actually starts after the order for the products is received. Based on the demand, production process starts and the requirement for raw materials is sent to the purchase department for purchase. This can be understood with the help of the following diagram:

Production
starts to
process the
demad for
product

| Materail |
| :---: |
| Requirement |
| is sent to |
| Purchase |
| department |


| Order for |
| :---: |
| raw |
| materials |
| sent to |
| supplier |

Supplier sent the material for production

Difference between Bin Card \& Stores Ledger

|  | Bin Card | Stores Ledger |
| :--- | :--- | :--- |
| (i) | It is maintained by the storekeeper <br> in the store. | It is maintained in costing <br> department. |
| (ii) | It contains only quantitative details <br> of material received, issued and <br> returned to stores. | It contains information both in <br> quantity and value. |
| (iii) | Entries are made when transactions <br> take place. | It is always posted after the <br> transaction. |
| (iv) | Each transaction is individually <br> posted. | Transactions may be summarized and <br> then posted. |
| (v) | Inter-department transfers do not <br> appear in Bin Card. | Material transfers from one job to <br> another job are recorded for costing <br> purposes. |

(c) M/s. Builder \& Co. should follow cost -plus contract to quote price for the contract.) Cost-plus contract provide for the payment by the contracteeof the actual cost of manufactureplusastipulatedprofit,mutuallydecidedbetweenthetwoparties. The main features of these contracts are as follows:
(i) The practice of cost-plus contracts is adopted in the case of those contracts where the probable cost of the contracts can not be ascertained in advance with a reasonableaccuracy.
(ii) These contracts are preferred when the cost of material and labour is not steady and the contract completion may take number ofyears.
(iii) The different cost to be included in the execution of the contract are mutually agreed, so that no dispute may arise in future in this respect. Under such type of contacts, contractee is allowed to check or scrutinize the concerned books, documents andaccounts.
(iv) Such a contract offers a fair price to the contractee and also a reasonable profit to the contractor.
(v) The contract price here is ascertained by adding a fixed and mutually predecided component of profit to the total cost of thework.
Since, $M / s$ Builders \& Co. is not confident in quoting the price, socost plus contact is better option to safeguard it from unexpectedlosses.
(d) Molasses is a by productof sugar and treatment of by-product in cost accounting is as follows.
(i) When they are of small total value, the amount realized from their sale may be dealt asfollows:

- Sales value of the by-product may be credited to Profit and Loss Account and no credit be given in Cost Accounting. The credit to Profit and Loss Account here is treated either as a miscellaneous income or as additional salesrevenue.
- The sale proceeds of the by-product may be treated as deduction from the total costs. The sales proceeds should be deducted either from production cost or cost of sales.
(ii) When theyrequire further processing: In this case, the net realisablevalue of the by-product at the split-off point may be arrived at by subtracting the further processing cost from realisable value of by-product. If the value is small, it may be treated as discussed in (i)above.

