## PAPER - 3: COST AND MANAGEMENT ACCOUNTING <br> QUESTIONS

## Material Cost

1. Sky \& Co., an unregistered supplier under GST, purchased material from Vye Ltd. which is registered under GST. The following information is available for one lot of 5,000 units of material purchased:

Listed price of one lot
Trade discount
CGST and SGST (Credit Not available)
Cash discount
(Will be given only if payment is made within 30 days.)
Toll Tax paid
Freight and Insurance
₹ 5,000

Demurrage paid to transporter
Commission and brokerage on purchases
Amount deposited for returnable containers
Amount of refund on returning the container
Other Expenses
₹ $2,50,000$
@ 10\% on listed price
12\% (6\% CGST + 6\% SGST)
@ 10\%
$20 \%$ of material shortage is due to normal reasons.
The payment to the supplier was made within 21 days of the purchases.
You are required to CALCULATE cost per unit of material purchased by Sky \& Co.

## Employee Cost

2. A total of 108 labour hours have been put in a particular job card for repair work engaging a semi-skilled and skilled labour (Mr. Deep and Mr. Sam respectively).

The hours devoted by both the workers individually on daily basis for this particular job are given below:

| Monday | Tuesday | Wednesday | Thursday | Friday |
| :---: | :---: | :---: | :---: | :---: |
| 10.5 | 8.0 | 10.5 | 9.5 | 10.5 |

The skilled labour also worked on Saturday for 10 hours.

Sunday is a weekly holiday and each worker has to work for 8 hours on all week days and 5 hours on Saturdays; the workers are however paid full wages for Saturday (8 hours for 5 hours worked).
Semi-skilled and skilled worker is paid ordinary wage @ ₹ 400 and ₹ 600 respectively per day of 8 hours labour. Further, the workers are also paid dearness allowance @ 20\%.
Extra hours worked over and above 8 hours are also paid at ordinary wage rate however, overtime premium of $100 \%$ of ordinary wage rate is paid if a worker works for more than 9 hours in a day AND 48 hours in a week.
You are required to COMPUTE the wages payable to Mr. Deep (Semi-skilled) and Mr. Sam (Skilled).

## Overheads: Absorption Costing Method

3. Pretz Ltd. is a manufacturing company having two production departments, ' A ' \& ' B ' and two service departments ' $X$ ' \& ' $Y$ '. The following is the budget for March, 2022:

|  | Total (₹) | $\mathbf{A}(₹)$ | $\mathbf{B}(₹)$ | $\mathbf{X}(₹)$ | $\mathbf{Y}(₹)$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Direct material |  | $2,00,000$ | $4,00,000$ | $4,00,000$ | $2,00,000$ |
| Direct wages |  | $10,00,000$ | $4,00,000$ | $2,00,000$ | $4,00,000$ |
| Factory rent | $9,00,000$ |  |  |  |  |
| Power (Machine) | $5,10,000$ |  |  |  |  |
| Depreciation | $2,00,000$ |  |  |  |  |
| General Lighting | $3,00,000$ |  |  |  |  |
| Perquisites | $4,00,000$ |  |  |  |  |
| Additional information: |  |  |  |  |  |
| Area (Sq. ft.) |  |  |  |  |  |
| Capital value of assets (₹ lakhs) | 40 | 80 | 20 | 20 |  |
| Light Points | 10 | 20 | 10 | 10 |  |
| Machine hours | 1,000 | 2,000 | 1,000 | 1,000 |  |
| Horse power of machines | 50 | 40 | 15 | 25 |  |

A technical assessment of the apportionment of expenses of service departments is as under:

|  | A | B | $\mathbf{X}$ | $\mathbf{Y}$ |
| :--- | :---: | :---: | :---: | :---: |
| Service Dept. 'X' (\%) | 55 | 25 | - | 20 |
| Service Dept. 'Y' (\%) | 60 | 35 | 5 | - |

You are required to:
(a) PREPARE a statement showing distribution of overheads to various departments.
(b) PREPARE a statement showing re-distribution of service departments expenses to production departments using-
(i) Simultaneous equation method
(ii) Trial and error method
(iii) Repeated Distribution Method.

## Activity Based Costing

4. PCP Limited belongs to the apparel industry. It specializes in the distribution of fashionable garments. It buys from the industry and resells the same to the following two different supermarkets:
(i) Supermarket A dealing in Adults' garments (Age group 15-30)
(ii) Supermarket B dealing in Kids' garments (Age group 5 -10)

The following data for the month of April in respect of PCP Limited has been reported:

|  | Supermarket A (₹) | Supermarket B (₹) |
| :--- | ---: | ---: |
| Average revenue per delivery | $1,69,950$ | 57,750 |
| Average cost of goods sold per delivery | $1,65,000$ | 55,000 |
| Number of deliveries | 660 | 1,650 |

In the past, PCP Limited has used gross margin percentage to evaluate the relative profitability of its supermarket segments.
The company plans to use activity -based costing for analysing the profitability of its supermarket segments.
The April month's operating costs (other than cost of goods sold) of PCP Limited are $₹ 16,55,995$. These operating costs are assigned to five activity areas. The cost in each area and Activity analysis including cost driver for the month of April are as follows:

| Activity Area | Total costs (₹) | Cost Driver |
| :--- | ---: | :--- |
| Store delivery | $3,90,500$ | Store deliveries |
| Cartons dispatched to store | $4,15,250$ | Cartons dispatched to a store <br> per delivery |
| Shelf-stocking at customer store | 64,845 | Hours of shelf-stocking |
| Line-item ordering | $3,45,400$ | Line-items per purchase order |
| Customer purchase order <br> processing | $4,40,000$ | Purchase orders by customers |

Other data for the month of April include the following:

|  | Supermarket A | Supermarket B |
| :--- | ---: | ---: |
| Total number of store deliveries | 1,100 | 2,805 |
| Average number of cartons shipped per store <br> delivery | 250 | 50 |
| Average number of hours of shelf-stocking per <br> store delivery | 6 | 1.5 |
| Average number of line items per order | 14 | 12 |
| Total number of orders | 770 | 1,980 |

Required:
(i) COMPUTE gross-margin percentage for each of its supermarket segments and compute PCP Limited's operating income.
(ii) COMPUTE the operating income of each supermarket segments using the activitybased costing information.

## Cost Sheet

5. A Ltd. produces a single product $X$. During the month of December 2021, the company has produced 14,560 tonnes of $X$. The details for the month of December 2021 are as follows:
(i) Materials consumed ₹ $15,00,000$
(ii) Power consumed 13,000 Kwh @ ₹ 7 per Kwh
(iii) Diesels consumed 1,000 litres @ ₹ 93 per litre
(iv) Wages \& salary paid - ₹ $64,00,000$
(v) Gratuity \& leave encashment paid - ₹ $44,20,000$
(vi) Hiring charges paid for HEMM- ₹ $13,00,000$
(vii) Hiring charges paid for cars used for official purpose - ₹ 80,000
(viii) Reimbursement of diesel cost for the cars - ₹ 20,000
(ix) The hiring of cars attracts GST under RCM @ $5 \%$ without credit.
(x) Maintenance cost paid for weighing bridge (used for weighing of final goods at the time of despatch) - ₹ 7,000
(xi) AMC cost of CCTV installed at weighing bridge (used for weighing of final goods at the time of despatch) and factory premises is ₹ 6,000 and ₹ 18,000 per month respectively.
(xii) TA/ DA and hotel bill paid for sales manager- ₹ 16,000
(xiii) The company has 180 employees works for 26 days in a month.

Required:
(a) PREPARE a Cost sheet for the month of December 2021.
(b) COMPUTE Earnings per manshift (EMS) and Output per manshift (OMS) for the month of December 2021.

## Cost Accounting System

6. X Ltd. maintains a non-integrated accounting system for the purpose of management information. The following are the data related with year 2021-22:

| Particulars | Amount ('000) |
| :--- | ---: |
| Opening balances: |  |
| - $\quad$ Stores ledger control A/c | 48,000 |
| - $\quad$ Work-in-process control A/c | 12,000 |
| - Finished goods control A/c | $2,58,000$ |
| - $\quad$ Building construction A/c | 6,000 |
| - $\quad$ Cost ledger control A/c | $3,24,000$ |
| During the year following transactions took place: |  |
| Materials: |  |
| - Purchased | 24,000 |
| - Issued to production | 30,000 |
| - Issued to general maintenance | 3,600 |
| - Issued to building construction | 2,400 |
| Wages: |  |
| - Gross wages paid | 90,000 |
| - Indirect wages paid | 24,000 |
| - For building construction | 6,000 |
| Factory overheads: |  |
| - Actual amount incurred (excluding items shown above) | 96,000 |
| - Absorbed in building construction | 12,000 |
| - Under-absorbed | 4,800 |
| Royalty paid | 3,000 |
| Selling distribution and administration overheads | 15,000 |
| Sales | $2,70,000$ |

At the end of the year, the stock of raw material and work-in-process was $₹ 3,30,00,000$ and $₹ 15,00,000$ respectively. The loss arising in the raw material account is treated as factory overheads. The building under construction was completed during the year. Gross profit margin is $20 \%$ on sales.
Required:
PREPARE the relevant control accounts to record the above transactions in the cost ledger of the company.

## Batch Costing

7. Brostom Ltd. manufactures 'Stent' that is used by hospitals in angioplasty, a procedure used to open blocked coronary arteries without open-heart surgery. As per the estimates provided by Pharmaceutical Industry Bureau, there will be a demand of 1 crore 'Stents' in the coming year. Brostom Ltd. is having a market share of $10 \%$ of the total market demand of the Stents. It is estimated that it costs ₹ 3.00 as inventory holding cost per stent per month and that the set-up cost per run of stent manufacture is ₹ 450 .
Required:
(i) WHAT would be the optimum run size for Stent manufacture?
(ii) WHAT is the minimum inventory holding cost?

## Job Costing

8. KJ Motors Ltd. is a manufacturer of auto components. Following are the details of expenses for the year 2020-21:

|  |  | $(₹)$ |
| :--- | :--- | ---: |
| (i) | Opening Stock of Material | $15,00,000$ |
| (ii) | Closing Stock of Material | $20,00,000$ |
| (iii) | Purchase of Material | $1,80,50,000$ |
| (iv) | Direct Labour | $90,50,000$ |
| (v) | Factory Overhead | $30,80,000$ |
| (vi) | Administrative Overhead | $20,50,400$ |

During the FY 2021-22, the company has received an order from a car manufacturer where it estimates that the cost of material and labour will be ₹ $80,00,000$ and ₹ $40,50,000$ respectively. The company charges factory overhead as a percentage of direct labour and administrative overheads as a percentage of factory cost based on previous year's cost.
Cost of delivery of the components at customer's premises is estimated at ₹ $9,50,000$.
You are required to:
(i) CALCULATE the overhead recovery rates based on actual costs for 2020-21.
(ii) PREPARE a Job cost sheet for the order received and the price to be quoted if the desired profit is $25 \%$ on sales.

## Process Costing

9. A company produces a component, which passes through two processes. During the month of December, 2021, materials for 40,000 components were put into Process-I of which 30,000 were completed and transferred to Process-II. Those not transferred to Process- II were $100 \%$ complete as to materials cost and $50 \%$ complete as to labour and overheads cost. The Process-I costs incurred were as follows:

| Direct Materials | ₹ $6,00,000$ |
| :--- | :--- |
| Direct Wages | ₹ $7,00,000$ |
| Factory Overheads | ₹ $4,90,000$ |

Of those transferred to Process II, 28,000 units were completed and transferred to finished goods stores. There was a normal loss with no salvage value of 200 units in Process II. There were 1,800 units, remained unfinished in the process with $100 \%$ complete as to materials and $25 \%$ complete as regard to wages and overheads.

Costs incurred in Process-II are as follows:

| Packing Materials | ₹ $1,60,000$ |
| :--- | :--- |
| Direct Wages | ₹ $1,42,250$ |
| Factory Overheads | $₹ 1,70,700$ |

Packing material cost is incurred at the end of the second process as protective packing to the completed units of production.
Required:
(i) PREPARE Statement of Equivalent Production, Cost per unit and Process I A/c.
(ii) PREPARE statement of Equivalent Production, Cost per unit and Process II A/c.

## Service Costing

10. Navya LMV Pvt. Ltd, operates cab/ car rental service in Delhi/NCR. It provides its service to the offices of Noida, Gurugram and Faridabad. At present it operates CNG fuelled cars but it is also considering to upgrade these into Electric vehicle (EV). The details related with the owning of CNG \& EV propelled cars are as tabulated below:

| Particulars | CNG Car | EV Car |
| :--- | ---: | ---: |
| Car purchase price (₹) | $9,20,000$ | $15,20,000$ |
| Govt. subsidy on purchase of car $(₹)$ | -- | $1,50,000$ |
| Life of the car | 15 years | 10 years |


| Residual value $(₹)$ | 95,000 | $1,70,000$ |
| :--- | ---: | ---: |
| Mileage | $20 \mathrm{~km} / \mathrm{kg}$ | 240 km per charge |
| Electricity consumption per full charge | -- | 30 Kwh |
| CNG cost per Kg $(₹)$ | 60 | -- |
| Power cost per Kwh $(₹)$ | -- | 7,60 |
| Annual Maintenance cost $(₹)$ | 8,000 | 5,200 |
| Annual insurance cost $(₹)$ | 7,600 | 14,600 |
| Tyre replacement cost in every 5 -year (₹) | 16,000 | 16,000 |
| Battery replacement cost in every 8 - year (₹) | 12,000 | $5,40,000$ |

Apart from the above, the following are the additional information:

| Particulars |  |
| :--- | :---: |
| Average distance covered by a car in a month | $1,500 \mathrm{~km}$ |
| Driver's salary (₹) | 20,000 p.m |
| Garage rent per car (₹) | 4,500 p.m |
| Share of Office \& Administration cost per car (₹) | 1,500 p.m |

Required:
CALCULATE the operating cost of vehicle per month per car for both CNG \& EV options.

## Standard Costing

11. The standard output of a Product ' $D$ ' is 50 units per hour in manufacturing department of a Company employing 100 workers. In a 40 hours week, the department produced 1,920 units of product ' $D$ ' despite $5 \%$ of the time paid was lost due to an abnormal reason. The hourly wage rates actually paid were ₹ 12.40 , ₹ 12.00 and ₹ 11.40 respectively to Group 'A' consisting 10 workers, Group ' B ' consisting 30 workers and Group 'C' consisting 60 workers. The standard wage rate per labour is same for all the workers. Labour Efficiency Variance is given ₹ $480(\mathrm{~F})$.
You are required to COMPUTE:
(i) Total Labour Cost Variance.
(ii) Total Labour Rate Variance.
(iii) Total Labour Gang Variance.
(iv) Total Labour Yield Variance, and
(v) Total Labour Idle Time Variance.

## Marginal Costing

12. A Limited manufactures three different products and the following information has been collected from the books of accounts:

|  | Products |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | S | T | U |  |
| Sales Mix | $25 \%$ | $35 \%$ | $40 \%$ |  |
| Selling Price | $₹ 600$ | $₹ 800$ | $₹ 400$ |  |
| Variable Cost | $₹ 300$ | $₹ 400$ | $₹ 240$ |  |
| Total Fixed Costs | $₹ 36,00,000$ |  |  |  |
| Total Sales | ₹ $1,20,00,000$ |  |  |  |

The company has currently under discussion, a proposal to discontinue the manufacture of Product $U$ and replace it with Product $M$, when the following results are anticipated:

|  | Products |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | S | T | M |  |
| Sales Mix | $40 \%$ | $35 \%$ | $25 \%$ |  |
| Selling Price | $₹ 600$ | $₹ 800$ | $₹ 600$ |  |
| Variable Cost | $₹ 300$ | $₹ 400$ | $₹ 300$ |  |
| Total Fixed Costs | ₹ $36,00,000$ |  |  |  |
| Total Sales | ₹ $1,28,00,000$ |  |  |  |

Required:
(i) COMPUTE the PV ratio, total contribution, profit and Break-even sales for the existing product mix.
(ii) COMPUTE the PV ratio, total contribution, profit and Break-even sales for the proposed product mix

## Budget and Budgetary Control

13. Maharatna Ltd., a public sector undertaking (PSU), produces product A. The company is in process of preparing its revenue budget for the year 2022. The company has the following information which can be useful in preparing the budget:
(i) It has anticipated 12\% growth in sales volume from the year 2021 of 4,20,000 tonnes.
(ii) The sales price of ₹ 23,000 per tonne will be increased by $10 \%$ provided Wholesale Price Index (WPI) increases by $5 \%$.
(iii) To produce one tonne of product $\mathrm{A}, 2.3$ tonnes of raw material are required. The raw material cost is ₹ 4,500 per tonne. The price of raw material will also increase by $10 \%$ if WPI increase by $5 \%$.
(iv) The projected increase in WPI for 2022 is $4 \%$
(v) A total of 6,000 employees works for the company. The company works 26 days in a month.
(vi) $85 \%$ of employees of the company are permanent and getting salary as per 5 - year wage agreement. The earnings per manshift (means an employee cost for a shift of 8 hours) is ₹ 3,000 (excluding terminal benefits). The new wage agreement will be implemented from $1^{\text {st }}$ July 2022 and it is expected that a $15 \%$ increase in pay will be given.
(vii) The casual employees are getting a daily wage of ₹ 850 . The wages in linked to Consumer Price Index (CPI). The present CPI is 165.17 points and it is expected to be 173.59 points in year 2022.
(viii) Power cost for the year 2021 is ₹ $42,00,000$ for $7,00,000$ units ( 1 unit $=1 \mathrm{Kwh}$ ). $60 \%$ of power is used for production purpose (directly related to production volume) and remaining are for employee quarters and administrative offices.
(ix) During the year 2021, the company has paid ₹ $60,00,000$ for safety and maintenance works. The amount will increase in proportion to the volume of production.
(x) During the year 2021, the company has paid ₹ $1,20,000$ for the purchase of diesel to be used in car hired for administrative purposes. The cost of diesel will increase by $15 \%$ in year 2022.
(xi) During the year 2021, the company has paid ₹ $6,00,000$ for car hire charges (excluding fuel cost). In year 2022, the company has decided to reimburse the diesel cost to the car rental company. Doing this will attract 5\% GST on Reverse Charge Mechanism (RCM) basis on which the company will not get GST input credit.
(xii) Depreciation on fixed assets for the year 2021 is ₹ $80,40,00,000$ and it will be $15 \%$ lower in 2022.
Required:
From the above information PREPARE Revenue (Flexible) budget for the year 2022 and also show the budgeted profit/ loss for the year.

## Miscellaneous

14. (a) EXPLAIN the difference between controllable \& uncontrollable costs?
(b) DEFINE cost plus contract? STATE its advantages.
(c) "Is reconciliation of cost accounts and financial accounts necessary in case of integrated accounting system?" EXPLAIN.
(d) DISCUSS the impact of Information Technology in Cost Accounting.

## SUGGESTED HINTS/ANSWERS

## 1. Calculation of cost per unit:

| Particulars | Units | (₹) |
| :---: | :---: | :---: |
| Listed Price of Materials | 5,000 | 2,50,000 |
| Less: Trade discount @ 10\% on invoice price |  | $(25,000)$ |
|  |  | 2,25,000 |
| Add: CGST @ 6\% of ₹ 2,25,000 |  | 13,500 |
| Add: SGST @ 6\% of ₹ $2,25,000$ |  | 13,500 |
|  |  | 2,52,000 |
| Add: Toll Tax |  | 5,000 |
| Freight and Insurance |  | 17,000 |
| Commission and Brokerage Paid |  | 10,000 |
| Add: Cost of returnable containers:  <br>  Amount deposited ₹ 30,000 <br>  Less: Amount refunded $\underline{ } 20,000$ |  |  |
|  |  |  |
|  |  | 10,000 |
|  |  | 2,94,000 |
| Add: Other Expenses @ $2 \%$ of Total $\operatorname{Cost}\left(\frac{₹ 2,94,000}{98} \times 2\right)$ |  | 6,000 |
| Total cost of material |  | 3,00,000 |
| Less: Shortage material due to normal reasons @ 20\% | 1,000 | - |
| Total cost of material of good units | 4,000 | 3,00,000 |
| Cost per unit (₹ $3,00,000 / 4,000$ units) |  | 75 |

## Note:

1. GST is payable on net price i.e., listed price less discount.
2. Cash discount is treated as interest and finance charges; hence it is ignored.
3. Demurrage is penalty imposed by the transporter for delay in uploading or off-loading of materials. It is an abnormal cost and not included.
4. Shortage due to normal reasons should not be deducted from cost to ascertain total cost of good units.
5. Calculation of total normal hours to be paid for Mr. Deep (Semi-skilled):

| Day | Normal <br> hours | Extra <br> hours | Overtime <br> hours | Equivalent <br> normal hours for <br> overtime worked | Total normal <br> hours |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | A | B | C | D = C×2 | E = A+B+D |
| Monday | 8 | 1 | $11 / 2$ | 3 | 12 |
| Tuesday | 8 | -- | -- | -- | 8 |
| Wednesday | 8 | 1 | $11 / 2$ | 3 | 12 |
| Thursday | 8 | 1 | $1 / 2$ | 1 | 10 |
| Friday | 8 | 1 | $11 / 2$ | 3 | 12 |
| Saturday | -- | -- | -- | -- | -- |
| Total | 40 | 4 | 5 | 10 | 54 |

## Calculation of total normal hours to be paid for Mr. Sam (Skilled):

| Day | Normal <br> hours | Extra <br> hours | Overtime <br> hours | Equivalent normal <br> hours for overtime <br> worked | Total <br> normal <br> hours |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | A | B | C | $\mathrm{D}=\mathbf{C \times 2}$ | $\mathrm{E}=\mathrm{A}+\mathrm{B}+\mathrm{D}$ |
| Monday | 8 | 1 | $11 / 2$ | 3 | 12 |
| Tuesday | 8 | --- | -- | --- | 8 |
| Wednesday | 8 | 1 | $11 / 2$ | 3 | 12 |
| Thursday | 8 | 1 | $1 / 2$ | 1 | 10 |
| Friday | 8 | 1 | $11 / 2$ | 3 | 12 |
| Saturday | 5 | $3^{*}+1$ | $1^{* *}$ | 2 | 11 |
| Total | 45 | $\mathbf{8}$ | $\mathbf{6}$ | $\mathbf{1 2}$ | 65 |

*Mr. Sam will be paid for equivalent 8 normal working hours at ordinary wage rate, though 5 hours of working is required on Saturday. Further, extra $9^{\text {th }}$ hour worked will also be paid at ordinary wage rate.
** Overtime of 1 hour worked over and above 9 hours will be paid at overtime rate.

## Wages payable:

|  | Mr. Deep | Mr. Sam |
| :--- | ---: | ---: |
| Basic Wages per hour (₹ 400/8, ₹ 600/8) (₹) | 50 | 75 |
| Dearness allowance per hour (@ 20\%) (₹) | 10 | 15 |
| Hourly rate (₹) | 60 | 90 |
| Total equivalent normal hours | 54 | 65 |
| Total Wages payable (₹) | $\mathbf{3 , 2 4 0}$ | $\mathbf{5 , 8 5 0}$ |

3. (a) Primary Distribution of Overheads

|  | Basis | Total (₹) | $\mathbf{A}(₹)$ | $\mathbf{B}(₹)$ | $\mathbf{X}(₹)$ | $\mathbf{Y}(₹)$ |
| :--- | :--- | ---: | ---: | ---: | ---: | ---: |
| Direct <br> materials | Direct | $6,00,000$ | - | $-4,00,000$ | $2,00,000$ |  |
| Direct wages | Direct | $6,00,000$ | - | - | $2,00,000$ | $4,00,000$ |
| Factory rent <br> $(2: 1: 1: 2)$ | Area | $9,00,000$ | $3,00,000$ | $1,50,000$ | $1,50,000$ | $3,00,000$ |
| Power <br> (Machine) <br> $(10: 16: 3: 5)^{*}$ | H.P. $\times$ Machine <br> Hrs. | $5,10,000$ | $1,50,000$ | $2,40,000$ | 45,000 | 75,000 |
| Depreciation <br> $(2: 4: 1: 1)$ | Capital value | $2,00,000$ | 50,000 | $1,00,000$ | 25,000 | 25,000 |
| General <br> Lighting <br> $(1: 2: 1: 1)$ | Light Points | $3,00,000$ | 60,000 | $1,20,000$ | 60,000 | 60,000 |
| Perquisites <br> $(5: 2: 1: 2)$ | Direct Wages | $4,00,000$ | $2,00,000$ | 80,000 | 40,000 | 80,000 |

*\{(1000×50) : $(2000 \times 40):(1000 \times 15):(1000 \times 25)\}$
(50000: 80000: 15000:25000)
(10: $16: 3: 5)$
(b) (i) Redistribution of Service Department's expenses using 'Simultaneous equation method'

$$
\begin{array}{ll}
X & =9,20,000+0.05 \mathrm{Y} \\
Y & =11,40,000+0.20 \mathrm{X}
\end{array}
$$

Substituting the value of $X$,

$$
\begin{aligned}
Y & =11,40,000+0.20(9,20,000+0.05 \mathrm{Y}) \\
& =13,24,000+0.01 \mathrm{Y} \\
Y-0.01 \mathrm{Y} & =13,24,000 \\
Y & =\frac{13,24,000}{0.99} \\
Y & =₹ 13,37,374
\end{aligned}
$$

The total expense of Y is $₹ 13,37,374$ and that of X is $₹ 9,86,869$ i.e., ₹ $9,20,000$ $+(0.05 \times ₹ 13,37,374)$.
Distribution of Service departments' overheads to Production departments

|  | Production Departments |  |
| :--- | ---: | ---: |
|  | $\mathbf{A}(₹)$ | $\mathbf{B}(₹)$ |
| Overhead as per primary distribution | $7,60,000$ | $6,90,000$ |
| Dept- X (55\% and 25\% of ₹ $9,86,869)$ | $5,42,778$ | $2,46,717$ |
| Dept- $Y(60 \%$ and $35 \%$ of $₹ 13,37,374)$ | $8,02,424$ | $4,68,081$ |
|  | $\mathbf{2 1 , 0 5}, \mathbf{2 0 2}$ | $\mathbf{1 4 , 0 4 , 7 9 8}$ |

(ii) Redistribution of Service Department's expenses using 'Trial and Error Method':

|  | Service Departments |  |
| :---: | :---: | :---: |
|  | X (₹) | Y (₹) |
| Overheads as per primary distribution | 9,20,000 | 11,40,000 |
| (i) Apportionment of Dept-X expenses to Dept-Y ( $20 \%$ of ₹ $9,20,000$ ) | --- | 1,84,000 |
|  | --- | 13,24,000 |
| (ii) Apportionment of Dept-Y expenses to Dept-X ( $5 \%$ of ₹ $13,24,000$ ) | 66,200 | --- |
| (i) Apportionment of Dept-X expenses to Dept-Y ( $20 \%$ of ₹ 66,200 ) | -- | 13,240 |
| (ii) Apportionment of Dept-Y expenses to Dept-X ( $5 \%$ of ₹ 13,240 ) | 662 | --- |


| (i) | Apportionment of Dept-X expenses to Dept-Y <br> (20\% of ₹ 662) |  | 132 |
| :--- | :--- | ---: | ---: |
| (ii) Apportionment of Dept-Y expenses to Dept-X <br> (5\% of ₹ 132) <br> Total 7 |  |  |  |

Distribution of Service departments' overheads to Production departments

|  | Production Departments |  |
| :--- | ---: | ---: |
|  | $\mathbf{A}$ (₹) | B (₹) |
| Overhead as per primary distribution | $7,60,000$ | $6,90,000$ |
| Dept- $X$ (55\% and $25 \%$ of ₹ $9,86,869)$ | $5,42,778$ | $2,46,717$ |
| Dept- $Y(60 \%$ and $35 \%$ of ₹ $13,37,372)$ | $8,02,423$ | $4,68,080$ |
|  | $\mathbf{2 1 , 0 5 , 2 0 1}$ | $\mathbf{1 4 , 0 4 , 7 9 7}$ |

(iii) Redistribution of Service Department's expenses using 'repeated distribution method':

|  | A (₹) | B (₹) | X (₹) | Y (₹) |
| :---: | :---: | :---: | :---: | :---: |
| Overhead as per primary distribution | 7,60,000 | 6,90,000 | 9,20,000 | 11,40,000 |
| Dept. X overhead apportioned in the ratio (55:25:-:20) | 5,06,000 | 2,30,000 | $(9,20,000)$ | 1,84,000 |
| Dept. Y overhead apportioned in the ratio (60:35:5: -) | 7,94,400 | 4,63,400 | 66,200 | (13,24,000) |
| Dept. X overhead apportioned in the ratio (55:25:-:20) | 36,410 | 16,550 | $(66,200)$ | 13,240 |
| Dept. Y overhead apportioned in the ratio (60:35:5: -) | 7,944 | 4,634 | 662 | $(13,240)$ |
| Dept. X overhead apportioned in the ratio (55:25:-:20) | 364 | 166 | (662) | 132 |

$\left.\begin{array}{|lrr|r|r|r|r|}\hline \begin{array}{l}\text { Dept. } \\ \text { apportioned } \\ \text { (in the ratio } \\ (60: 35: 5:-)\end{array} & & \text { overhead }\end{array}\right)$
4. (i)

PCP Limited's
Statement of operating income and gross margin percentage for each of its supermarket segments

| Particulars | Supermarket A | Supermarket B | Total |
| :--- | ---: | ---: | ---: |
| Revenues: (₹) | $11,21,67,000$ <br> $(660 \times ₹ 1,69,950)$ | $9,52,87,500$ <br> $(1,650 \times ₹ 57,750)$ | $20,74,54,500$ |
| Less: Cost of goods <br> sold: (₹) | $10,89,00,000$ <br> $(660 \times ₹ 1,65,000)$ | $9,07,50,000$ <br> $(1650 \times ₹ 55,000)$ | $19,96,50,000$ |
| Gross Margin: (₹) | $32,67,000$ | $\mathbf{4 5 , 3 7 , 5 0 0}$ | $\mathbf{7 8 , 0 4 , 5 0 0}$ |
| Less: Other operating <br> costs: (₹) |  |  | $16,55,995$ |
| Operating income: (₹) |  |  | $\mathbf{6 1 , 4 8 , 5 0 5}$ |
| Gross Margin | $\mathbf{2 . 9 1 \%}$ |  | $\mathbf{4 . 7 6 \%}$ |
| Operating income \% |  |  | $\mathbf{3 . 7 6 \%}$ |

(ii)

Operating Income Statement of each distribution channel in April (Using the Activity based Costing information)

|  | Supermarket A | Supermarket B |
| :--- | ---: | ---: |
| Gross margin (₹) : (A) <br> (Refer to (i) part of the answer) | $32,67,000$ | $45,37,500$ |
| Operating cost (₹): (B) <br> (Refer to working note) | $6,55,600$ | $10,00,395$ |
| Operating income (₹): (A-B) | $\mathbf{2 6 , 1 1 , 4 0 0}$ | $\mathbf{3 5 , 3 7 , 1 0 5}$ |
| Operating income (in \%) <br> (Operating income/Revenue) $\times 100$ | $\mathbf{2 . 3 3}$ | $\mathbf{3 . 7 1}$ |

## Working note:

Computation of rate per unit of the cost allocation base for each of the five activity areas for the month of April

|  | (₹) |
| :--- | :---: |
| Store delivery <br> $[₹ 3,90,500 /(1,100+2,805$ store deliveries $)]$ | 100 per delivery |
| Cartons dispatched <br> $[₹ 4,15,250 /\{(250 \times 1,100)+(50 \times 2,805)\}$ carton dispatches $]$ | 1 per carton dispatch |
| Shelf-stocking at customer store $(₹)$ <br> ₹ $64,845 /\{(6 \times 1,100)+(1.5 \times 2,805)\}$ hours $]$ | 6 per hour |
| Line item ordering <br> $[₹ 3,45,400 /\{(14 \times 770)+(12 \times 1,980)\}$ line items $]$ | 10 per line item order |
| Customer purchase order processing <br> $[₹ 4,40,000 /(770+1,980$ orders $)]$ | 160 per order |

Computation of operating cost of each distribution channel:

|  | Supermarket ( ${ }^{\text {\% }}$ ) | Supermarket B (₹) |
| :---: | :---: | :---: |
| Store delivery | (₹ $100 \times 1,100$ deliveries) | (₹ $100 \times 2,805$ deliveries) |
| Cartons dispatched | $\begin{array}{r} 2,75,000 \\ (₹ 1 \times 250 \text { cartons } \times 1,100 \\ \text { deliveries) } \\ \hline \end{array}$ | $\begin{array}{r} 1,40,250 \\ (₹ 1 \times 50 \text { cartons } \times 2,805 \\ \text { deliveries }) \end{array}$ |
| Shelf stocking | $\begin{array}{r} 39,600 \\ (₹ 6 \times 1,100 \text { deliveries } \times 6 \mathrm{Av} . \\ \text { hrs. }) \end{array}$ | $\begin{array}{r} 25,245 \\ (₹ 6 \times 2,805 \text { deliveries } \times 1.5 \\ \text { Av. hrs) } \end{array}$ |
| Line item ordering | $\begin{array}{r} 1,07,800 \\ (₹ 10 \times 14 \text { line item } \times 770 \\ \text { orders) } \end{array}$ | $\begin{array}{r} 2,37,600 \\ (₹ 10 \times 12 \text { line item } \times 1,980 \\ \text { orders }) \end{array}$ |
| Customer purchase order processing | $\begin{array}{r} 1,23,200 \\ (₹ 160 \times 770 \text { orders) } \end{array}$ | (₹ $160 \times 1,980$ orders) |
| Operating cost | 6,55,600 | 10,00,395 |

5. (a) Cost Sheet of A Ltd. for the month of December 2021

| Particulars | Amount (₹) | Amount (₹) |
| :---: | :---: | :---: |
| Materials consumed |  | 15,00,000 |
| Wages \& Salary | 64,00,000 |  |
| Gratuity \& leave encashment | 44,20,000 | 1,08,20,000 |
| Power cost ( $13,000 \mathrm{kwh} \times$ ₹ 7 ) | 91,000 |  |
| Diesel cost (1,000 Itr $\times$ ₹ 93 ) | 93,000 | 1,84,000 |
| HEMM hiring charges |  | 13,00,000 |
| Prime Cost |  | 1,38,04,000 |
| AMC cost of CCTV installed at factory premises |  | 18,000 |
| Cost of Production/ Cost of Goods Sold |  | 1,38,22,000 |
| Hiring charges of cars | 80,000 |  |
| Reimbursement of diesel cost | 20,000 |  |
|  | 1,00,000 |  |
| Add: GST @ $5 \%$ on RCM basis | 5,000 | 1,05,000 |
| Maintenance cost for weighing bridge | 7,000 |  |
| AMC cost of CCTV installed at weigh bridge | 6,000 | 13,000 |
| TA/ DA \& hotel bill of sales manager |  | 16,000 |
| Cost of Sales |  | 1,39,56,000 |

(b) Manshift $=180$ employees $\times 26$ days $=4,680$ manshifts

Computation of earnings per manshift (EMS):

$$
\begin{aligned}
\text { EMS } & =\frac{\text { Total employee benefits paid }}{\text { Manshift }} \\
& =\frac{₹ 1,08,20,000}{4,680}=₹ 2,312
\end{aligned}
$$

Computation of Output per manshift (OMS):

$$
\begin{aligned}
\text { OMS } & =\frac{\text { Total Output/ Production }}{\text { Manshift }} \\
& =\frac{14,560 \text { Tonne }}{4,680}=3.11 \text { tonne }
\end{aligned}
$$

6. 

Cost Ledger Control Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Costing P\&L A/c | $2,70,000$ | By Balance b/d | $3,24,000$ |
| To Building Construction A/c | 26,400 | By Stores Ledger Control <br> A/c | 24,000 |
| To Balance c/d | $2,89,800$ | By Wages Control A/c | 90,000 |
|  |  | By Factory overhead control <br> A/c | 96,000 |
|  |  | By Royalty A/c | 3,000 |
|  |  | By Selling, Distribution and <br> Administration overheads | 15,000 |
|  |  | By Costing P\&L A/c | 34,200 |
|  | $5,86,200$ |  | $5,86,200$ |

Stores Ledger Control Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in ‘000) |
| :--- | ---: | :--- | ---: |
| To Balance b/d | 48,000 | By WIP control A/c | 30,000 |
| To Cost Ledger control A/c | 24,000 | By Factory overheads <br> control A/c | 3,600 |
|  |  | By Building construction A/c | 2,400 |
|  |  | By Factory overhead control <br> A/c (loss) (Bal. fig) | 3,000 |
|  |  | By Balance c/d | 33,000 |
|  | 72,000 |  | 72,000 |

Work-in-process Control Account

| Particulars | (₹ in '000) | Particulars | $(₹$ in '000) |
| :--- | ---: | :--- | ---: |
| To Balance b/d | 12,000 | By Finished goods control <br> A/c | $1,99,800$ |
| To Stores Ledger control A/c | 30,000 |  |  |
| To Wages Control A/c | 60,000 |  |  |
| To Factory overhead control <br> A/c | $1,09,800$ |  | 15,000 |
| To Royalty A/c | 3,000 | By Balance c/d | $2,14,800$ |
|  | $2,14,800$ |  |  |

Finished Goods Control Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in ‘000) |
| :--- | ---: | :--- | ---: |
| To Balance b/d | $2,58,000$ | By Cost of Goods Sold A/c <br> (Refer working note) | $2,16,000$ |
| To WIP control A/c | $1,99,800$ | By Balance c/d | $2,41,800$ |
|  | $4,57,800$ |  | $4,57,800$ |

Cost of Sales Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Cost of Goods Sold A/c | $2,16,000$ | By Costing P\&L A/c | $2,31,000$ |
| To Selling, Distribution and <br> Administration A/c | 15,000 |  |  |
|  | $2,31,000$ |  | $2,31,000$ |

Costing P\&L Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in ‘000) |
| :--- | ---: | :--- | ---: |
| To Cost of Sales A/c | $2,31,000$ | By Cost Ledger control A/c | $2,70,000$ |
| To Factory overhead control A/c | 4,800 |  |  |
| To Cost Ledger control A/c | 34,200 |  |  |
|  | $2,70,000$ |  | $2,70,000$ |

Building Construction Account

| Particulars | (₹ in '000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Balance b/d | 6,000 | By Cost Ledger control A/c | 26,400 |
| To Stores Ledger control A/c | 2,400 |  |  |
| To Wages Control A/c | 6,000 |  |  |
| To Factory overhead control A/c | 12,000 |  |  |
|  | 26,400 |  | 26,400 |

Factory Overhead Control Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in ‘000) |
| :--- | ---: | :--- | ---: |
| To Stores Ledger control A/c | 3,600 | By Building Construction A/c | 12,000 |
| To Wages Control A/c | 24,000 | By WIP Control A/c | $1,09,800$ |
| To Cost Ledger control A/c | 96,000 | By Costing P\&L A/c | 4,800 |


| To Stores Ledger control A/c <br> (loss) | 3,000 |  |  |
| :--- | ---: | ---: | ---: |
|  | $1,26,600$ |  | $1,26,600$ |

Wages Control Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Cost Ledger control A/c | 90,000 | By Factory overhead control <br> A/c | 24,000 |
|  |  | By Building Construction A/c | 6,000 |
|  |  | By WIP Control A/c | 60,000 |
|  | 90,000 |  | 90,000 |

Royalty Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Cost Ledger control A/c | 3,000 | By WIP Control A/c | 3,000 |
|  | 3,000 |  | 3,000 |

Cost of Goods Sold Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Finished Goods control A/c | $2,16,000$ | By Cost of sales A/c | $2,16,000$ |
|  | $2,16,000$ |  | $2,16,000$ |

Selling, Distribution and Administration Overhead Control Account

| Particulars | (₹ in ‘000) | Particulars | (₹ in '000) |
| :--- | ---: | :--- | ---: |
| To Cost Ledger control A/c | 15,000 | By Cost of sales A/c | 15,000 |
|  | 15,000 |  | 15,000 |

Trial Balance

| Particulars | Dr. | Cr. |
| :--- | ---: | ---: |
|  | in $\left.{ }^{\prime} 000\right)$ | (₹ in $\left.{ }^{\prime} 000\right)$ |
| Stores Ledger Control A/c | 33,000 |  |
| WIP Control A/c | 15,000 |  |
| Finished Goods Control A/c | $2,41,800$ |  |
| Cost Ledger Control A/c |  | $2,89,800$ |
|  | $2,89,800$ | $2,89,800$ |

## Working Note:

Cost of Goods sold $=2,70,000 \times 80 / 100=₹ 2,16,000$
7. (i) Computation of Optimum Run size of 'Stents' or Economic Batch Quantity (EBQ)

Economic Batch Quantity $(E B Q)=\sqrt{\frac{2 D S}{C}}$
Where,
D = Annual demand for the Stents

$$
=1,00,00,000 \times 10 \%=10,00,000 \text { units }
$$

S $\quad=$ Set- up cost per run

$$
\text { = ₹ } 450
$$

C = Carrying cost per unit per annum
$=₹ 3 \times 12=₹ 36$
EBQ $\quad=\sqrt{\frac{2 \times 10,00,000 \times ₹ 450}{₹ 36}}$
$=5,000$ units of Stents
(ii) Minimum inventory holding cost

Minimum Inventory Cost $=$ Average Inventory $\times$ Inventory Carrying Cost per unit per annum

$$
\begin{aligned}
& =(5,000 \div 2) \times ₹ 36 \\
& =₹ 90,000
\end{aligned}
$$

(iii) Calculation of the extra cost due to manufacturing policy

|  | When run size is $\mathbf{6 , 0 0 0}$ units | When run size is 5,000 <br> units i.e. at EBQ |
| :--- | :---: | :---: |
| Total set up cost | $=\frac{10,00,000}{6,000} \times ₹ 450$ <br> $=₹ 75,000$ | $\frac{10,00,000}{5,000} \times ₹ 450$ <br> $=₹ 90,000$ |
| Total Carrying cost | $1 / 2 \times 6,000 \times ₹ 36$ <br> $=₹ 1,08,000$ | $1 / 2 \times 5,000 \times ₹ 36$ <br> $=₹ 90,000$ |
| Total Cost | $₹ 1,83,000$ | $₹ 1,80,000$ |

Extra cost $=₹ 1,83,000-₹ 1,80,000=₹ 3,000$
8. (i) Calculation of Overhead Recovery Rate:

Factory Overhead Recovery Rate $\quad=\frac{\text { Factory Overhead in 2020-21 }}{\text { Direct labour cost in 2020-21 }} \times 100$
$=\frac{₹ 30,80,000}{₹ 90,50,000} \times 100=34 \%$ of Direct labour
Administrative Overhead Recovery Rate $=\frac{\text { Administrative Overhead in 2020-21 }}{\text { Factory cost in 2020-21 (W.N) }} \times 100$

$$
=\frac{₹ 20,50,400}{₹ 2,96,80,000} \times 100=6.91 \% \text { of Factory Cost }
$$

Working Note: Calculation of Factory Cost in 2020-21

| Particulars | Amount (₹) |
| :--- | ---: |
| Opening Stock of Material | $15,00,000$ |
| Add: Purchase of Material | $1,80,50,000$ |
| Less: Closing Stock of Material | $(20,00,000)$ |
| Material Consumed | $1,75,50,000$ |
| Direct Labour | $90,50,000$ |
| Prime Cost | $2,66,00,000$ |
| Factory Overhead | $30,80,000$ |
| Factory Cost | $2,96,80,000$ |

(ii) Job Cost Sheet for the order received in 2021-22

| Particulars | Amount (₹) |
| :--- | ---: |
| Material | $80,00,000$ |
| Labour | $40,50,000$ |
| Factory Overhead (34\% of ₹ 40,50,000) | $13,77,000$ |
| Factory Cost | $1,34,27,000$ |
| Administrative Overhead (6.91\% of ₹ $1,34,27,000)$ | $9,27,806$ |
| Cost of delivery | $9,50,000$ |
| Total Cost | $1,53,04,806$ |
| Add: Profit @ 25\% of Sales or $33.33 \%$ of cost | $51,01,602$ |
| Sales value (Price to be quoted for the order) | $2,04,06,408$ |

Hence the price to be quoted is ₹ $2,04,06,408$.
9. (i)

## Process I

## Statement of Equivalent Production and Cost

| Input (Units) | Particulars | Outpu t Units | Equivalent Production |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Materials |  | Labour |  | Overheads |  |
|  |  |  | (\%) | Units | (\%) | Units | (\%) | Units |
| 40,000 | Completed Closing WIP | 30,000 | $\begin{aligned} & 100 \\ & 100 \end{aligned}$ | 30,000 | 10050 | 30,000 | $\begin{gathered} 100 \\ 50 \end{gathered}$ | 30,000 |
|  |  | 10,000 |  | 10,000 |  | 5,000 |  | 5,000 |
| 40,000 |  | 40,000 |  | 40,000 |  | 35,000 |  | 35,000 |


| Particulars | Materials | Labour | Overhead | Total |
| :--- | ---: | ---: | ---: | ---: |
| Cost incurred $(₹)$ | $6,00,000$ | $7,00,000$ | $4,90,000$ | $17,90,000$ |
| Equivalent units | 40,000 | 35,000 | 35,000 |  |
| Cost per equivalent unit $(₹)$ | 15 | 20 | 14 | 49 |

Process-I Account

| Particulars | Units | (₹) | Particulars | Units | (₹) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| To Materials | 40,000 | 6,00,000 | By Process-II A/c (30,000 units $\times$ ₹ 49 ) | 30,000 | 14,70,000 |
| To Labour To Overhead |  | 7,00,000 | By Closing WIP* | 10,000 | 3,20,000 |
|  |  | 4,90,000 |  |  |  |
|  | 40,000 | 17,90,000 |  | 40,000 | 17,90,000 |

* (Material 10,000 units $\times$ ₹ 15 ) + (Labour 5,000 units $\times$ ₹ 20 ) + (Overheads 5,000 units $\times$ ₹ 14)

$$
=₹ 1,50,000+₹ 1,00,000+₹ 70,000=₹ 3,20,000
$$

(ii)

Process II
Statement of Equivalent Production and Cost

| Input (Units) | Particulars | Output Units | Equivalent Production |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Materials |  | Labour |  | Overheads |  |
|  |  |  | (\%) | Units | (\%) | Units | (\%) | Units |
| 30,000 | Completed Normal loss Closing WIP | 28,000 | $\begin{aligned} & 100 \\ & 100 \end{aligned}$ | 28,000 | 10025 | 28,000 | $\begin{aligned} & 100 \\ & 25 \end{aligned}$ | 28,000 |
|  |  | 200 |  | -- |  | -- |  | -- |
|  |  | 1,800 |  | 1,800 |  | 450 |  | 450 |
| 30,000 |  | 30,000 |  | 29,800 |  | 28,450 |  | 28,450 |


| Particulars | Materials | Labour | Overhead | Total |
| :--- | ---: | ---: | ---: | ---: |
| Process-I Cost | $14,70,000$ | -- | -- | $14,70,000$ |
| Cost incurred (₹) | -- | $1,42,250$ | $1,70,700$ | $3,12,950$ |
| Equivalent units | 29,800 | 28,450 | 28,450 | -- |
| Cost per equivalent unit (₹) | 49.3289 | 5.00 | 6.00 | 60.3289 |

Process-II Account
$\left.\begin{array}{|l|r|r|l|r|r|}\hline \text { Particulars } & \text { Units } & \text { (₹) } & \text { Particulars } & \text { Units } & \text { (₹) } \\ \hline \text { To Process-I A/c } & 30,000 & 14,70,000 & \text { By Normal loss A/c } & 200 & -- \\ \text { To Packing } & -- & 1,60,000 & \begin{array}{l}\text { By Finished Goods } \\ \text { Material }\end{array} & 28,000^{*} & 18,49,209 \\ \text { Stock A/c }\end{array}\right)$

$$
\begin{aligned}
& \text { * } 28,000 \times ₹ 60.3289=₹ 16,89,209+₹ 1,60,000 \text { (Packing Material Cost) } \\
& =₹ 18,49,209 \\
& \text { ** } 1,800 \text { units } \times ₹ 49.3289+450 \text { units } \times(₹ 5+₹ 6)=₹ 93,741
\end{aligned}
$$

## 10. Working Notes:

1. Calculation of Depreciation per month:

|  | Particulars | CNG Car | EV Car |
| :---: | :---: | :---: | :---: |
| A | Car purchase price (₹) | 9,20,000 | 15,20,000 |
| B | Less: Govt. subsidy (₹) | -- | $(1,50,000)$ |
| C | Less: Residual value (₹) | $(95,000)$ | $(1,70,000)$ |
| D | Depreciable value of car (₹) [A-B-C] | 8,25,000 | 12,00,000 |
| E | Life of the car | 15 years | 10 years |
| F | Annual depreciation (₹) [ $\mathrm{D} \div \mathrm{E}$ ] | 55,000 | 1,20,000 |
| G | Depreciation per month (₹) [F;12] | 4,583.33 | 10,000 |

2. Fuel/ Electricity consumption cost per month:

|  | Particulars | CNG Car | EV Car |
| :--- | :--- | ---: | ---: |
| A | Average distance covered in a month (KM) | 1,500 | 1,500 |
| B | Mileage (KM) | 20 | 240 |


| C | Qty. of CNG/ Full charge required [A $\div \mathrm{B}]$ | 75 kg. | 6.25 |
| :--- | :--- | ---: | ---: |
| D | Electricity Consumption [C×30kwh] | - | 187.5 |
| E | Cost of CNG per kg (₹) | 60 | - |
| F | Power cost per Kwh (₹) | - | 7.60 |
| G | CNG Cost per month (₹) [C×E] | 4,500 | - |
| H | Power cost per month (₹) [D×F] | - | $\mathbf{1 , 4 2 5}$ |

3. Amortised cost of Tyre replacement:

|  | Particulars | CNG Car | EV Car |
| :--- | :--- | :---: | :---: |
| A | Life of vehicle | 15 years | 10 years |
| B | Replacement interval | 5 years | 5 years |
| C | No. of time replacement required | 2 times | 1 time |
| D | Cost of tyres for each replacement (₹) | 16,000 | 16,000 |
| E | Total replacement cost (₹) [C×D] | 32,000 | 16,000 |
| F | Amortised cost per year (₹) $[\mathrm{E} \div \mathrm{A}]$ | $2,133.33$ | 1,600 |
| E | Cost per month $(₹)[\mathrm{F} \div \mathbf{1 2 ]}$ | $\mathbf{1 7 7 . 7 8}$ | $\mathbf{1 3 3 . 3 3}$ |

4. Amortised cost of Battery replacement:

|  | Particulars | CNG Car | EV Car |
| :--- | :--- | ---: | ---: |
| A | Life of vehicle | 15 years | 10 years |
| B | Replacement interval | 8 years | 8 years |
| C | No. of time replacement required | 1 time | 1 time |
| D | Cost of battery for each replacement (₹) | 12,000 | $5,40,000$ |
| E | Total replacement cost (₹) [C×D] | 12,000 | $5,40,000$ |
| F | Amortised cost per year (₹) $[\mathrm{E} \div \mathrm{A}]$ | 800 | 54,000 |
| E | Cost per month (₹) $[\mathrm{F} \div \mathbf{1 2 ]}$ | $\mathbf{6 6 . 6 7}$ | $\mathbf{4 , 5 0 0}$ |

Calculation of Operating cost per month:

|  | Particulars | CNG Car (₹) | EV Car (₹) |
| :--- | :--- | ---: | ---: |
| A | Running cost: |  |  |
|  | Fuel cost/ Power consumption cost [Refer <br> WN-2] | 4,500 | 1,425 |


| B | Maintenance cost: |  |  |
| :---: | :---: | :---: | :---: |
|  | Annual Maintenance cost [Annual cost $\div 12$ ] | 666.67 | 433.33 |
|  | Annual Insurance cost [Annual cost $\div$ 12] | 633.33 | 1,216.67 |
|  | Amortised cost of Tyre replacement [Refer WN-3] | 177.78 | 133.33 |
|  | Amortised cost of Battery replacement | 66.67 | 4,500 |
|  |  | 1,544.45 | 6,283.33 |
| C | Fixed cost: |  |  |
|  | Depreciation [Refer WN-1] | 4,583.33 | 10,000 |
|  | Driver's salary | 20,000 | 20,000 |
|  | Garage rent | 4,500 | 4,500 |
|  | Share of Office \& Administration cost | 1,500 | 1,500 |
|  |  | 30,583.33 | 36,000 |
| D | Operating cost per month [ $\mathrm{A}+\mathrm{B}+\mathrm{C}$ ] | 36,627.78 | 43,708.33 |

11. Working Notes:
12. Calculation of Standard Man hours

When 100 workers work for 1 hour, the standard output is 50 units.
Standard man hours per unit $=\frac{100 \text { hours }}{50 \text { units }}=\mathbf{2}$ hours per unit
2. Calculation of standard man hours for actual output:
$=1,920$ units $\times 2$ hours $=3,840$ hours.
3. Calculation of actual cost

| Type of <br> Workers | No of <br> Workers | Actual <br> Hours Paid | Rate <br> (₹) | Amount <br> (₹) | Idle Hours (5\% <br> of hours paid) | Actual hours <br> Worked |
| :---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Group 'A' | 10 | 400 | 12.40 | 4,960 | 20 | 380 |
| Group 'B' | 30 | 1,200 | 12 | 14,400 | 60 | 1,140 |
| Group 'C' | 60 | 2,400 | 11.40 | 27,360 | 120 | 2,280 |
|  | 100 | 4,000 |  | 46,720 | $\mathbf{2 0 0}$ | 3,800 |

4. Calculation of Standard wage Rate:

| Labour Efficiency Variance | $=480 \mathrm{~F}$ |
| ---: | :--- |
| (Standard hours for Actual production - Actual Hours) $\times \mathrm{SR}$ $=480 \mathrm{~F}$ <br> $(3,840-3,800) \times S R$  <br> Standard Rate $(\mathrm{SR})$  <br>  $=₹ 180$ <br>  $\quad$per hour |  |

## (i) Total Labour Cost Variance

$=$ (Standard hours $\times$ Standard Rate) - (Actual Hours $\times$ Actual rate)
$=(3,840 \times 12)-46,720=640 \mathrm{~A}$
(ii) Total Labour Rate Variance
= (Standard Rate - Actual Rate) $\times$ Actual Hours
Group ' $A$ ' $=(12-12.40) 400=160 \mathrm{~A}$
Group ' B ' $=(12-12) 1,200 \quad=\quad 0$
Group 'C' $=(12-11.40) 2,400=1,440 \mathrm{~F}$
1,280F
(iii) Total Labour Gang Variance
$=$ Total Actual Time Worked (hours) $\times$ \{Average Standard Rate per hour of Standard Gang -Average Standard Rate per hour of Actual Gang@\}
@ on the basis of hours worked
$=3,800 \times\left(12-\frac{3,840 \times 12}{3,800}\right)$
$=0$
[Note: As the number of workers in standard and actual is the same, there is no difference in mix ratio, so labour gang variance will be NIL]
(iv) Total Labour Yield Variance
$=$ Average Standard Rate per hour of Standard Gang $\times\{$ Total Standard Time (hours) - Total Actual Time worked (hours)\}
$=12 \times(3,840-3,800)$
$=480 \mathrm{~F}$
(v) Total Labour idle time variance
$=$ Total Idle hours x standard rate per hour
$=200$ hours $\times 12$
$=2,400 \mathrm{~A}$
12. (i) Computation of PV ratio, contribution, profit and break-even sales for existing product mix

|  | Products |  |  | Total |
| :---: | :---: | :---: | :---: | :---: |
|  | S | T | U |  |
| Selling Price (₹) | 600 | 800 | 400 |  |
| Less: Variable Cost (₹) | 300 | 400 | 240 |  |
| Contribution per unit (₹) | 300 | 400 | 160 |  |
| P/V Ratio (Contribution/Selling price) | 50\% | 50\% | 40\% |  |
| Sales Mix | 25\% | 35\% | 40\% |  |
| Contribution per rupee of sales (P/V Ratio × Sales Mix) | 12.5\% | 17.5\% | 16\% | 46\% |
| Present Total Contribution ( $₹ 1,20,00,000 \times 46 \%$ ) |  |  | ₹ $55,20,000$ |  |
| Less: Fixed Costs |  |  | ₹ $36,00,000$ |  |
| Present Profit |  |  | ₹ 19,20,000 |  |
| Present Break Even Sales ( $₹ 36,00,000 / 0.46$ ) |  |  | ₹ 78,26,087 |  |

(ii) Computation of PV ratio, contribution, profit and break-even sale for proposed product mix

|  | Products |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | S | T | M | Total |
| Selling Price (₹) | 600 | 800 | 600 |  |
| Less: Variable Cost (₹) | 300 | 400 | 300 |  |
| Contribution per unit (₹) | 300 | 400 | 300 |  |
| P/V Ratio (Contribution/Selling price) | 50\% | 50\% | 50\% |  |
| Sales Mix | 40\% | 35\% | 25\% |  |
| Contribution per rupee of sales (P/V Ratio x Sales Mix) | 20\% | 17.5\% | 12.5\% | 50\% |
| Proposed Total Contribution ( $₹ 1,28,00,000 \times 50 \%$ ) |  |  | ₹ $64,00,000$ |  |
| Less: Fixed Costs |  |  | ₹ $36,00,000$ |  |
| Proposed Profit |  |  | ₹ $28,00,000$ |  |
| Proposed Break-Even Sales (₹ $36,00,000 / 0.50$ ) |  |  | ₹ 72,00,000 |  |

13. Revenue Budget (Flexible Budget) of Maharatna Ltd. for the Year 2022

|  | Particulars | PY 2021 | CY 2022 |
| :---: | :---: | :---: | :---: |
| A | Sales Volume (Tonnes) | 4,20,000 | 4,70,400 |
|  |  |  | [112\% $\times 4,20,000]$ |
| B | Selling Price per tonne (₹) | 23,000 | 23,000 |
|  |  | (₹ in lakh) | (₹ in lakh) |
| C | Sales value [ $\mathrm{A} \times \mathrm{B}$ ] | 96,600 | 1,08,192 |
|  | Raw material Cost: |  |  |
| D ${ }_{\text {(i) }}$ | Qty. of Material [2.3 tonnes $\times \mathrm{A}$ ] (tonnes) | 9,66,000 | 10,81,920 |
|  | Price per tonne (₹) | 4,500 | 4,500 |
| (iii) | Total raw material cost (₹ in lakh) [(i)×(ii)] | 43,470 | 48,686.40 |
| E | Wages \& Salary Cost: |  |  |
| (i) | Wages to casual employees <br> ( $15 \% \times 6,000=900$ employees) | $\begin{array}{r} 2,386.80 \\ {[900 \times 26 \times 12 \times} \\ ₹ 850] \end{array}$ | $\begin{array}{r} 2,508.47 \\ {[900 \times 26 \times 12 \times} \\ ₹ 893.33] \end{array}$ |
| (ii) | Salary to permanent employees ( $85 \% \times 6,000=5,100$ employees) | $\begin{array}{r} 47,736 \\ {[5100 \times 26 \times 12 \times} \\ ₹ 3,000] \end{array}$ | $\begin{array}{r} 51,316.20 \\ {[(5100 \times 26 \times 6 \times} \\ ₹ 3,000)+(5100 \times 26 \\ \times 6 \times ₹ 3,450)] \\ \hline \end{array}$ |
| (iii) | Total wages \& salary [(i)+(ii)] | 50,122.80 | 53,824.67 |
| F | Power cost: |  |  |
| (i) | For production (units) | $\begin{array}{r} 4,20,000 \\ {[60 \% \times 7,00,000]} \end{array}$ | $\begin{array}{r} 4,70,400 \\ {[112 \% \times 4,20,000]} \end{array}$ |
| (ii) | For employees \& offices (units) [ $40 \% \times 7,00.000$ ] | 2,80,000 | 2,80,000 |
| (iii) | Total Power consumption (units) [(i)+(ii)] | 7,00,000 | 7,50,400 |
| (iv) | Power rate per unit (₹) [ $₹ 42,00,000 \div 7,00,000$ ] | 6.00 | 6.00 |
| (v) | Total power cost [(iii)×(iv)] | 42 | 45.024 |
| G | Safety and maintenance Cost | 60 | 67.20 |
|  |  |  | [112\% $\times 60,00,000]$ |
| H | Diesel cost | 1.2 |  |


| 1 | Car Hire charge: |  |  |
| :---: | :---: | :---: | :---: |
| (i) | Car hire charge | 6 | 6 |
| (ii) | Fuel reimbursement cost | - | 1.38 |
|  |  |  | [115\% × 1.2] |
| (iii) | GST@5\% on RCM basis $[5 \% \times(i+i i)]$ | - | 0.369 |
| (iv) | Total Car hire charge cost [(i)+(ii)+(iii)] | 6 | 7.749 |
| $J$ | Depreciation | 8,040 | 6,834 |
|  |  |  | [85\% $\times 8040]$ |
| K | Total Cost [Sum of D to J] | 1,01,742 | 1,09,465.043 |
| L | Profit/ (Loss) [C-L] | $(5,142)$ | (1273.043) |

14. (a) Controllable costs and Uncontrollable costs: Cost that can be controlled, typically by a cost, profit or investment centre manager is called controllable cost. Controllable costs incurred in a particular responsibility centre can be influenced by the action of the executive heading that responsibility centre.
Costs which cannot be influenced by the action of a specified member of an undertaking are known as uncontrollable costs.
(b) Cost plus contract: Under cost plus contract, the contract price is ascertained by adding a percentage of profit to the total cost of the work. Such types of contracts are entered into when it is not possible to estimate the contract cost with reasonable accuracy due to unstable condition of material, labour services etc.

## Following are the advantages of cost plus contract:

(i) The contractor is assured of a fixed percentage of profit. There is no risk of incurring any loss on the contract.
(ii) It is useful specially when the work to be done is not definitely fixed at the time of making the estimate.
(iii) Contractee can ensure himself about the 'cost of contract' as he is empowered to examine the books and documents of the contractor to ascertain the veracity of the cost of contract.
(c) In integrated accounting system cost and financial accounts are kept in the same set of books. Such a system will have to afford full information required for Costing as well as for Financial Accounts. In other words, information and data should be recorded in such a way so as to enable the firm to ascertain the cost (together with the necessary analysis) of each product, job, process, operation or any other identifiable activity. It also ensures the ascertainment of marginal cost, variances, abnormal losses and gains. In fact all information that management requires from a
system of Costing for doing its work properly is made available. The integrated accounts give full information in such a manner so that the profit and loss account and the balance sheet can be prepared according to the requirements of law and the management maintains full control over the liabilities and assets of its business.
Since, only one set of books are kept for both cost accounting and financial accounting purpose so there is no necessity of reconciliation of cost and financial accounts.
(d) The impact of IT in cost accounting may include the following:
(i) After the introduction of ERPs, different functional activities get integrated and as a consequence a single entry into the accounting system provides custom made reports for every purpose and saves an organisation from preparing different sets of documents. Reconciliation process of results of both cost and financial accounting systems become simpler and less sophisticated.
(ii) A move towards paperless environment can be seen where documents like Bill of Material, Material Requisition Note, Goods Received Note, labour utilisation report etc. are no longer required to be prepared in multiple copies, the related department can get e-copy from the system.
(iii) Information Technology with the help of internet (including intranet and extranet) helps in resource procurement and mobilisation. For example, production department can get materials from the stores without issuing material requisition note physically. Similarly, purchase orders can be initiated to the suppliers with the help of extranet. This enables an entity to shift towards Just-in-Time (JIT) approach of inventory management and production.
(iv) Cost information for a cost centre or cost object is ascertained with accuracy in timely manner. Each cost centre and cost object is codified and all related costs are assigned to the cost object or cost centre. This process automates the cost accumulation and ascertainment process. The cost information can be customised as per the requirement. For example, when an entity manufactures or provide services, it can know information job-wise, batch-wise, process-wise, cost centre wise etc.
(v) Uniformity in preparation of report, budgets and standards can be achieved with the help of IT. ERP software plays an important role in bringing uniformity irrespective of location, currency, language and regulations.
(vi) Cost and revenue variance reports are generated in real time basis which enables the management to take control measures immediately.
(vii) IT enables an entity to monitor and analyse each process of manufacturing or service activity closely to eliminate non-value-added activities.
The above are examples of few areas where Cost Accounting is done with the help of IT.

