Practice Questions & Solutions for Virtual Coaching Classes

Paper 3: Cost and Management Accounting

Topic: Material Costing

Question-1

(i) COMPUTE E.O.Q. and the total variable cost for the following:

Annual Demand	=	*5,000 units*
Unit price	=	*₹ 20.00*
Order cost	=	*₹ 16.00*
Storage rate	=	*2% per annum*
Interest rate	=	*12% per annum*
Obsolescence rate	=	*6% per annum*

(ii) DETERMINE the total cost that would result for the items if a new price of ₹ 12.80 is used.

Solution:

(i) Carrying cost (C) = Storage rate = 2%

Interest Rate = 12%

Obsolescence Rate = 6%

Total = 20% per annum

C = 20% of ₹ 20 = ₹ 4 per unit per annum.

$$E.O.Q = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 5000 \times 16}{4}} = \sqrt{40,000} = 200 \text{ units}$$

Total cost:

Purchase price of 5,000 units @ ₹ 20.00 per unit			= ₹ 1,00,000
Ordering cost	$= \frac{5000}{200}$	= 25 orders @ ₹ 16	= ₹ 400
Carrying cost of average Inventory	$= \frac{200}{2}$	= 100 units @ ₹ 4	= ₹ 400
Total cost			**₹ 1,00,800**

(ii) If the new price of ₹ 12.80 is used:

C = 20% of ₹ 12.80 = ₹ 2.56 per unit per annum.

$$\text{E.O.Q.} = \sqrt{\frac{2 \times 5,000 \times 16}{2.56}} = 250 \text{ units}$$

Total cost:

Purchase price of 5,000 units @ ₹ 12.80 per unit	₹ 64,000
Ordering cost = $\frac{5,000}{250}$ = 20 orders @ ₹ 16	₹ 320
Carrying cost (of average inventory) = $\frac{250}{2}$ =125 units @ ₹ 2.56	₹ 320
Total variable cost	**₹ 64,640**

Question-2

G. Ltd. produces a product which has a monthly demand of 4,000 units. The product requires a component X which is purchased at ₹ 20. For every finished product, one unit of component is required. The ordering cost is ₹ 120 per order and the holding cost is 10% p.a.

You are required to CALCULATE:

(i) Economic order quantity.

(ii) If the minimum lot size to be supplied is 4,000 units, what is the extra cost, the company has to incur?

(iii) What is the minimum carrying cost, the company has to incur?

Solution:

(i) Economic order quantity:

A (Annual requirement or Component 'X')	= 4,000 units per month × 12 months
	= 48,000 units
C (Purchase cost p.u.)	= ₹ 20
O (Ordering cost per order)	= ₹ 120
Ci (Holding cost)	= 10% per annum

$$\text{E.O.Q.} = \sqrt{\frac{2AO}{C_i}} = \sqrt{\frac{2 \times 48,000 \text{units} \times ₹120}{10\% \text{of} ₹20}} = \textbf{2,400 units}$$

(ii) Extra cost incurred by the company:

A. Total cost when order size is equal 4,000 units:

Total cost = Total ordering cost + Total carrying cost

$$= \frac{A}{Q} \times O + \frac{1}{2} Q\,(C_i)$$

$$= \left(\frac{48{,}000\ \text{units}}{4{,}000\ \text{units}} \times ₹120\right) + \left(\frac{1}{2} \times 4{,}000\ \text{units} \times 10\% \times ₹\ 20\right)$$

= ₹ 1,440 + ₹ 4,000 = ₹ 5,440

B. Total cost when order size is equal EOQ i.e. 2,400 units:

$$\text{Total cost} = \left(\frac{48{,}000\ \text{units}}{2{,}400\ \text{units}} \times ₹120\right) + \left(\frac{1}{2} \times 2{,}400\ \text{units} \times 10\% \times ₹\ 20\right)$$

= ₹ 2,400 + ₹ 2,400 = ₹ 4,800

Extra cost that the company has to incur = (A) – (B) = ₹ 5,440 – ₹ 4,800 = **₹ 640**

(iii) Minimum carrying cost: Carrying cost depends upon the size of the order. It will be minimum on the least order size. (In this part of the question the two order sizes are 2,400 units and 4,000 units. Here 2,400 units is the least of the two order sizes. At this order size carrying cost will be minimum.)

The minimum carrying cost in this case can be computed as under:

Minimum carrying cost = $\frac{1}{2}$ × 2,400 units × 10% × ₹ 20 = ₹ **2,400**.

Question-3

From the details given below, CALCULATE:

(i) Re-ordering level

(ii) Maximum level

(iii) Minimum level

(iv) Danger level.

Re-ordering quantity is to be calculated on the basis of following information:

Cost of placing a purchase order is ₹ 20

Number of units to be purchased during the year is 5,000

Purchase price per unit inclusive of transportation cost is ₹ 50

Annual cost of storage per units is ₹ 5.

Details of lead time : Average- 10 days, Maximum- 15 days, Minimum- 5 days.

For emergency purchases- 4 days.

Rate of consumption : Average: 15 units per day,

Maximum: 20 units per day.

Solution:

Basic Data:

A	(Number of units to be purchased annually)	=	5,000 units
O	(Ordering cost per order)	=	₹ 20
C	(Annual cost of storage per unit)	=	₹ 5
Purchase price per unit inclusive of transportation cost		=	₹ 50

Computations:

(i) Re-ordering level = Maximum usage per period × Maximum lead time

(ROL) = 20 units per day × 15 days = **300 units**

(ii) Maximum level = ROL + ROQ – [Min. rate of consumption × Min. lead time]

(Refer to working notes1 and 2)

= 300 units + 200 units – [10 units per day × 5 days]

= **450 units**

(iii) Minimum level = ROL – Average rate of consumption × Average re-order-period

= 300 units – (15 units per day × 10 days) = **150 units**

(iv) Danger level = Average consumption × Lead time for emergency purchases

= 15 units per day × 4 days = **60 units**

Working Notes:

1. Minimum rate of consumption per day

$$\text{Av. rate of consumption} = \frac{\text{Minimum rate of consumption} + \text{Maximum rate of consumption}}{2}$$

$$15 \text{ units per day} = \frac{X \text{ units/day} + 20 \text{ units per day}}{2} \text{ or } X = 10 \text{ units per day.}$$

2. Re-order Quantity (ROQ) or Economic Order Quantity (EOQ)

$$= \sqrt{\frac{2 \times 5{,}000 \text{ units} \times ₹\, 20}{5}} = 200 \text{ units}$$

Question-4

A Company uses three raw materials A, B and C for a particular product for which the following data apply:

Raw Material	*Usage per unit of Product (Kgs.)*	*Re-order quantity (Kgs.)*	*Price per Kg.*	*Delivery period (in weeks)*			*Re-order level (Kgs)*	*Minimum level (Kgs.)*
				Minimum	*Average*	*Maximum*		
A	*10*	*10,000*	*10*	*1*	*2*	*3*	*8,000*	*?*
B	*4*	*5,000*	*30*	*3*	*4*	*5*	*4,750*	*?*
C	*6*	*10,000*	*15*	*2*	*3*	*4*	*?*	*2,000*

Weekly production varies from 175 to 225 units, averaging 200 units of the said product. COMPUTE the following quantities:

(i) Minimum stock of A,

(ii) Maximum stock of B,

(iii) Re-order level of C,

(iv) Average stock level of A.

Solution:

(i) Minimum stock of A

Re-order level – (Average rate of consumption × Average time required to obtain fresh delivery)

= 8,000 – (200 × 10 × 2) = **4,000 kgs**.

(ii) Maximum stock of B

Re-order level + Re-order quantity – (Minimum consumption × Minimum delivery period)

= 4,750 + 5,000 – (175 × 4 × 3)

= 9,750 – 2,100 = **7,650 kgs**.

(iii) Re-order level of C

Maximum delivery period × Maximum usage

= 4 × 225 × 6 = 5,400 kgs.

OR

Re-order level of C

= Minimum level of C + [Average rate of consumption × Average time required to obtain fresh delivery]

= 2,000 + [(200 × 6) × 3] kgs = **5,600 kgs**.

(iv) Average stock level of A

= Minimum stock level of A + ½ Re-order quantity of A

= 4,000 + ½ × 10,000 = 4,000 + 5,000 = **9,000 kgs**

OR

Average Stock level of A

$$= \frac{\text{Minimum stock level of A} + \text{Maximum stock level of A}}{2} \text{ (Refer to working note)}$$

$$= \frac{4,000 + 16,250}{2} = 10,125 \text{ kgs}$$

Working note:

Maximum stock of A = ROL+ROQ – (Minimum consumption× Minimum re-order period)

= 8,000 + 10,000 – [(175 × 10) × 1] = 16,250 kgs

Question-5

The following data are available in respect of material X for the year ended 31st March, 2020.

	(₹)
Opening stock	*90,000*
Purchases during the year	*2,70,000*
Closing stock	*1,10,000*

CALCULATE:

(i) Inventory turnover ratio, and

(ii) The number of days for which the average inventory is held.

Solution:

Inventory turnover ratio

(Refer to working note) $= \frac{\text{Cost of stock of raw material consumed}}{\text{Average stock of raw material}}$

$$= \frac{₹2,50,000}{₹1,00,000} = 2.5$$

Average number of days for which the average inventory is held

$$= \frac{365}{\text{Inventory turnover ratio}} = \frac{365 \text{ days}}{2.5}$$

= **146 days**

Working Note:

	(₹)
Opening stock of raw material	90,000
Add: Material purchases during the year	2,70,000
Less: Closing stock of raw material	1,10,000
Cost of stock of raw material consumed	2,50,000

Question-6

The following information is provided by Sunrise Industries for the fortnight of April, 2020:

Material Exe:

Stock on 1-4-2020 100 units at ₹5 per unit.

Purchases

5-4-2020, 300 units at ₹6
8-4-2020, 500 units at ₹7

12-4-2020, 600 units at ₹8

Issues

6-4-2020, 250 units

10-4-2020, 400 units

14-4-2020, 500 units

Required:

CALCULATE using FIFO method of pricing issues:

(a) the value of materials consumed during the period.

(b) the value of stock of materials on 15-4-2020.

Solution:

(a) Value of Material Exe consumed during the period 1-4-2020 to 15-4-2020 by using FIFO method.

Date	Description Units	Qty. (Units)	Rate (₹)	Amount (₹)
1-4-2020	Opening balance	100	5	500
5-4-2020	Purchased	300	6	1,800
6-4-2020	Issued	100	5	
		150	6	1,400
8-4-2020	Purchased	500	7	3,500
10-4-2020	Issued	150	6	
		250	7	2,650
12-4-2020	Purchased	600	8	4,800
14-4-2020	Issued	250	7	
		250	8	3,750
15-4-2020	Balance	350	8	2,800

Total value of material Exe consumed during the period under FIFO method comes to (₹ 1,400 + ₹ 2,650 + ₹ 3,750) ₹ 7,800 and balance on 15-4-2020 is of ₹ 2,800.

(b) As shown in (a) above, the value of stock of materials on 15-4-2020 under FIFO method is ₹ 2,800

Question-7

During the month of April, a company has made five purchases as follows:

1st April, 200 units @ ₹ 10 each;

5th April, 150 units @ ₹ 12 each;

14th April, 210 units @ ₹ 12 each;

21st April, 50 units @ ₹ 15 each and

28th April, 140 units @ ₹ 11 each.

Calculate issue price under Weightage Average Price Method.

Solution:

The issue price under Weightage Average Price Method would be calculated as below:

$$\frac{\{(₹10\times200\text{ units})+(₹12\times150\text{ units})+(₹12\times210\text{ units})+(₹15\times50\text{ units})+(₹11\times140\text{ units})\}}{(200+150+210+50+140)\text{ units}}$$

$$= \frac{₹8,610}{750\text{ units}} = ₹\ 11.48 \text{ each}$$

Question-8

EXE Limited has received an offer of quantity discounts on its order of materials as under:

Price per ton (₹)	*Ton (Nos.)*
1,200	*Less than 500*
1,180	*500 and less than 1,000*
1,160	*1,000 and less than 2,000*
1,140	*2,000 and less than 3,000*
1,120	*3,000 and above.*

The annual requirement for the material is 5,000 tons. The ordering cost per order is ₹ 1,200 and the stock holding cost is estimated at 20% of material cost per annum. You are required to COMPUTE the most economical purchase level.

WHAT will be your answer to the above question if there are no discounts offered and the price per ton is ₹ 1,500?

Solution:

Total annual requirement (A)	Order size (Tonne) (q)	No. of orders A/q	Cost of inventory A × Per tonne cost (₹)	Ordering cost A/q × ₹ 1200 (₹)	Carrying cost p.t. p.a 1/2× q × 20% of cost p.t. (₹)	Total Cost (4+5+6) (₹)
1	2	3	4	5	6	7
5,000 Ton	400	12.5 (13)*	60,00,000 (5,000×₹1200)	15,600	48,000 (200 × ₹ 240)	60,63,600
	500	10	59,00,000 (5,000 × ₹ 1180)	12,000	59,000 (250 × ₹ 236)	59,71000
	1,000	5	58,00,000 (5,000× ₹ 1160)	6,000	1,16,000 (500 × ₹ 232)	59,22,000
	2,000	2.5 (3)*	57,00,000 (5,000×₹ 1140)	3,600	2,28,000 (1,000×₹228)	59,31,600
	3,000	1.666 (2)*	56,00,000 (5,000×₹ 1120)	2,400	3,36,000 (1,500×₹224)	59,38,400

* Since number of orders cannot be in decimals, thus 12.5 orders are taken as 13 orders, 2.5 are taken as 3 order and 1.66 orders are taken as 2 orders.

The above table shows that the total cost of 5,000 units including ordering and carrying cost is minimum (` 59,22,000) when the order size is 1,000 units. Hence the most economical purchase level is 1,000 units.

If there will are no discount offer then the purchase quantity should be equal to EOQ. The EOQ is as follows:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

where A = annual inventory requirement,

O = ordering cost per order and

C = carrying cost per unit per annum.

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

Question-9

Arnav Electronics manufactures electronic home appliances. It follows weighted average Cost method for inventory valuation. Following are the data of component X:

Date	*Particulars*	*Units*	*Rate per unit (₹)*
15-12-19	*Purchase Order- 008*	*10,000*	*9,930*
30-12-19	*Purchase Order- 009*	*10,000*	*9,780*
01-01-20	*Opening stock*	*3,500*	*9,810*
05-01-20	*GRN*-008 (against the Purchase Order- 008)*	*10,000*	-
05-01-20	*MRN**-003 (against the Purchase Order- 008)*	*500*	-
06-01-20	*Material Requisition-011*	*3,000*	-
07-01-20	*Purchase Order- 010*	*10,000*	*9,750*
10-01-20	*Material Requisition-012*	*4,500*	-
12-01-20	*GRN-009 (against the Purchase Order- 009)*	*10,000*	-
13-01-20	*MRN-004 (against the Purchase Order- 009)*	*400*	-
15-01-20	*Material Requisition-013*	*2,200*	-
24-01-20	*Material Requisition-014*	*1,500*	-
25-01-20	*GRN-010 (against the Purchase Order- 010)*	*10,000*	-

28-01-20	*Material Requisition-015*	*4,000*	*-*
31-01-20	*Material Requisition-016*	*3,200*	*-*

**GRN- Goods Received Note; **MRN- Material Returned Note*

Based on the above data, you are required to CALCULATE:

(i) Re-order level

(ii) Maximum stock level

(iii) Minimum stock level

(iv) PREPARE Store Ledger for the period January 2020 and DETERMINE the value of stock as on 31-01-2020.

(v) Value of components used during the month of January, 2020.

(vi) Inventory turnover ratio.

Solution

Workings:

1. Consumption is calculated on the basis of material requisitions:

Maximum component usage = 4,500 units (Material requisition on 10-01-20)

Minimum component usage = 1,500 units (Material requisition on 24-01-20)

Lead time is calculated from purchase order date to material received date

Maximum lead time = 21 days (15-12-2019 to 05-01-2020)

Minimum lead time = 14 days (30-12-2019 to 13-01-2020)

2. Reorder quantity (observed) = 10,000 units.

3.

Date	Material Requisition number	Units
06-01-2020	11	3,000
10-01-2020	12	4,500 (Maximum)
15-01-2020	13	2,200
24-01-2020	14	1,500 (Minimum)
28-01-2020	15	4,000
31-01-2020	16	3,200

Calculations:

(i) Re-order level

= Maximum usage × Maximum lead time

= 4,500 units × 21 days = 94,500 units

(ii) Maximum stock level

= Re-order level + Re-order Quantity – (Min. Usage × Min. lead time)

= 94,500 units + 10,000 units – (1,500 units × 14 days)

= 1,04,500 units – 21,000 units = 83,500 units

(iii) Minimum stock level

= Re-order level – (Avg. consumption × Avg. lead time)

= 94,500 units – (3,000 units × 17.5 days)

= 94,500 units – 52,500 units

= 42,000 units

(iv) Store Ledger for the month of January 2020: (Weighted Average Method)

Date	Receipts				Issue				Balance		
	GRN/ MRN	Units	Rate	Amt. ('000)	MRN/ MR	Units	Rate	Amt. ('000)	Units	Rate	Amt. ('000)
01-01-20	-	-	-	-	-	-	-	-	3,500	9,810	34,335
05-01-20	008	10,000	9,930	99,300	003	500	9,930	4,965	13,000	9,898	1,28,670
06-01-20	-	-	-	-	011	3,000	9,898	29,694	10,000	9,898	98,980
10-01-20	-	-	-	-	012	4,500	9,898	44,541	5,500	9,898	54,439
12-01-20	009	10,000	9,780	97,800	004	400	9,780	3,912	15,100	9,823	1,48,327
15-01-20	-	-	-	-	013	2,200	9,823	21,611	12,900	9,823	1,26,716
24-01-20	-	-	-	-	014	1,500	9,823	14,734	11,400	9,823	1,11,982
25-01-20	010	10,000	9,750	97,500	-	-	-	-	21,400	9,789	2,09,482
28-01-20	-	-	-	-	015	4,000	9,789	39,156	17,400	9,789	1,70,326
31-01-20	-	-	-	-	016	3,200	9,789	31,325	14,200	9,789	1,39,001

[**Note**: Decimal figures may be rounded-off to the nearest rupee value wherever required)

Value of 14,200 units of stock as on 31-01-2020 ('000) = ₹ 1,39,001

(v) Value of components used during the month of January 2020:

Sum of material requisitions 011 to 016 ('000)

= ₹ 29,694 + ₹ 44,541 + ₹ 21,611 + ₹ 14,734 + ₹ 39,156 + ₹ 31,325

= ₹ 1,81,061

(vi) Inventory Turnover Ratio

$$= \frac{\text{Value of materials used}}{\text{Average stock value}} = \frac{1,81,061}{(1,39,001 + 34,335)/2} = \frac{1,81,061}{86,668} = 2.09$$