CA INTER COSTING

CA SANKALP KANSTIYA

SUPER 60
IMPORTANT QUESTIONS LIST

MASTER PRACTICAL QUESTIONS FROM

ICAI MODULE, RTP, PAST PAPERS

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QUESTION 1

An invoice in respect of a consignment of chemicals A and B provides the following information:

Particulars	(Rs.)
Chemical A: 10,000 kgs: at Rs. 10 per kg.	1,00,000
Chemical B: 8,000 kgs at Rs. 13 per kg	1,04,000
Basic Custom Duty @ 10% (Credit is not allowed)	20,400
Railway Freight	3,840
Total Cost	2,28,240

A shortage of 500 kgs. in chemical A and 320 kgs. in chemical B is noticed due to normal breakages. You are required to COMPUTE the rate per kg of each chemical, assuming a provision of 2% for further deterioration.

SOLUTION

Working:

(i) Computation of effective quantity of each chemical available for use:

Particulars	Chemical A (kg.)	Chemical B (Kg.)
Quantity Purchased	10,000	8,000
Less: Shortage due to normal breakages	500	320
	9,500	7,680
Less: Provision for deterioration 2%	190	153.6
Quantity Available	9,310	7,526.4

(ii) Statement showing the computation of rate per kg. of each chemical

Particulars	Chemical A (Rs.)	Chemical B (Rs.)
Purchase price 10,000 @ Rs. 10 per kg , 8,000 @ Rs. 13 per kg	1,00,000	1,04,000
Add: Basic Custom Duty @ 10%	10,000	10,400
Add: Railway Freight (in the ratio of quantity purchased ie: 5:4)	2,133	1,707
Total Cost (A)	1,12,133	1,16,107
Effective Quantity (see working) (B)	9,310 kg.	7,526.4 kg.
Rate per kg. (A /B)	12.04	15.43

QUESTION 2

The quarterly production of a company's product which has a steady market is 20,000 units. Each unit of a product requires 0.5 kg. of raw material. The cost of placing one order for raw material is Rs. 100 and the inventory carrying cost is Rs. 2 per annum. The lead time for procurement of raw material is 36 days and a safety stock of 1,000 kg. of raw materials is maintained by the company. The company has been able to negotiate the following discount structure with the raw material supplier.

Order quantity (kg.)	Discount (Rs.)
Upto 6,000	NIL
6,001 – 8,000	400
8,001 – 16,000	2,000
16,001 – 30,000	3,200
30,001 – 45,000	4,000

You are required to

(i) Calculate the re-order point taking 30 days in a month.

(ii) Prepare a statement showing the total cost of procurement and storage of raw material after considering the discount of the company elects to place one, two, four or six orders in the year.

(iii) State the number of orders which the company should place to minimize the costs after taking EOQ also into consideration.

SOLUTION

Working notes

1. Annual production (20,000 units per quarter × 4 quarters) = 80,000 units
2. Raw material required for 80,000 units (80,000 units × 0.5 kg.) = 40,000 kg.

3. $EOQ = \sqrt{\dfrac{2 \times 40,000 \text{ kgs.} \times \text{Rs. } 100}{\text{Rs. } 2}}$ = 2,000 kgs.

4. Total cost of procurement and storage when the order size is equal to
   EOQ or 2,000 kg:(No. of orders (40,000 kg. ÷ 2,000 kg.)   = 20 times
   Ordering cost (20 orders × Rs.100)   = Rs. 2,000
   Carrying cost (Rs.)($\frac{1}{2}$ × 2,000 kg. × Rs. 2)   = Rs. 2,000
   Total cost   Rs. 4,000

(i) Re-order point   =   Safety stock + Lead time consumption

   =   1,000 kg. + $\dfrac{40,000 \text{ kg.} \times 36 \text{ days}}{360 \text{ days}}$

   =   1,000 kg. + 4,000 kg. = 5,000 kg.

(ii) Statement showing the total cost of procurement and storage of raw materials

(after considering the discount)

Order size	No. of orders	Total cost of procurement	Average stock	Total cost of storage of rawmaterials	Discount	Total cost
Kg.		(Rs.)	Kg.	(Rs.)	(Rs.)	(Rs.)
(1)	(2)	(3)=(2)×Rs.100	(4)=$\frac{1}{2}$×(1)	(5)=(4)×Rs.2	(6)	(7)=[(3)+(5)] – (6)
40,000	1	100	20,000	40,000	4,000	36,100
20,000	2	200	10,000	20,000	3,200	17,000
10,000	4	400	5,000	10,000	2,000	8,400
6666.66	6	600	3,333	6,666	400	6,866

(iii) Number of orders which the company should place to minimize the costs after taking EOQ also into consideration is 20 orders each of size 2,000 kg. The total cost of procurement and storage in this case comes to Rs. 4,000, which is minimum. (Refer to working notes 3 and 4)

QUESTION 3

Following details are related to a manufacturing concern:

Re-order Level	16,000 units
Economic Order Quality	90,000
Minimum Stock Level	100,000 units
Maximum Stock Level	190,000 units
Average Lead Time	6 days
Difference between minimum lead time and Maximum lead time	4 days

Calculate:

(i) Maximum consumption per day   (ii) Minimum consumption per day

SOLUTION

Difference between Minimum lead time & Maximum lead time = 4 days Max. lead time – Min. lead time = 4 days

Or, Max. lead time = Min. lead time + 4 days   (I)

Average lead time is given as 6 days i.e.

$$\frac{\text{Max. lead time + Min. lead time}}{2} = 6 \text{ days} \text{(ii)}$$

Putting the value of (i) in (ii),

$$\frac{\text{Min. lead time + 4 days + Min. lead time}}{2} = 6 \text{ days}$$

Or, Min. lead time + 4 days + Min. lead time   = 12 days
Or, 2 Min. lead time   = 8 days

Or, Minimum lead time $= \dfrac{8 \text{ days}}{2}$ = 4 days

Putting this Minimum lead time value in (i), we get
Maximum lead time   = 4 days + 4 days = 8 days

(i) Maximum consumption per day:

Re-order level = Max. Re-order period × Maximum Consumption per day

1,60,000 units = 8 days × Maximum Consumption per day

Or, Maximum Consumption per day $= \dfrac{1,60,000 \text{ units}}{8 \text{ days}}$ = 20000 units

(ii)   Minimum Consumption per day: Maximum Stock Level =
Re-order level + Re-order Quantity – (Min. lead time × Min. Consumption per day)

Or, 1,90,000 units = 1,60,000 units + 90,000 units – (4 days × Min. Consumption

per day)

Or, 4 days × Min. Consumption per day

= 2,50,000 units – 1,90,000 units = 60,000 units

Or, Minimum Consumption per day = $\dfrac{60,000 \text{ units}}{4 \text{ days}}$ = 15,000 days

QUESTION 4 (RTP May 19) (Similar to RTP May 21)

Ananya Ltd. produces a product 'Exe' using a raw material Dee. To produce one unit of Exe, 2 kg of Dee is required. As per the sales forecast conducted by the company, it will able to sale 10,000 units of Exe in the coming year. The following is the information regarding the raw material Dee:

(i) The Re-order quantity is 200 kg. less than the Economic Order Quantity (EOQ).
(ii) Maximum consumption per day is 20 kg. more than the average consumption per day.
(iii) There is an opening stock of 1,000 kg.
(iv) Time required to get the raw materials from the suppliers is 4 to 8 days.
(v) The purchase price is Rs. 125 per kg.

There is an opening stock of 900 units of the finished product Exe.
The rate of interest charged by bank on Cash Credit facility is 13.76%.
To place an order company has to incur Rs. 720 on paper and documentation work. From the above information find out the following in relation to raw material Dee:

(a) Re-order Quantity
(b) Maximum Stock level
(c) Minimum Stock level
(d) Calculate the impact on the profitability of the company by not ordering the EOQ. [Take 364 days for a year]

SOLUTION

Working Notes:

(i) Computation of annual consumption & annual demand for raw material Dee':

Sales forecast of the product 'Exe'	10,000 units
Less: Opening stock of 'Exe'	(900 units)
Fresh units of 'Exe' to be produced	9,100 units
Raw material required to produce 9,100 units of 'Exe' (9,100 units × 2 kg.)	18,200 kg.
Less: Opening Stock of 'Dee'	(1,000 kg.)
Annual demand for raw material 'Dee'	17,200 kg.

(ii) Computation of Economic Order Quantity (EOQ):

$$EOQ = \sqrt{\frac{2 \times \text{Annual demand of 'Dee '} \times \text{Ordering cost}}{\text{Carrying cost per unit per annum}}}$$

$$= \sqrt{\frac{2 \times 17,200\text{kg.} \times \text{Rs. } 720}{\text{Rs.}125 \times 13.76\%}}$$

$$= \sqrt{\frac{2 \times 17,200\text{kg.} \times \text{Rs.}720}{\text{Rs. } 17.2}}$$

= 1,200 kg.

(iii) Re-Order level:

= (Maximum consumption per day × Maximum lead time)

$$= \left\{ \left(\frac{\text{Annual Consumption of 'Dee'}}{364 \text{ days}} + 20 \text{ kg} \right) \times 8 \text{ days} \right\}$$

$$= \left\{ \left(\frac{18,200 \text{ kg}}{364 \text{ days}} + 20\text{kg} \right) \times 8 \text{ days} \right\}$$

= 560 kg.

(iv) Minimum consumption per day of raw material 'Dee':

Average Consumption per day = 50 Kg.

Hence, Maximum Consumption per day = 50 kg. + 20 kg. = 70 kg.

So Minimum consumption per day will be

$$\text{Average Consumption} = \frac{\text{Min. consumption + Max. consumption}}{2}$$

$$\text{Or, 50 kg.} = \frac{\text{Min. consumption + 70 kg.}}{2}$$

Or, Min Consumption = 100 kg – 70 kg. = 30 kg

(a) Re-order quantity :

EOQ – 200 kg. = 1,200 kg. – 200 kg.= 1,000 kg.

(b) Maximum stock level:

= Re-order level + Re-order Quantity – (Min. consumption per day × Min. lead time)

= 560 kg. + 1,000 kg. – (30 kg. × 4 days) = 1,560 kg. – 120 kg. = 1,440 kg.

(c) Minimum stock level:
= Re-order level – (Average consumption per day × Average lead time)
= 560 kg. – (50 kg. × 6 days) = 260 kg.

(d) Impact on the profitability of the company by not ordering the EOQ.

		When purchasing the ROQ	When purchasing the EOQ
I	Order quantity	1,000 kg.	1,200 kg.
II	No. of orders a year	$\dfrac{17,200kg.}{1,000kg.}$ = 17.2 or 18 orders	$\dfrac{17,200kg.}{1,200kg.}$ = 14.33 or 15 orders
III	Ordering Cost	18 orders × Rs. 720 = Rs.12,960	15 orders × Rs. 720 = Rs.10,800
IV	Average Inventory	$\dfrac{500kg.}{2}$ = 1,000kg.	$\dfrac{1,200kg.}{2}$ = 600kg.
V	Carrying Cost	500 kg. × Rs. 17.2 = Rs.8,600	600 kg. × Rs. 17.2 = Rs.10,320
VI	Total Cost	Rs. 21,560	Rs. 21,120

Extra Cost incurred due to not ordering EOQ = Rs. 21,560 – Rs. 21,120 = Rs.440

QUESTION 5 (Advance Level Question) (RTP Nov' 20)

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

1. Minimum stock of A

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

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

2. Maximum stock of B

Re-order level + Re-order quantity – (Minimum consumption x Minimum delivery Period)

= 4,750 + 5,000 – (175 x 4 x 3)
= 9,750 – 2,100 = 7,650 kgs.

3. Re- order level of C

= Maximum delivery period x Maximum usage
= 4 x 225 x 6 = 5,400 kgs.

        OR

Re- order level of C

= Minimum level of C + (Average rate of consumption x Average time required to obtain fresh delivery)

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

4. Average stock level of A

= Minimum stock level of A + $\frac{1}{2}$ Re-order quantity of A

= 4,000 + $\frac{1}{2}$ × 10,000 = 4,000 + 5,000 = 9,000 kgs.

OR

Average stock level of A

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

= $\dfrac{4,000 + 16,250}{2}$ = 10,125 kgs.

Working note:

Maximum stock of A = ROL + ROQ – (Minimum consumption × Minimum reorder period)

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

QUESTION 6 (Past Paper May'18)

From the following data for the year ended 31st March, 2022, Calculate the inventory turnover ratio of the two items and put forward your comments on them.

	Material A (Rs.)	Material B (Rs.)
Opening stock 1.04.2021	10,000	9,000
Purchase during the year	52,000	27,000
Closing stock 31.03.2022	6,000	11,000

SOLUTION

First of all, it is necessary to find out the material consumed:

Cost of material consumed	Material A (Rs.)	Material B (Rs.)
Opening Stock	10,000	9,000
Add: Purchases	52,000	27,000
	62,000	36,000
Less: Closing Stock	6,000	11,000
Materials consumed	56,000	25,000
Average Inventory: (Opening Stock + Closing Stock) ÷ 2	8,000	10,000
Inventory Turnover Ratio: (Consumption ÷ Average Inventory)	7 Times	2.5 Times
Inventory Turnover (Number of Days in a year/IT Ratio)	52 Days	146 Days

Comments: Material A is moving faster than Material B.

QUESTION 7

M/s Tyrotubes trades in four wheeler tyres and tubes. It stocks sufficient quantity of tyres of almost every vehicle. In the year end 2021-22, the report of sales manager revealed that M/s Tyrotubes experienced stock-out of tyres.

The stock -out data is as follows:

Stock - Out of Tyres	No. of times of Stock Out
100	2
80	5
50	10
20	20
10	30
0	33

M/s Tyrotubes loses Rs.150 per unit due to stock-out and spends Rs.50 per unit on carrying of inventory.

DETERMINE optimum safest stock level.

SOLUTION

Computation of Stock -out and Inventory carrying cost

Safety Stock Level (units) (1)	Stockout (units) (2)	Probability (3)	Stock-out Cost (Rs.) (4) = (2) x Rs.150	Expected Stock-out Cost (Rs.) (5)=(3)x(4)	Inventory Carrying Cost (Rs.) (6) = (1)x Rs.50	Total Cost (Rs.) (7) = (5) + (6)
100	0	0.00	0	0	5,000	5,000
80	20	0.02	3,000	60	4,000	4,060
50	50	0.02	7,500	150		
	30	0.05	4,500	225		
			12,000	375	2,500	2,875
20	80	0.02	12,000	240		
	60	0.05	9,000	450		
	30	0.10	4,500	450		
			25,500	1,140	1,000	2,140
10	90	0.02	13,500	270		
	70	0.05	10,500	525		
	40	0.10	6,000	600		
	10	0.20	1,500	300		
			31,500	1,695	500	2,195

0	100	0.02	15,000	300		2,700
	80	0.05	12,000	600		
	50	0.10	7,500	750		
	20	0.20	3,000	600		
	10	0.30	1,500	450		
			39,000	2,700	0	2700

At safety stock level of 20 units, total cost is least ie: Rs.2,140

Working Note:
Computation of Probability of Stock -out

Stock-out (units)	100	80	50	20	10	0	Total
Nos. of Times	2	5	10	20	30	33	100
Probability	0.02	0.05	0.10	0.20	0.30	0.33	1.00

Explanation:

Stock-out means the demand of an item that could not be fulfilled because of insufficient stock level.

Safety stock is the level of stock of any item which is maintained in excess of lead time consumption. It is kept as cushion against unexpected demand for that item.

Safety stock level	Impact
100 units	Any unexpected demand up-to 100 units can be met.
80 units	Stock out will only arise if unexpected demand will be for 100 units. In this case 20 units will remain unsatisfied. The probability of any unexpected demand for 100 units is 0.02.
50 units	An unexpected demand beyond 50 units will remain unsatisfied. If unexpected demand for 100 units arises (probability is 0.02) 50 units will unsatisfied. Similarly, if unexpected demand for 80 units arises (probability is 0.05), 30 units will unsatisfied.
20 units	Any unexpected demand beyond 20 units will remain unsatisfied. If unexpected demand for 100 units arises (probability is 0.02), 80 units will remain unsatisfied. If unexpected demand for 80 units arises (probability is 0.05), 60 units will remain unsatisfied. Similarly, when unexpected demand for 50 units arises (probability is 0.10), 30 units will remain unsatisfied.

10 units	Any unexpected demand beyond 10 units will remain unsatisfied. If unexpected demand for 100 units arises (probability is 0.02), 90 units will remain unsatisfied. If unexpected demand for 80 units arises (probability is 0.05), 70 units will remain unsatisfied. If unexpected demand for 50 units arises (probability is 0.10), 40 units will remain unsatisfied. Similarly, when unexpected demand for 20 units arises (probability is 0.20), 10 units will remain unsatisfied.
0 unit	When no safety stock level is maintained, any unexpected demand cannot satisfied. If unexpected demand for 100 units arises (probability is 0.02), 100 units will remain unsatisfied. If unexpected demand for 80 units arises (probability is 0.05), 80 units will remain unsatisfied. If unexpected demand for 50 units arises (probability is 0.10), 50 units will remain unsatisfied. If unexpected demand for 20 units arises (probability is 0.20), 20 units will remain unsatisfied. Similarly, unexpected demand for 10 units (probability is 0.30), 10 units will remain unsatisfied.

QUESTION 8 (RTP May 20)

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 (Rs.)
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	-
12-01-20	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 2021 and DETERMINE the value of stock as on 31-01-2021.

(v) Value of components used during the month of January, 2021.

(vi) Inventory turnover ratio.

SOLUTION

Workings:

Consumption is calculated on the basis of material requisitions:

Maximum component usage = 4,500 units (Material requisition on 10-01-21)

Minimum component usage = 1,500 units (Material requisition on 24 -01-21)