ULTIMATE CA

PYQ RTP COMPILER
Chp2 Material Cost

Costing CA Intermediate Regular Batch Jan 2025

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Past Year Questions (PYQs)

May 2018 to May 2024

PYQ Analysis

Exam	Q No.	Marks	Requirement	Special Points
PYQ May 2024	MCQ 2	2m	Number of days for which avg inventory is held	Basic - Easy
PYQ May 2024	DQ 1a	5m	EOQ, ROL, Discount Offer	Basic - Easy
PYQ Nov 2023	1a	5m	EOQ, ROL, Maximum Stock Level	Basic - Easy
PYQ Nov 2023	6b	5m	True or False	Theory
PYQ Nov 2022	1c	5m	EOQ, ROP	Basic - Easy
PYQ Nov 2022	6a	5m	Demand Pull and Pull through	Theory
PYQ May 2022	1a	5m	EOQ, Frequency of Order, Inventory Cost	Basic – Easy
PYQ May 2022	6b	5m	Treatment of items in material receipts valuation	Theory
PYQ Dec 2021	1a	5m	Inventory Turnover Ratio and Checking of Inventory Days	Basic – Easy
PYQ Dec 2021	4c	5m	Bill of Material and uses in Different Department	Theory
PYQ July 2021	1a	5m	Rank items and Classify ABC	Item ranking should be as per % of inventory cost Classification Criteria is given in question itself
PYQ July 2021	6e	5m	Short note on VED Analysis	Theory
PYQ Jan 2021	6a	5m	Treatment of items in material receipts valuation	Theory

PYQ Analysis

Exam	Q No.	Marks	Requirement	Special Points
PYQ Nov 2020	3b	10m	Cost saving due to EOQ, ROL, Order Frequency	• Number of orders are taken in integers, but ordering cost is taken as per actual number of orders in decimals • As no separate data for Max Consumption is given, we will take given consumption as max and same with the lead time
PYQ Nov 2019	1a	5m	EOQ and Total Annual Inventory Cost	Basic - Easy
PYQ Nov 2019	6c	5m	Inventory Control and Objectives	Theory
PYQ May 2019	4b	10m	Store Ledger by WAM and LIFO. Also Cost of Material Consumed	Calculation of Cost of material consumed by statement
PYQ Nov 2018	1a	5m	ROQ, ROL, Max Level, Min Level, Avg Stock Level	Annual Requirement of Material
PYQ Nov 2018	6b	5m	Obsolescence	Theory
PYQ May 2018	1a	5m	EOQ and evaluation of quantity discount	Comments about risk in high inventory
PYQ -May 2018	5a	5m	Inventory Turnover Ratio and Checking of Inventory Days	Advice about Moving of Materials

PYQ May 2024 – Q1a

(a) *Tesco cycles Ltd. used about 3,60,000 cycle locks per annum and the usage is fairly constant at 30,000 per month. The cycle lock costs ₹ 240 each at wholesale rate and carrying cost is estimated to be 10% of the annual average inventory value. The cost to place an order is ₹ 1200. It takes 45 days to receive delivery from the date of order. In order to avoid any kind of disruption in assembly line, safety stock of 6,500 cycle locks is always maintained by Tesco Cycles Ltd.*

(Assume 360 days in a year).

Compute:

(i) E.O.Q.

(ii) The re-order level.

(iii) The company has been offered a quantity discount of 2% on the purchase of cycle locks provided the order size is 30,000 units at a time. Advise whether quantity discount offer can be accepted?

PYQ May 2024 – Q1a

(a) (i) Calculation of Economic Order Quantity

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 3,60,000 \text{ units} \times ₹1200}{₹24}} = \textbf{6,000 units}$$

Where,

A = Annual Demand = 3,60,000 units

O = Ordering cost per order = ₹1200

C = Inventory carrying cost per unit per annum = 10% of ₹240 = ₹ 24

(ii) Re-order Level = Safety Stock + Lead Time Consumption

= 6,500 + (1,000 x 45) units = **51,500 units**

Or,

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

= 6,500 + (1,000 x 45) units = **51,500 units**

PYQ May 2024 – Q1a

(iii) Evaluation of Profitability of Different Options of Order Quantity

(a) When EOQ is ordered (order size of 6,000 units)

		(₹)
Purchase Cost	(3,60,000 units × ₹ 240)	8,64,00,000
Ordering Cost	[(3,60,000 units/6,000 units) × ₹ 1,200]	72,000
Carrying Cost	(6,000 units × ₹240 ×½ × 10/100)	72,000
Total Cost		**8,65,44,000**

PYQ May 2024 – Q1a

(b) When Quantity Discount is accepted (order size of 30,000 units)

		(₹)
Purchase Cost	[3,60,000 units × ₹ 235.2 (240-4.8)]	8,46,72,000
Ordering Cost	[(3,60,000 units/30,000 units) × ₹1,200]	14,400
Carrying Cost	(30,000 units × ₹ 235.2 ×½ × 10/100)	3,52,800
Total Cost		**8,50,39,200**

Advise – The total cost of inventory is lower if discount is accepted. Hence, the company is advised to accept the quantity discount.

PYQ May 2024 – MCQ – Q1

Opening stock of material Z was ₹ 138,000. Material worth ₹ 4,66,000 was purchased during the year and the closing stock at the end of the year was ₹ 74,000.
(Assume 360 days in a year)Calculate the number of days for which the average inventory is held.

(A) 48 days

(B) 72 days

(C) 50 days

(D) 82 days

PYQ Nov 2023 – Q1a

(a) *ABC Limited manufactures a product 'AM25' using material 'CEE'.*

The following information is available regarding material 'CEE':

Purchase price per unit	*₹ 300*
Cost of placing an order	*₹ 150*
Carrying cost per unit per annum	*6% of purchase price*
Consumption of material 'CEE' per annum	*1,94,400 units*
Lead time	*Average 6 days, Maximum 8 days, Minimum 4 days*

Maximum consumption of material 'CEE' per day is 200 kg more than the average consumption per day.

Required:

Calculate the following in relation to material 'CEE':

(i) Economic Order Quantity.

(ii) Reorder Level

(iii) Maximum Stock Level. (Assume 360 days in a year) ***(5 Marks)***

PYQ Nov 2023 – Q1a

(a) (i) Economic Order Quantity (EOQ) = $\sqrt{\frac{2AO}{C}}$

Where, A= Annual demand for the material CEE = 1,94,400 Kgs

O = Ordering cost = ₹ 150

C = Carrying cost per unit per annum = 6% of ₹ 300 = 18

EOQ = $\sqrt{\frac{2\times1,94,400\times150}{18}}$ = **1,800 Units (Kgs.)**

(ii) Re-order level (ROL) = Maximum consumption# × Maximum lead time

ROL = 740 × 8 = **5,920 Kg.**

Maximum Consumption = Average consumption +200 kg

$= \frac{1,94,400}{360} + 200 = 540 + 200$ Kg = 740 Kg.

Maximum lead time = 8 days

(iii) Maximum Stock level = Re-order quantity + Re-order level – (Min. consumption* × Min. lead time)

= 1,800 + 5,920 – (340×4)

= 7,720 – 1,360 = **6,360 Kg**

*Minimum consumption = 2 × Average consumption – Maximum Consumption

= 2 × 540 – 740

= 1080 – 740 = 340 kg.

PYQ Nov 2023 – Q6b

(b) *State with reasons whether the following independent statements are* ***true or false:***

(i) *Under LIFO method, in the period of falling prices, lower income is reported and income-tax liability is reduced.*

(ii) *Under VED analysis, inventories are classified on the basis of cost of individual items.*

(iii) *Material requisition note is prepared by the store keeper.*

(iv) *Simple average pricing method is suitable when quantity purchased under each lot is different and prices fluctuate considerably.*

(v) *Bin card and stores ledger are maintained by the purchasing department.* ***(5 Marks)***

PYQ Nov 2023 – Q6b

(b)

Statement No.	True/False	Reason
(i)	**False**	Under LIFO method, in case of falling prices profit tends to rise due to lower material cost, thus income tax liability is increased.
(ii)	**False**	Under VED Analysis, inventories are classified on the basis of its criticality for the production function and final product.
(iii)	**False**	Material Requisition Note is prepared by the production or other consuming department. It is a voucher used to get material issued from store.
(iv)	**False**	Simple average pricing method is suitable when the materials are received in uniform lots of similar quantity, and prices do not fluctuate considerably.
(v)	**False**	Bin card is maintained by the storekeeper in the store. While Stores ledger is maintained in cost accounting department.

PYQ Nov 2022 – Q1c

(c) *MM Ltd. uses 7500 valves per month which is purchased at a price of ₹1.50 per unit. The carrying cost is estimated to be 20% of average inventory investment on an annual basis. The cost to place an order and getting the delivery is ₹15. It takes a period of 1.5 months to receive a delivery from the date of placing an order and a safety stock of 3200 valves is desired.*

You are required to determine:

(i) The Economic Order Quantity (EOQ) and the frequency of orders.

(ii) The re-order point.

(iii) The Economic Order Quantity (EOQ) if the valve cost ₹4.50 each instead of 1.50 each.

(Assume a year consists of 360 days)

PYQ Nov 2022 – Q1c

(c) (i) Calculation of Economic Order Quantity

Annual requirement (A) = 7500×12= 90,000 Valves

Cost per order (O) = ₹ 15

Inventory carrying cost (i) = 20%

Cost per unit of spare (c) = ₹ 1.5

Carrying cost per unit (i × c) = ₹ 1.5 × 20% = ₹ 0.30

Economic Order Quantity (EOQ) $= \sqrt{\frac{2 \times A \times O}{i \times c}}$

$= \sqrt{\frac{2 \times 90,000 \times 15}{0.3}}$ = 3,000 Valves

Frequency of order or Number of Orders = 90,000/3,000 = 30 orders.

So Order can be placed in every 12 (360days/30) days

PYQ Nov 2022 – Q1c

(ii) Re-order Quantity = {Maximum Consumption X Maximum lead time} + safety Stock

= {7500X1.5} + 3200 = 14,450 Valves

(iii) Calculation of Economic Order Quantity if valve costs ₹ 4.50

Carrying cost is 20% of ₹ 4.50 = ₹ 0.90

$$\text{Economic Order Quantity (EOQ)} = \sqrt{\frac{2 \times A \times O}{i \times c}}$$

$$= \sqrt{\frac{2 \times 90{,}000 \times 15}{0.9}}$$

= 1732.0508 units or 1733 Valves

PYQ Nov 2022 – Q6a

(a) Which system of inventory management is known as 'Demand pull' or 'Pull through' system of production? Explain. Also, specify the two principles on which this system is based.

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

It 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.

PYQ May 2022 – Q1a

(a) *A Limited a toy company purchases its requirement of raw material from S Limited at ₹120 per kg. The company incurs a handling cost of ₹400 plus freight of ₹350 per order. The incremental carrying cost of inventory of raw material is ₹0.25 per kg per month. In addition the cost of working capital finance on the investment in inventory of raw material is ₹15 per kg per annum. The annual production of the toys is 60,000 units and 5 units of toys are obtained from one kg. of raw material.*

Required:

(i) *Calculate the Economic Order Quantity (EOQ) of raw materials.*

(ii) *Advise, how frequently company should order to minimize its procurement cost. Assume 360 days in a year.*

(iii) *Calculate the total ordering cost and total inventory carrying cost per annum as per EOQ.*

PYQ May 2022 – Q1a

(a) Annual requirement of raw material in kg. (A) $= \frac{60{,}000 \text{ units}}{5 \text{ units per kg.}} =$ **12,000 kg.**

Ordering Cost (Handling & freight cost) (O) = ₹ 400 + ₹ 350 = ₹ 750

Carrying cost per unit per annum i.e. inventory carrying cost + working capital cost (c × i)

= (₹ 0.25 × 12 months) + ₹15

= ₹ 18 per kg.

(i) E.O.Q. $= \sqrt{\frac{2 \times 12{,}000 \text{ kgs.} \times ₹\ 750}{₹\ 18}}$ **= 1,000 kg.**

PYQ May 2022 – Q1a

(ii) Frequency of orders for procurement:

Annual consumption (A) = 12,000 kg.

Quantity per order (EOQ) = 1,000 kg.

No. of orders per annum $\left(\frac{A}{EOQ}\right)$ = $\frac{12{,}000\,kg.}{1{,}000\,kg.}$ = 12

Frequency of placing orders (in months) = $\frac{12\,months}{12\,orders}$ **= 1 months**

Or, (in days) = $\frac{360\,days}{12\,orders}$ **= 30 days**

PYQ May 2022 – Q1a

(iii) Calculation of total ordering cost and total inventory carrying cost as per EOQ:

	Amount/Quantity
Size of the order	1,000 kg.
No. of orders	12
Cost of placing orders	**₹ 9,000** (12 orders × ₹ 750)
Inventory carrying cost	**₹ 9,000** (1,000 kg. × ½ × ₹ 18)
Total Cost	₹18,000

PYQ May 2022 – Q6b

(b) Write down the treatment of following items associated with purchase of materials.

(i) Cash discount

(ii) IGST

(iii) Demurrage

(iv) Shortage

(v) Basic Custom Duty

PYQ May 2022 – Q6b

(b) Treatment of items associated with purchase of materials is tabulated as below

S. No.	Items	Treatment
(i)	**Cash Discount**	Cash discount **is not deducted** from the purchase price. It is treated as interest and finance charges. It is ignored.
(ii)	**Integrated Goods and Service Tax (IGST)**	Integrated Goods and Service Tax (IGST) is paid on inter-state supply of goods and provision of services and collected from the buyers. It **is excluded from the cost of purchase if credit for the same is available**. Unless mentioned specifically it should not form part of cost of purchase.
(iii)	**Demurrage**	Demurrage is a penalty imposed by the transporter for delay in uploading or offloading of materials. It is an **abnormal cost and not included with cost of purchase**

PYQ May 2022 – Q6b

(iv)	**Shortage**	Shortage in materials are treated as follows: **Shortage due to normal reasons: Good units absorb the cost of shortage due to normal reasons.** Losses due to breaking of bulk, evaporation, or due to any unavoidable conditions etc. are the reasons of normal loss. **Shortage due to abnormal reasons:** Shortage arises due to abnormal reasons such as material mishandling, pilferage, or due to any avoidable reasons are not absorbed by the good units. Losses due to abnormal reasons **are debited to costing profit and loss account**.
(v)	**Basic Custom Duty**	Basic Custom duty is paid on import of goods from outside India. It **is added** with the purchase cost.

PYQ Dec 2021 – Q1a

(a) *XYZ Ltd. uses two types of raw materials – 'Material A' and 'Material B' in the production process and has provided the following data for the year ended on 31st March, 2021:*

Particulars	*Material A (₹)*	*Material B (₹)*
Opening stock as on 01.04.2020	*30,000*	*32,000*
Purchase during the year	*90,000*	*51,000*
Closing stock as on 31.03.2021	*20,000*	*14,000*

(i) You are required to calculate:

(a) The inventory turnover ratio of 'Material A' and 'Material B'.

(b) The number of days for which the average inventory is held for both materials 'A' and 'B'.

(ii) Based on above calculations, give your comments.

(Assume 360 days in a year.)

PYQ Dec 2021 – Q1a

(a) (i) Calculation of Inventory Turnover ratios and number of days:

	Material A (₹)	Material B (₹)
Opening stock	30,000	32,000
Add: Purchases	90,000	51,000
	1,20,000	83,000
Less: Closing stock	20,000	14,000
Materials consumed	1,00,000	69,000
Average inventory: (Opening Stock + Closing Stock) ÷ 2	25,000	23,000
(a) Inventory Turnover ratio: (Consumption ÷ Average inventory)	4 times	3 times
(b) Number of days for which the average inventory held (Number of Days in a year/IT ratio)	90 days	120 days

(ii) Comments: Material A is moving faster than Material B. Or Material A has a less holding period.

PYQ Dec 2021 – Q4c

(c) What is Bill of Material? Describe the uses of Bill of Material in following departments:

(i) Purchases Department

(ii) Production Department

(iii) Stores Department

(iv) Cost/Accounting Department ***(5 Marks)***

(c) Bill of Material: It is a detailed list specifying the standard quantities and qualities of materials and components required for producing a product or carrying out of any job.

Uses of Bill of Material in different department:

Purchase Department	Production Department	Stores Department	Cost/ Accounting Department
Materials are procured (purchased) on the basis of specifications mentioned in it.	Production is planned according to the nature, volume of the materials required to be used. Accordingly, material requisition lists are prepared.	It is used as a reference document while issuing materials to the requisitioning department.	It is used to estimate cost and profit. Any purchase, issue and usage are compared/ verified against this document.

PYQ Jul 2021 – Q1a

(a) *MM Ltd. has provided the following information about the items in its inventory.*

Item Code Number	Units	Unit Cost (₹)
101	25	50
102	300	01
103	50	80
104	75	08
105	225	02
106	75	12

MM Ltd. has adopted the policy of classifying the items constituting 15% or above of Total Inventory Cost as 'A' category, items constituting 6% or less of Total Inventory Cost as 'C' category and the remaining items as 'B' category.

You are required to:

(i) *Rank the items on the basis of % of Total Inventory Cost.*

(ii) *Classify the items into A, B and C categories as per ABC Analysis of Inventory Control adopted by MM Ltd.*

PYQ Jul 2021 – Q1a

(a) (i) Statement of Total Inventory Cost and Ranking of items

Item code no.	Units	% of Total units	Unit cost (₹)	Total Inventory cost (₹)	% of Total Inventory cost	Ranking
101	25	3.33	50	1,250	16.67	**2**
102	300	40.00	1	300	4.00	**6**
103	50	6.67	80	4,000	53.33	**1**
104	75	10.00	8	600	8.00	**4**
105	225	30.00	2	450	6.00	**5**
106	75	10.00	12	900	12.00	**3**
	750	100	153	7,500	100	

(ii) Classifying items as per ABC Analysis of Inventory Control

Basis for ABC Classification as % of Total Inventory Cost

15% & above	--	'A' items
7% to 14%	--	'B' items
6% & Less	--	'C' items

PYQ Jul 2021 – Q1a

Ranking	Item code No.	% of Total units	Total Inventory cost (₹)	% of Total Inventory Cost	Category
1	103	6.67	4,000	53.33	
2	101	3.33	1,250	16.67	
Total	2	10.00	5,250	70.00	A
3	106	10.00	900	12.00	
4	104	10.00	600	8.00	
Total	2	20.00	1,500	20.00	B
5	105	30.00	450	6.00	
6	102	40.00	300	4.00	
Total	2	70.00	750	10.00	C
Grand Total	6	100	7,500	100	

PYQ Jul 2021 – Q6e

(e) Write a short note on VED analysis of Inventory Control. ***(4 x 5 = 20 Marks)***

(e) Vital, Essential and Desirable (VED): Under this system of inventory analysis, **inventories are classified on the basis of its criticality for the production function and final product**. Generally, this classification is done for spare parts which are used for production.

(i) Vital- Items are classified as vital when its **unavailability can interrupt the production process and cause a production loss.** Items under **this category are strictly controlled by setting re-order level.**

(ii) Essential- Items under this category are essential but not vital. **The unavailability may cause sub standardisation and loss of efficiency in production process.** Items under this category are reviewed periodically and get the second priority.

(iii) Desirable- Items under this category are optional in nature; **unavailability does not cause any production or efficiency loss.**

PYQ Jan 2021 – Q6a

(a) State how the following items are treated in arriving at the value of cost of material purchased:

(i) Detention Charges/Fines

(ii) Demurrage

(iii) Cost of Returnable containers

(iv) Central Goods and Service Tax (CGST)

(v) Shortage due to abnormal reasons.

PYQ Jan 2021 – Q6a

(a) Treatment of items in arriving at the value of cost of material Purchased

S. No.	Items	Treatment
(i)	**Detention charges/ Fine**	Detention charges/ fines imposed for non-compliance of rule or law by any statutory authority. It is an abnormal cost and **not included** with cost of purchase.
(ii)	**Demurrage**	Demurrage is a penalty imposed by the transporter for delay in uploading or offloading of materials. It is an abnormal cost and **not included** with cost of purchase.
(iii)	**Cost of returnable containers**	Treatment of cost of returnable containers are as follows: Returnable Containers: If the containers are returned and their costs are refunded, then cost of containers should not be considered in the cost of purchase. If the amount of refund on returning the container is less than the amount paid, then, only the short fall is added with the cost of purchase.

PYQ Jan 2021 – Q6a

(iv)	**Central Goods and Service Tax (CGST)**	Central Goods and Service Tax (CGST) is paid on manufacture and supply of goods and collected from the buyer. It **is excluded** from the cost of purchase if the input credit is available for the same. Unless mentioned specifically CGST is not added with the cost of purchase.
(v)	**Shortage due to abnormal reasons**	Shortage arises due to abnormal reasons such as material mishandling, pilferage, or due to any avoidable reasons are not absorbed by the good units. Losses due to abnormal reasons are debited to costing profit and loss account.

PYQ Nov 2020 – Q3b

(b) *An automobile company purchases 27,000 spare parts for its annual requirements. The cost per order is ₹ 240 and the annual carrying cost of average inventory is 12.5%. Each spare part costs ₹ 50.*

At present, the order size is 3,000 spare parts.

(Assume that number of days in a year = 360 days)

Find out:

(i) How much the company's cost would be saved by opting EOQ model?

(ii) The Re-order point under EOQ model if lead time is 12 days.

(iii) How frequently should orders for procurement be placed under EOQ model?

(10 Marks)

PYQ Nov 2020 – Q3b

Economic Order Quantity (EOQ) $= \sqrt{\frac{2 \times A \times O}{i \times c}}$

$= \sqrt{\frac{2 \times 27{,}000 \times 240}{6.25}}$ **= 1440 units**

(i) Calculation of saving by opting EOQ:

	Existing Order policy	**EOQ Model**
No. of orders	9 $\left(\frac{27{,}000}{3{,}000}\right)$	**18.75 or 19** $\left(\frac{27{,}000}{1{,}440}\right)$
A. Ordering Cost (₹)	**2,160** (₹ 240 × 9)	**4,500** $\left\{₹\ 240 \times \left(\frac{27{,}000}{1{,}440}\right)\right\}$
B. Carrying cost (₹)	**9,375** $\left(\frac{3{,}000 \times ₹\ 6.25}{2}\right)$	**4,500** $\left(\frac{1{,}440 \times ₹\ 6.25}{2}\right)$
Total cost (A+B) (₹)	**11,535**	**9,000**

Savings of Cost by opting EOQ Model = ₹ 11,535 – ₹ 9,000 = ₹ 2,535

PYQ Nov 2020 – Q3b

(ii) Re-order point under EOQ:

Re-order point/ Re-order level = Maximum consumption × Maximum lead time

$$\text{Consumption per day} = \frac{27{,}000\,\text{units}}{360\,\text{days}} = \textbf{75 units}$$

Re-order point/ Re-order level = 75 units × 12 days **= 900 units**

(iii) Frequency of Orders (in days):

$$\frac{360\,\text{days}}{\text{No. of orders a year}} = \frac{360\,\text{days}}{19} = 18.95 \text{ days or } 19 \text{ days}$$

PYQ Nov 2019 – Q1a

(a) *Surekha Limited produces 4,000 Litres of paints on a quarterly basis. Each Litre requires 2 kg of raw material. The cost of placing one order for raw material is ₹ 40 and the purchasing price of raw material is ₹ 50 per kg. The storage cost and interest cost is 2% and 6% per annum respectively. The lead time for procurement of raw material is 15 days.*

Calculate Economic Order Quantity and Total Annual Inventory Cost in respect of the above raw material.

PYQ Nov 2019 – Q1a

(a) Working:

Calculation of Annual demand of raw material

= 4,000 Litres (per quarter) x 4 (No. of Quarter in a year) x 2 kg. (raw material required for each Litre of paint)

= **32,000 kg.**

Calculation of Carrying cost

Storage rate	=	2%
Interest Rate	=	6%
Total	=	8% per annum

Carrying cost per unit per annum = 8% of ₹ 50 = ₹ 4 per unit per annum

PYQ Nov 2019 – Q1a

(i) EOQ $= \sqrt{\frac{2 \times \text{Annual demand (A)} \times \text{Ordering Cost per order(O)}}{\text{Carrying cost per unit per annum (C)}}}$

$= \sqrt{\frac{2 \times 32{,}000\,\text{kg} \times ₹\,40}{₹\,4}} = \mathbf{800}$ Kg

(ii) Total Annual Inventory Cost

Purchasing cost of 32,000 kg @ ₹ 50 per kg	=	₹ 16,00,000
Ordering Cost $\left(\frac{32{,}000\,\text{kg}}{800\,\text{kg}} \times ₹\,40\right)$	=	₹ 1,600
Carrying Cost of Inventory $\left(\frac{15\ \text{days}}{30\ \text{days}} \times 800\ kg \times ₹\,4\right)$	=	₹ 1,600
		₹ 16,03,200

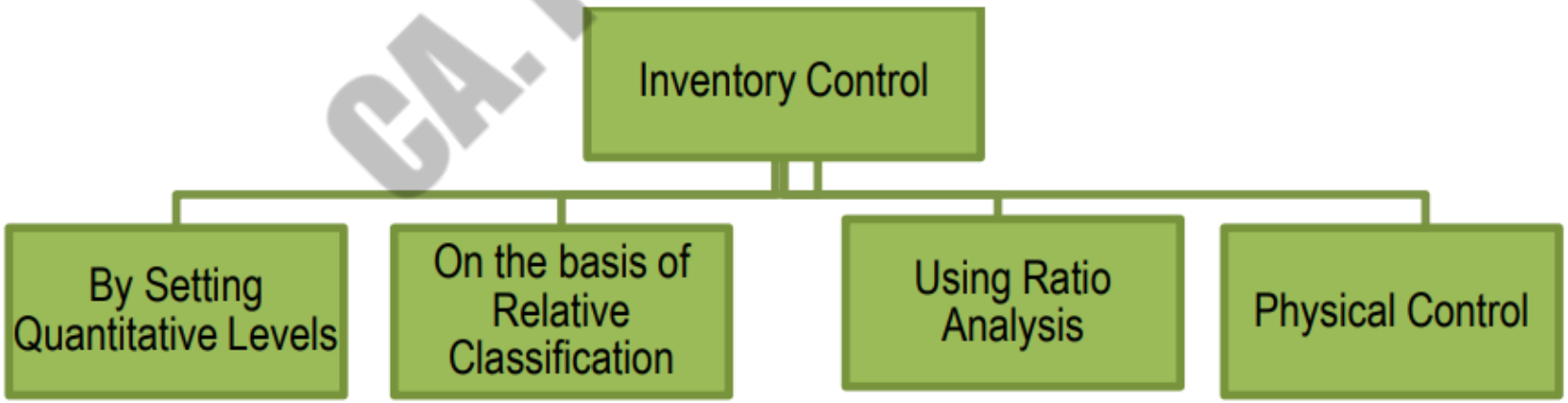
PYQ Nov 2019 – Q6c

(c) Define Inventory Control and give its objectives.

List down the basis to be adopted for Inventory Control.

(c) Inventory Control: The Chartered Institute of Management Accountants (CIMA) **defines** Inventory Control as "The function of ensuring that sufficient goods are retained in stock to meet all requirements without carrying unnecessarily large stocks."

The **objective** of inventory control is to make a balance between sufficient stock and over-stock. The stock maintained should be sufficient to meet the production requirements so that uninterrupted production flow can be maintained. Insufficient stock not only pause the production but also cause a loss of revenue and goodwill. On the other hand, Inventory requires some funds for purchase, storage, maintenance of materials with a risk of obsolescence, pilferage etc. A trade-off between Stock-out and Over-stocking is required. The management may employ various methods of Inventory control to have a balance. Management may adopt the following **basis** for Inventory control:



PYQ May 2019 – Q4b

(b) *The following are the details of receipt and issue of material 'CXE' in a manufacturing Co. during the month of April 2019:*

Date	Particulars	Quantity (kg)	Rate per kg
April 4	Purchase	3,000	₹16
April8	Issue	1,000	
April15	Purchase	1,500	₹18
April 20	Issue	1,200	
April 25	Return to supplier out of purchase made on April 15	300	
April 26	Issue	1,000	
April 28	Purchase	500	₹17

Opening stock as on 01-04-2019 is 1,000 kg @ ₹15 per kg.

On 30th April, 2019 it was found that 50 kg of material 'CXE' was fraudulently misappropriated by the store assistant and never recovered by the Company.

PYQ May 2019 – Q4b

Required:

(i) Prepare a store ledger account under each of the following method of pricing the issue:

(a) Weighted Average Method

(b) LIFO

(ii) What would be the value of material consumed and value of closing stock as on 30-04-2019 as per these two methods? ***(10 Marks)***

PYQ May 2019 – Q4b

(b) (i) (a) Stores Ledger Account for the month of April, 2019 (Weighted Average Method)

	Receipt			Issue			Balance		
Date	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)
1-4-19	_	_	_	_	_	_	1,000	15.00	15,000
4-4-19	3,000	16.00	48,000	_	_	_	4,000	15.75	63,000
8-4-19	_	_	_	1,000	15.75	15,750	3,000	15.75	47,250
15-4-19	1,500	18.00	27,000	_	_	_	4,500	16.50	74,250
20-4-19	_	_	_	1,200	16.50	19,800	3,300	16.50	54,450
25-4-19	_	_	_	300	18.00	5,400	3,000	16.35	49,050
26-4-19	_	_	_	1,000	16.35	16,350	2,000	16.35	32,700
28-4-19	500	17.00	8,500	_	_	_	2,500	16.48	41,200
30-4-19	_	_	_	50	16.48	824	2,450	16.48	40,376

PYQ May 2019 – Q4b

(b) Stores Ledger Account for the month of April, 2019 (LIFO)

	Receipt			Issue			Balance		
Date	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)
1-4-19	_	_	_	_	_	_	1,000	15	15,000
4-4-19	3,000	16	48,000	_	_	_	1,000 3,000	15 16	15,000 48,000
8-4-19	_	_	_	1,000	16	16,000	1,000 2,000	15 16	15,000 32,000
15-4-19	1,500	18	27,000	_	_	_	1,000 2,000 1,500	15 16 18	15,000 32,000 27,000
20-4-19	_	_	_	1,200	18	21,600	1,000 2,000 300	15 16 18	15,000 32,000 5,400
25-4-19	_	_	_	300	18	5,400	1,000 2,000	15 16	15,000 32,000
26-4-19	_	_	_	1,000	16	16,000	1,000 1,000	15 16	15,000 16,000
28-4-19	500	17	8,500	_	_	_	1,000	15	15,000

PYQ May 2019 – Q4b

							1,000	16	16,000
							500	17	8,500
30-4-19	–	–	–	50	17	850	1,000	15	15,000
							1,000	16	16,000
							450	17	7,650

(ii) Value of Material Consumed and Closing Stock

	Weighted Average method (₹)	LIFO method (₹)
Opening stock as on 01-04-2019	15,000	15,000
Add: Purchases	83,500	83,500
	98,500	98,500
Less: Return to supplier	5,400	5,400
Less: Abnormal loss	824	850
Less: Closing Stock as on 30-04-2019	**40,376**	**38,650**
Value of Material Consumed	**51,900**	**53,600**

PYQ Nov 2018 – Q1a

(a) *M/s. SJ Private Limited manufactures 20000 units of a product per month. The cost of placing an order is ₹ 1,500. The purchase price of the raw material is ₹ 100 per kg. The re-order period is 5 to 7 weeks. The consumption of raw materials varies from 200 kg to 300 kg per week, the average consumption being 250 kg. The carrying cost of inventory is 9.75% per annum.*

You are required to calculate:

(i) Re-order quantity

(ii) Re-order level

(iii) Maximum level

(iv) Minimum level

(v) Average stock level

PYQ Nov 2018 – Q1a

(a) Annual consumption 250 kg × 52 weeks = 13,000 kg.

(i) Re-order Quantity or EOQ = $\sqrt{\frac{2 \times A \times O}{c \times i}}$

A = Annual Consumption = 13,000 kg

O = Ordering Cost = ₹. 1,500

C = Cost per kg = ₹. 100

i = carrying cost rate = 9.75%

Carrying cost per kg per annum (c× i) = 100 × 9.75% = ₹. 9.75

$\therefore$ EOQ = $\sqrt{\frac{2 \times 13,000 \times 1,500}{9.75}}$

= $\sqrt{\frac{39000000}{9.75}}$ = 2000 kg.

PYQ Nov 2018 – Q1a

(ii) Re-order level = Max. re-order period × Max, Consumption

= 7 weeks × 300 kg = 2,100 kg

(iii) Maximum level = Re-order level + Re-order Qty – (Min re-order Period × Min. Consumption)

= 2100 kg + 2000 kg – (5 × 200) kg = 3100 kg.

(iv) Minimum level = Re-order level – (Avg. re-order period × Avg. Consumption)

= 2,100 kg – (6 × 250) kg = 600 kg.

(v) Avg. stock level = $\frac{1}{2}$(Max. level +Min.level)

= $\frac{1}{2}(3100 + 600)$ = 1850 kg

OR

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

= 600 kg. + $\frac{1}{2}$ × 2000 kg. = 1600 kg.

PYQ Nov 2018 – Q1a

(ii) Re-order level = Max. re-order period × Max, Consumption

= 7 weeks × 300 kg = 2,100 kg

(iii) Maximum level = Re-order level + Re-order Qty – (Min re-order Period × Min. Consumption)

= 2100 kg + 2000 kg – (5 × 200) kg = 3100 kg.

(iv) Minimum level = Re-order level – (Avg. re-order period × Avg. Consumption)

= 2,100 kg – (6 × 250) kg = 600 kg.

(v) Avg. stock level = $\frac{1}{2}$(Max. level +Min.level)

= $\frac{1}{2}(3100 + 600)$ = 1850 kg

OR

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

= 600 kg. + $\frac{1}{2}$ × 2000 kg. = 1600 kg.

PYQ Nov 2018 – Q6b

(b) Explain obsolescence and circumstances under which materials become obsolete. State the steps to be taken for its treatment.

(b) Obsolescence: Obsolescence is defined as "the loss in the intrinsic value of an asset due to its supersession".

Materials may become obsolete under any of the following **circumstances:**

(i) where it is a spare part, or a component of a machinery used in manufacture and that machinery becomes obsolete;

(ii) where it is used in the manufacture of a product which has become obsolete;

(iii) where the material itself is replaced by another material due to either improved quality or fall in price.

Treatment: In all three cases, the value of the obsolete material held in stock is a total loss and immediate steps **should be taken to dispose it off** at the best available price. The loss arising out of obsolete materials on **abnormal loss does not form part of the cost** of manufacture.

PYQ May 2018 – Q1a

(a) *M/s. X Private Limited is manufacturing a special product which requires a component "SKY BLUE". The following particulars are available for the year ended 31st March, 2018:*

Annual demand of "SKY BLUE"	*12000 Units*
Cost of placing an order	*₹1,800*
Cost per unit of "SKY BLUE	*₹640*
Carrying cost per annum	*18.75%*

The company has been offered a quantity discount of 5 on the purchases of "SKY BLUE" provided the order size is 3000 components at a time.

You are required to:

(i) Compute the Economic Order Quantity.

(ii) Advise whether the quantity discount offer can be accepted.

PYQ May 2018 – Q1a

(a) (i) Calculation of Economic Order Quantity

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 12{,}000 \text{ units} \times ₹ 1{,}800}{₹ 640 \times 18.75/100}} = 600 \text{ units}$$

(ii) Evaluation of Profitability of Different Options of Order Quantity

When EOQ is ordered

		(₹)
Purchase Cost	(12,000 units × ₹ 640)	76,80,000
Ordering Cost $[\frac{A}{Q} \times O$ -	(12,000 units/ 600 units) × ₹ 1,800]	36,000
Carrying Cost $(\frac{Q}{2} \times C \times i$ -	600 units × ₹ 640 × ½ × 18.75/100)	36,000
Total Cost		77,52,000

PYQ May 2018 – Q1a

(b) When Quantity Discount is accepted

		(₹)
Purchase Cost	(12,000 units × ₹ 608)	72,96,000
Ordering Cost $[\frac{A}{Q} \times O$	(12,000 units/3,000 units) × ₹ 1,800]	7,200
Carrying Cost $[\frac{Q}{2} \times C \times i$	(3,000 units × ₹ 608 × ½ × 18.75/100)]	1,71,000
Total Cost		74,74,200

Advise – The total cost of inventory is higher if EOQ is adopted. If M/s. X Private Limited gets a discount of 5% on the purchases of "SKY BLUE" (if order size is 3,000 components at a time), there will be financial benefit of ₹ 2,77,800 (77,52,000 - 74,74,200). However, order size of big quantity will increase volume of average inventory to 5 times. There may be risk of shrinkage, pilferage and obsolescence etc., of inventory due to increase in the average volume of inventory holding. This aspect also has to be taken into consideration before opting the discount offer and taking final decision.

PYQ May 2018 – Q5a

(a) (i) *The following details are provided by M/s. SKU Enterprises for the year ended 31st March, 2018:*

Particulars	**Material-M (₹)**	**Material-N (₹)**
Stock as on 01-04-2017	*6,00,000*	*10,00,000*
Stock as on 31-03-2018	*4,50,000*	*7,25,000*
Purchases during the year	*9,50,000*	*18,40,000*

You are required to:

(i) Calculate Turnover Ratio of both the materials.

(ii) Advise which of the two materials is fast moving. (Assume 360 days in a year).

(5 Marks)

PYQ May 2018 – Q5a

5. (a) (i)

Material M	Material N
Turnover ratio $= \frac{\text{Cost of stock of raw material consumed}}{\text{Average stock of raw material}}$ $= \frac{₹6,00,000 + ₹9,50,000 - ₹4,50,000}{(6,00,000 + 4,50,000)/2} = 2.09$ Average number of days for which the average inventory is held $= \frac{360}{\text{Inventory turnover ratio}}$ $= \frac{360 \text{ days}}{2.09}$ = 172.25 days	**Turnover ratio** $= \frac{\text{Cost of stock of raw material consumed}}{\text{Average stock of raw material}}$ $= \frac{₹10,00,000 + ₹18,40,000 - ₹7,25,000.}{(10,00,000 + 7,25,000)/2}$ =2.45 Average number of days for which the average inventory is held $= \frac{360}{\text{Inventory turnover ratio}}$ $= \frac{360 \text{ days}}{2.45}$ = 146.94 days

PYQ May 2018 – Q5a

(ii) Advice

Comparatively Material M is slower than Material N since Inventory holding period of 'M' is 172.25 days in Comparison to 'N' i.e. 146.94 days. Infact, both materials have slow inventory turnover. Though, different business has their own expected rates for inventory turnover like food shops have fast inventory turnover, shop selling furniture etc. will have slower inventory turnover while manufacturers of large items of plant will have very long inventory turnover.

If it is not as per the Industry Standard, then a slow turnover may indicate that excessive inventory is held and risk of obsolete or spoiled inventory will increase. Large quantity of slow moving material means that capital is locked up in business and not earning revenue. It is advisable to make proper investigations into slow moving materials and take steps to minimize the loss arises therefrom as it may impact overall financial health of the organisation.

Revision Test Papers (RTPs)

May 2018 to Sep 2024

RTP Analysis

Exam	Q No.	Requirement	Special Points
RTP – Sep 2024	1	Case Scenario MCQ - (i) Cash Discount and its treatment (ii) Other Expenses and its treatment (iii) GST amount and its treatment (iv) Total Material Cost (v) Number of good units and cost per unit	• As per ICAI, cash discount is to be calculated on Invoice Value before GST
RTP – May 2024	1	Case Scenario MCQ - (i) Material to be requisitioned (ii) EOQ (iii) Max Stock of A (iv) Saving Loss on not using EOQ (v) Min Stock of A	• Effect of Perishable nature of Mat A in calculating max stock level of A • ROQ in excess of shelf life consumption is obsolete • Cal of purchase quantity considering obsolesce losses done intentionally (illogical)
RTP - Nov 2023	1	Max Consumption and Min. Consumption per day	New Requirement but Easy
RTP - May 2023	1	EOQ, Frequency of Order, Discount Proposal	• Calculation of Annual Requirement • Discount Proposal Point when carrying cost is not dependent on purchase price
RTP – Nov 2022	1	EOQ, ROL, Max, Min, Avg, No. of order, Total Inventory Cost, Discount Offer, Counter Offer	• Annual Requirement Calculation is day based not week based as lead time is in days • Ordering Cost is based on rounded off number of orders • Counter Offer Point – discount rate when carrying cost is dependent on purchase price (equation based cal)

RTP Analysis

Exam	Q No.	Requirement	Special Points
RTP - May 2022	1	Cost per unit of material purchased	Similar to Module Illustration 1
RTP - Nov 2021	1	Inventory Turnover Ratio and Checking of Inventory Days & Interpret the ratio comparing with Industry	Basic Easy
RTP - May 2021	1	ROQ, Max Level, Min Level, Impact due to no EOQ	• Cal of Annual Requirement of Material • Cal of average consumption per day using 300 days
RTP - Nov 2020	1	Min Stock, Max Stock etc.	Similar to Exercise Que 4 - Page 2.72
RTP - May 2020	1	ROL, Max Stock, Min Stock, Store Ledger, Closing Stock, Value of Component Consumed, Inventory Turnover Ratio	• Cal of lead time comparing order date and receipt date (error in cal of 14 days) • Cal of usage of material comparing requisition quantity • Calculation of ROQ
RTP - Nov 2019	1	Cost per kg and EOQ	• Cal of freight of special truck • Zero EOQ for local material
RTP - May 2019	1	ROQ, Max Level, Min Level, Impact due to no EOQ	Similar to RTP May 2021
RTP - Nov 2018	1	EOQ, Stock Levels	Basic – Easy
RTP - May 2018	1	EOQ and related requirements	Part iv - when should next order be placed

RTP Sep 2024 – Case Scenario – Q1

1. 'Axe Trade', an unregistered supplier under GST, purchased material from Vye Ltd. which is registered supplier under GST. During the month of June 2024, the Axe Traders has purchased a lot of 5,000 units on credit from Vye Ltd. The information related to the purchase are as follows:

Listed price of one lot of 5,000 units	- ₹ 2,50,000
Trade discount	- @ 10% on listed price
CGST and SGST (Credit available)	- 18% (9% CGST + 9% SGST)
Cash discount	- @ 10%
(Will be given only if payment is made within 30 days.)	
Toll Tax paid	₹ 5,000
Freight and Insurance	₹ 17,220
Demurrage paid to transporter	₹ 5,000
Commission and brokerage on purchases	₹ 10,000
Amount deposited for returnable containers	₹ 30,000
Amount of refund on returning the container	₹ 20,000
Other Expenses	@ 2% of total cost

RTP Sep 2024 – Case Scenario – Q1

A 20% shortage in material on receipt is expected considering the nature of the raw material.

The payment to the supplier was made within 21 days of the purchases.

(i) If Axe Traders pays the supplier within 30 days of purchase, then, what is the total amount of cash discount received from the supplier and how it is treated to calculate material cost?

(a) ₹ 25,000 & it will not be deducted from the material cost

(b) ₹ 26,550 & it will be deducted from the material cost

(c) ₹ 26,550 & it will not be deducted from the material cost

(d) ₹ 22,500 & it will not be deducted from the material cost

(ii) What will be the amount of other expenses and how it is treated in material cost?

(a) ₹ 6,154.40 & it will be added with the material cost

(b) ₹ 6,280.00 & it will be added with the material cost

(c) ₹ 5,344.40 & it will be added with the material cost

(d) ₹ 5,453.47 & it will not be added with the material cost

RTP Sep 2024 – Case Scenario – Q1

(iii) What is the amount of GST and how will it be treated in cost sheet of Axe Traders?

(a) ₹ 40,500 & it will not be added with material cost

(b) ₹ 40,500 & it will be added with material cost

(c) ₹ 45,000 & it will not be added with material cost

(d) ₹ 45,000 & it will be added with material cost

(iv) What is the total material cost chargeable in the cost sheet of Axe Traders?

(a) ₹ 3,14,000

(b) ₹ 2,73,500

(c) ₹ 2,72,673

(d) ₹ 3,13,874

(v) The number of good units and cost per unit of the materials received are:

(a) 5,000 units & ₹ 62.80

(b) 5,000 units & ₹ 54.70

(c) 4,000 units & ₹ 78.50

(d) 4,000 units & ₹ 68.38

RTP Sep 2024 – Case Scenario – Q1

1. (i) (d) Cash discount is received when credit amount is paid within the stipulated period of 30 days. The amount of cash discount to be received from the supplier is:

	Particulars	**Amount (₹)**
A.	Listed price	2,50,000
B.	Less: Trade Discount @10%	(25,000)
C.	Taxable value (A-B)	2.25,000
D.	Add: GST@18% (18% of C)	40,500
E.	Total amount payable to the supplier	2,65,500
F.	Cash discount @10% (10% of C)	**(22,500)**
G.	Net amount to be paid to the supplier (E-F)	2,43,000

RTP Sep 2024 – Case Scenario – Q1

(ii) (b)

Particulars	Units	(₹)
Listed Price of Materials	5,000	2,50,000
Less: Trade discount @ 10% on invoice price		(25,000)
		2,25,000
Add: GST @ 18% of ₹ 2,25,000		40,500
		2,65,500
Add: Toll Tax		5,000
Freight and Insurance		17,220
Commission and Brokerage Paid		10,000
Add: Cost of returnable containers:		
Amount deposited ₹ 30,000		
Less: Amount refunded ₹ 20,000		10,000
		3,07,720

RTP Sep 2024 – Case Scenario – Q1

Add: Other Expenses @ 2% of Total Cost $\left(\frac{₹\ 3,07,720}{98} \times 2\right)$		6,280
Total cost of material		3,14,000
Less: Shortage material due to normal reasons @ 20%	1,000	-
Total cost of material of good units	4,000	3,14,000
Cost per unit (₹ 3,14,000/4,000 units)		78.5

(iii) (b) Axe Traders is an unregistered supplier in the GST; thus, GST credit is not applicable for it. GST paid on the purchase of the material will be the part of the material cost.

(iv) (a) Please refer the solution above

(v) (c) Please refer the solution above

RTP May 2024 – Case Scenario – Q1

1. The purchase committee of A Ltd. has been entrusted to review the material procurement policy of the company. The chief marketing manager has appraised the committee that the company at present produces a single product X by using two raw materials A and B in the ratio of 3:2. Material A is perishable in nature and has to be used within 10 days from Goods received note (GRN) date otherwise material becomes obsolete. Material B is durable in nature and can be used even after one year. Material A is purchased from the local market within 1 to 2 days of placing order. Material B, on the other hand, is purchased from neighbouring state and it takes 2 to 4 days to receive the material in the store.

   The purchase price of per kilogram of raw material A and B is ₹30 and ₹44 respectively exclusive of taxes. To place an order, the company has to incur an administrative cost of ₹1,200. Carrying cost for Material A and B is 15% and 5% respectively. At present material A is purchased in a lot of 15,000 kg. to avail 10% discount on market price. GST applicable for both the materials is 18% and the input tax credit is availed.

   The sales department has provided an estimate that the company could sell 30,000 kg. in January 2024 and also projected the same trend for the entire year.

RTP May 2024 – Case Scenario – Q1

The ratio of input and output is 5:3. Company works for 25 days in a month and production is carried out evenly.

The following queries/ calculations to be kept ready for purchase committees' reference:

(i) For the month of January 2024, what would be the quantity of the materials to be requisitioned for both material A and B:

(a) 9,000 kg & 6,000 kg respectively

(b) 18,000 kg & 12,000 kg respectively

(c) 27,000 kg & 18,000 kg respectively

(d) 30,000 kg & 20,000 kg respectively.

(ii) The economic order quantity (EOQ) for both the material A & B:

(a) 13,856 kg & 16,181 kg respectively

(b) 16,197 kg & 17,327 kg respectively

(c) 16,181 kg & 17,165 kg respectively

(d) 13,197 kg & 17,165 kg respectively

RTP May 2024 – Case Scenario – Q1

(iii) What would the maximum stock level for material A:

(a) 18,200 kg.

(b) 12,000 kg.

(c) 16,000 kg.

(d) 16,200 kg.

(iv) Calculate saving/ loss in purchase of Material A if the purchase order quantity is equal to EOQ.

(a) Profit of Rs. 3,21,201.

(b) Loss of Rs. 3,21,201.

(c) Profit of Rs. 2,52,500.

(d) Loss of Rs. 2,52,500.

(v) What would the minimum stock level for material A:

(a) 1,800 kg.

(b) 1,200 kg.

(c) 600 kg.

(d) 2,400 kg.

RTP May 2024 – Case Scenario – Q1

1. (i) (d) Monthly Production of X = 30,000 kgs.

$$\text{Raw Material Required} = \frac{30,000}{3} \times 5 = 50,000 \text{ kgs.}$$

$$\text{Material A} = \frac{50,000}{5} \times 3 = \mathbf{30,000\ kg.}$$

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

(ii) (a) Calculation of Economic Order Quantity (EOQ):

$$\text{Material A} = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Order cost}}{\text{Carrying cost per unit p.a.}}}$$

$$= \sqrt{\frac{2 \times (30,000 \times 12) \times 1,200}{15\% \text{ of } 30}} = \mathbf{13,856\ kg.}$$

$$\text{Material B} = \sqrt{\frac{2 \times (20,000 \times 12) \times 1,200}{5\% \text{ of } 44}} = \mathbf{16,181\ kg.}$$

(iii) (b) Calculation of Maximum Stock level: Since, the Material A is perishable in nature and it required to be used within 10 days, hence, the Maximum Stock Level shall be lower of two:

(a) Stock equal to 10 days consumption

RTP May 2024 – Case Scenario – Q1

$$= \frac{30000}{25} \times 10 \text{ days} = 12{,}000 \text{ kg.}$$

(b) Maximum Stock Level for Material A:

Re-order Quantity + Re-order level – (Min consumption* × Min. lead time)

Where, Re-order Quantity = 15,000 kg.

Re-order level = Max. Consumption* × Max. Lead time

= 30,000/25 × 2 days = 2,400 kg.

Maximum stock Level = 15,000 kg. + 2,400 kg. - (30,000/25 × 1 day)

= 17,400 – 1,200 = 16,200 kg.

Stock required for 10 days consumption is lower than the maximum stock level calculated through the formula. Therefore, Maximum Stock Level will be **12,000 kg.**

(*Since, production is processed evenly throughout the month hence material consumption will also be even.)

RTP May 2024 – Case Scenario – Q1

(iv) (b) Calculation of Savings/ loss in Material A if purchase quantity equals to EOQ.

	Purchase Quantity = 15,000 kg.	Purchase Quantity = EOQ i.e. 13,856 kg.
Annual consumption	3,60,000 kg. (30,000 × 12 months)	3,60,000 kg. (30,000 × 12 months)
No. of orders [Note- (i)]	30 (3,60,000 ÷ 12,000)	30 (3,60,000 ÷ 12,000)
Ordering Cost (a)	₹36,000 (₹1200 × 30)	₹36,000 (₹1200 × 30)
Carrying Cost (b) [Note- (ii)]	₹30,375 (15% of ₹27 × 7,500)	₹31,176 (15% of ₹30 × 6,928)
Purchase Cost (c) (for good portion)	₹97,20,000 (₹27 × 3,60,000)	₹1,08,00,000 (₹30 × 3,60,000)

RTP May 2024 – Case Scenario – Q1

Loss due to obsolescence (d) [Note- (iii)]	₹24,30,000 [₹27 × (30 × 3,000)]	₹16,70,400 [₹30 × (30 × 1,856)]
Total Cost [(a) + (b) + (c) + (d)]	₹ 1,22,16,375	₹ 1,25,37,576

Purchasing of material -A at present policy of 15,000 kg. saves **₹ 3,21,201.**

Notes: (i) Since, material gets obsolete after 10 days, the quantity in excess of 10 days consumption i.e. 12,000 kg. are wasted. Hence, after 12,000 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 becomes obsolete and loss has to be incurred.

RTP May 2024 – Case Scenario – Q1

(v) (c) Minimum Stock Level for Material A

= Re-order level – (Average Consumption Rate x Average Re-order Period)

= 2400 – (1200 x 1.5) = **600 kgs**

Re-order level = Max. Consumption* × Max. Lead time

= 30,000/25 × 2 days = 2,400 kg.

Average Consumption Rate = (30,000/25 + 30,000/25)/2

= 1,200 Kg

Average Re-order Period = (1 + 2)/2 =1.5 Days

Stock required for 10 days consumption is lower than the maximum stock level calculated through the formula. Therefore, Maximum Stock Level will be 12,000 kg.

(*Since, production is processed evenly throughout the month hence material consumption will also be even.)

RTP Nov 2023 – Q1

1. Following details are related to a manufacturing concern:

Re-order Level	1,60,000 units
Economic Order Quality	90,000
Minimum Stock Level	1,00,000 units
Maximum Stock Level	1,90,000 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

RTP Nov 2023 – Q1

1. 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.

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

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

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

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

Or, 2 Min. lead time = 8 days

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

Putting this Minimum lead time value in (i), we get

Maximum lead time = 4 days + 4 days = 8 days

RTP Nov 2023 – Q1

(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 = $\frac{1,60,000 \text{ units}}{8 \text{ days}}$ = 20,000 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

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

RTP May 2023 – Q1

1. Reliable India Pvt Ltd is a startup company engaged in manufacturing of Agro Tech product from a raw material, which is purchased at ₹190 per kg. The company incurs a handling cost of ₹1,470 plus, freight of ₹770 per order. The incremental carrying cost of inventory of raw material is ₹3 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is ₹20 per kg per annum. The annual production of the product is 1,50,000 units and 3 units are obtained from one kg. of raw material. Assume 360 days in a year.

   Required:

   (i) Calculate the economic order quantity of raw materials.

   (ii) Determine, how frequently company should order for procurement be placed.

   (iii) If the company proposes to rationalize placement of orders on quarterly basis, determine the percentage of discount in the price of raw materials should be negotiated?

RTP May 2023 – Q1

1. (i) Calculation of Economic Order Quantity (E.O.Q)

Annual requirement (usage) of raw material in kg. (A) = $\frac{1,50,000 \text{units}}{3 \text{unitsperkg.}}$ = 50,000kg.

Ordering Cost (Handling & freight cost) (O) = ₹1,470 + ₹770 = ₹2,240

Carrying cost per unit per annum (C) i.e. inventory carrying cost + working capital cost= (₹3 × 12 months) + ₹20 = ₹56 per kg.

$$E.O.Q = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 50,000 \text{ kg.} \times ₹ 2,240}{₹ 56}} = 2,000 \text{ kg.}$$

(ii) Frequency of placing orders for procurement :

Annual consumption (A) = 50,000 kg.

Quantity per order (E.O.Q) = 2,000 kg.

$$\text{No. of orders per annum} = \frac{A}{E.O.Q} = \frac{50,000 \text{kg.}}{2,000 \text{kg.}} = 25 \text{ orders}$$

$$\text{Frequency of placing orders (in days)} = \frac{360 \text{days}}{25 \text{orders}} = 14.4 \text{ Days}$$

RTP May 2023 – Q1

(iii) Percentage of discount in the price of raw materials to be negotiated:

Particulars	On Quarterly Basis	On E.O.Q Basis
1. Annual Usage (in Kg.)	50,000 kg.	50,000 kg.
2. Size of the order	12,500 kg.	2,000 kg.
3. No. of orders (1 ÷ 2)	4	25
4. Cost of placing orders or Ordering cost (No. of orders × Cost per order)	₹ 8,960 (4 order × ₹ 2,240)	₹ 56,000 (25 orders × ₹ 2,240)
5. Inventory carrying cost (Average inventory × Carrying cost per unit)	₹3,50,000 (12,500 kg. × ½ × ₹ 56)	₹56,000 (2,000 kg. × ½ × ₹ 56)
6. Total Cost (4 + 5)	₹ 3,58,960	₹ 1,12,000

When order is placed on quarterly basis the ordering cost and carrying cost increased by ₹2,46,960 (₹3,58,960 - ₹1,12,000). So, discount required = ₹ 2,46,960

Total annual purchase = 50,000 kg. × ₹190 = ₹95,00,000 So, Percentage of discount to be negotiated = $= \frac{₹\ 2,46,960}{₹\ 95,00,000} \times 100 = 2.60\%$

RTP Nov 2022 – Q1

1. M/s Tanishka Materials Private Limited produces a product which names "ESS". The consumption of raw material for the production of "ESS" is 210 Kgs to 350 Kgs per week. Other information is as follows:

Procurement Time:	5 to 9 Days
Purchase price of Raw Materials:	₹ 100 per kg
Ordering Cost per Order:	₹ 200
Storage Cost:	1% per month plus ₹ 2 per unit per annum

Consider 365 days a year.

You are required to CALCULATE:

(a) Economic Order Quantity

(b) Re-Order Level (ROL)

(c) Maximum Stock Level

(d) Minimum Stock Level

(e) Average Stock Level

(f) Number of Orders to be placed per year

(g) Total Inventory Cost

(h) If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders, whether offer is acceptable?

(i) If the answer is no, what should be the counteroffer w.r.t. percentage of discount?

RTP Nov 2022 – Q1

1. As procurement time is given in days, consumption should also be calculated in days:

Maximum Consumption per Day: $\frac{350}{7}$ = 50 Kgs

Minimum Consumption per Day: $\frac{210}{7}$ = 30 Kgs.

Average Consumption per Day: $\frac{(50+30)}{2}$ = 40 Kgs

(a) Calculation of Economic Order Quantity (EOQ)

Annual consumption of Raw Materials (A): 40 Kgs x 365 days = 14,600 Kgs

Storage or Carrying Cost per unit per annum (C):(₹ 100 x 1% x 12 months) + ₹ 2 = ₹ 14

Ordering Cost (O): ₹ 200 per Order

$$EOQ = \sqrt{\frac{2 \times A \times O}{C}}$$

$$= \sqrt{\frac{2 \times 14,600 \times 200}{14}} = 646 \text{ Kgs.}$$

RTP Nov 2022 – Q1

(b)	**Re-Order Level (ROL)**	=	(Maximum consumption Rate × Maximum Procurement Time)
		=	50 kgs per day × 9 days
		=	450 kgs
(c)	**Maximum Stock Level**	=	Recorder Level + Recorder Quantity – (Minimum Consumption Rate × Minimum Procurement Time)
		=	450 kgs + 646 kgs - (30 kgs X 5 days)
		=	946 kgs
(d)	**Minimum Stock Level**	=	Recorder Level – (Average consumption Rate × Average Procurement Time)
		=	450 kgs – (40 kgs X 7 days)
		=	170 kgs

RTP Nov 2022 – Q1

(e) Average Stock Level = $\frac{\text{Maximum Stock Level + Minimum Stock Level}}{2}$

= $\frac{946 \text{ kgs} + 170 \text{ kgs}}{2}$

= 558 kgs

(f) Number of Orders to be placed per year

= $\frac{\text{Annual Consumption of Raw Materials}}{\text{EOQ}}$

= $\frac{14600 \text{ kgs}}{646 \text{ kgs}}$

= 22.60 Orders or 23 Orders

(g) Total Inventory Cost

Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 100)=		₹ 14,60,000
Total Ordering Cost (No. of Orders x O) (23 Orders x 200) =		₹ 4,600
Total Carrying Cost (EOQ / 2 x C) (646 kgs / 2 x ₹ 14)	=	₹ 4,522
Total Inventory Cost		₹ 14,69,122

RTP Nov 2022 – Q1

(h) If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders:

Offer Price	= ₹ 100 x 99%	= ₹ 99
Revised Carrying Cost	= (₹ 99 x 1% x 12 months) + ₹2	= ₹ 13.88
Revised Order Quantity	= 14600 kgs / 2 Orders	= 7300 kgs

Total Inventory Cost at Offer Price

Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 99)	= ₹ 14,45,400
Total Ordering Cost (No. of Orders x O) (2 Orders x 200)	= ₹ 400
Total Carrying Cost (EOQ / 2 x C) (7300 kgs / 2 x ₹13.88)	= ₹ 50,662
Total Inventory Cost	₹ 14,96,462

Advice: As total inventory cost at offer price is ₹ 27,340 (14,96,462 – 14,69,122) higher, offer should not be accepted.

RTP Nov 2022 – Q1

(i) Counter-offer:

Let Discount Rate = z%

Counter-Offer Price = ₹ 100 – z% = ₹ 100 – z

Revised Carrying Cost = [(₹ 100 – z) x 1% x 12 months] + ₹ 2 = ₹ 12 -0.12z + ₹ 2

= ₹ 14 – 0.12z

Total Inventory Cost at Counter-Offer Price

Cost of Materials (A x Purchase Price) [14600 kgs x (₹ 100 – z)] = ₹ 14,60,000 – 14,600z

Total Ordering Cost (No. of Orders x O) (2 Orders x 200) = ₹ 400

Total Carrying Cost (EOQ / 2 x C) [7300 kgs / 2 x (₹ 14 – 0.12z)] = ₹ 51,100 – 438z

Total Inventory Cost ₹ 15,11,500 – 15038z

₹ 14,69,122 = ₹ 15,11,500 – 15038z

Or 15038z = 42,378

Or z = 2.82

Therefore, discount should be at least 2.82% in offer price.

RTP May 2021 – Q1

1. A Ltd. produces a product 'X' using a raw material 'D'. To produce one unit of X, 4 kg of D is required. As per the sales forecast conducted by the company, it will be able to sale 20,000 units of X in the coming year.

   The following are the information related to the raw material D:

   (i) The Re-order quantity is 400 kg. less than the Economic Order Quantity (EOQ).

   (ii) Maximum consumption per day is 40 kg. more than the average consumption per day.

   (iii) There is an opening stock of 2,000 kg.

   (iv) Time required to get the raw materials from the suppliers is 4 to 8 days.

   (v) The purchase price is ₹ 250 per kg.

   There is an opening stock of 1,800 units of the finished product X.

   The carrying cost of inventory is 14% p.a.

   To place an order company has to incur ₹ 1,340 on paper and documentation work.

   From the above information FIND OUT the followings in relation to raw material D:

   (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 300 days for a year]

RTP May 2021 – Q1

1. Working Notes:

(i) Computation of Annual consumption & Annual Demand for raw material 'D':

Sales forecast of the product 'X'	20,000 units
Less: Opening stock of 'X'	1,800 units
Fresh units of 'X' to be produced	18,200 units
Raw material required to produce 18,200 units of 'X' (18,200 units × 4 kg.)	72,800 kg.
Less: Opening Stock of 'D'	2,000 kg.
Annual demand for raw material 'D'	70,800 kg.

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

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

RTP May 2021 – Q1

$$= \sqrt{\frac{2 \times 70,800\,kg. \times ₹1,340}{₹250 \times 14\%}} = \sqrt{\frac{2 \times 70,800\,kg. \times ₹1,340}{₹35}} = 2,328\ kg.$$

(iii) Re- Order level:

= (Maximum consumption per day × Maximum lead time)

$$= \left\{ \left(\frac{\text{Annual Consumption of 'D'}}{300\,\text{days}} + 40\,kg. \right) \times 8\ \text{days} \right\}$$

$$= \left\{ \left(\frac{70,800\,kg.}{300\,\text{days}} + 40\,kg. \right) \times 8\ \text{days} \right\} = 2,208\ kg.$$

RTP May 2021 – Q1

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

Average Consumption per day = 236 Kg.

Hence, Maximum Consumption per day = 236 kg. + 40 kg. = 276 kg.

So Minimum consumption per day will be

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

$$\text{Or, } 236 \text{ kg.} = \frac{\text{Min. consumption} + 276 \text{ kg.}}{2}$$

Or, Min. consumption = 472 kg – 276 kg. = 196 kg.

(a) Re-order Quantity :

EOQ – 400 kg. = 2,328 kg. – 400 kg.= 1,928 kg.

(b) Maximum Stock level:

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

= 2,208 kg. + 1,928 kg. – (196 kg. × 4 days) = 4,136 kg. – 784 kg. = 3,352 kg.

(c) Minimum Stock level:

= Re-order level – (Average consumption per day × Average lead time)

= 2,208 kg. – (236 kg. × 6 days) = 792 kg.

RTP May 2021 – Q1

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

		When purchasing the ROQ	When purchasing the EOQ
I	Order quantity	1,928 kg.	2,328 kg.
II	No. of orders a year	$\frac{70,800\,kg.}{1,928\,kg.} = 36.72$ or 37 orders	$\frac{70,800\,kg.}{2,328\,kg.} = 30.41$ or 31 orders
III	Ordering Cost	37 orders × ₹ 1,340 = ₹ 49,580	31 orders × ₹ 1,340 = ₹ 41,540
IV	Average Inventory	$\frac{1,928\,kg.}{2} = 964\,kg.$	$\frac{2,328\,kg.}{2} = 1,164\,kg.$
V	Carrying Cost	964 kg. × ₹ 35 = ₹ 33,740	1,164 kg. × ₹ 35 = ₹ 40,740
VI	Total Cost	₹ 83,320	₹ 82,280

Extra Cost incurred due to not ordering EOQ = ₹83,320 - ₹82,280 = ₹1,040

RTP May 2020 – Q1

Material Cost

1. 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	-
12-01-20	MRN-004 (against the Purchase Order- 009)	400	-
15-01-20	Material Requisition-013	2,200	-

RTP May 2020 – Q1

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.

RTP May 2020 – Q1

1. **Workings:**

   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 12-01-2020)

RTP May 2020 – Q1

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

RTP May 2020 – Q1

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

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 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

RTP Nov 2019 – Q1

1. HBL Limited produces product 'M' which has a quarterly demand of 20,000 units. Each product requires 3 kg. and 4 kg. of material X and Y respectively. Material X is supplied by a local supplier and can be procured at factory stores at any time, hence, no need to keep inventory for material X. The material Y is not locally available, it requires to be purchased from other states in a specially designed truck container with a capacity of 10 tons.

The cost and other information related with the materials are as follows:

Particulars	Material –X	Material-Y
Purchase price per kg. (excluding GST)	₹140	₹640
Rate of GST	18%	18%
Freight per trip (fixed, irrespective of quantity)	-	₹28,000
Loss of materials in transit*	-	2%
Loss in process*	4%	5%

**On purchased quantity*

Other information:

- The company has to pay 15% p.a. to bank for cash credit facility.
- Input credit is available on GST paid on materials.

Required:

(i) CALCULATE cost per kg. of material X and Y

(ii) CALCULATE the Economic Order quantity for both the materials.

RTP Nov 2019 – Q1

1. Working Notes:

(a) Annual purchase quantity for material X and Y:

Annual demand for product M- 20,000 units × 4 = 80,000 units

Particulars	Mat-X	Mat-Y
Quantity required for per unit of product M	3 kg.	4 kg.
Net quantity for materials required	2,40,000 kg.	3,20,000 kg.
Add: Loss in transit	-	6,881 kg.
Add: Loss in process	10,000 kg.	17,204 kg.
Purchase quantity	2,50,000 kg.	3,44,085 kg.

Note *- Input credit on GST paid is available; hence, it will not be included in cost of material.*

RTP Nov 2019 – Q1

(i) Calculation of cost per kg. of material X and Y:

Particulars	Mat-X	Mat-Y
Purchase quantity	2,50,000 kg.	3,44,085 kg.
Rate per kg.	₹140	₹640
Purchase price	₹3,50,00,000	₹22,02,14,400
Add: Freight	0	₹9,80,000*
Total cost	₹3,50,00,000	₹22,11,94,400
Net Quantity	2,40,000 kg.	3,20,000 kg
Cost per kg.	₹145.83	₹691.23

*No. of trucks $= \frac{3,44,085\,\text{kg.}}{10\,\text{ton} \times 1,000} = 34.40$ trucks or 35 trucks

Therefore, total freight = 35 trucks × ₹28,000 = ₹9,80,000

RTP Nov 2019 – Q1

(ii) Calculation of Economic Order Quantity (EOQ) for Mat.-X and Y:

$$EOQ = \sqrt{\frac{2 \times \text{Annual Requirement} \times \text{Order cost}}{\text{Carrying cost per unit p.a.}}}$$

Particulars	Mat-X	Mat-Y
Annual Requirement	2,50,000 kg.	3,44,085 kg.
Ordering cost	0	₹28,000
Cost per unit	₹145.83	₹691.23
Carrying cost	15%	15%
Carrying cost per unit p.a.	0*	₹103.68
EOQ	0	13,632.62 kg.

RTP May 2018 – Q1

Material Cost

1. Aditya Brothers supplies surgical gloves to nursing homes and polyclinics in the city. These surgical gloves are sold in pack of 10 pairs at price of ₹ 250 per pack.

   For the month of April 2018, it has been anticipated that a demand for 60,000 packs of surgical gloves will arise. Aditya Brothers purchases these gloves from the manufacturer at ₹ 228 per pack within a 4 to 6 days lead time. The ordering and related cost is ₹ 240 per order. The storage cost is 10% p.a. of average inventory investment.

   Required:

   (i) CALCULATE the Economic Order Quantity (EOQ)

   (ii) CALCULATE the number of orders needed every year

   (iii) CALCULATE the total cost of ordering and storage of the surgical gloves.

   (iv) DETERMINE when should the next order to be placed. (Assuming that the company does maintain a safety stock and that the present inventory level is 10,033 packs with a year of 360 working days).

RTP May 2018 – Q1

1. (i) Calculation of Economic Order Quantity:

$$EOQ = \sqrt{\frac{2 \times A \times O}{Ci}} = \sqrt{\frac{2 \times (60{,}000 \text{ packs} \times 12 \text{ months}) \times ₹\,240}{₹\,228 \times 10\%}}$$

= 3,893.3 packs or 3,893 packs.

(ii) Number of orders per year

$$\frac{\text{Annual requirements}}{\text{E.O.Q}} = \frac{7{,}20{,}000 \text{ packs}}{3{,}893 \text{ packs}} = 184.9 \text{ or } 185 \text{ orders a year}$$

(iii) Ordering and storage costs

	(₹)
Ordering costs :– 185 orders × ₹ 240	44,400.00
Storage cost :– ½ (3,893 packs × 10% of ₹228)	44,380.20
Total cost of ordering & storage	88,780.20

RTP May 2018 – Q1

(iv) Timing of next order

(a) Day's requirement served by each order.

$$\text{Number of days requirements} = \frac{\text{No. of working days}}{\text{No. of order in a year}} = \frac{360 \text{ days}}{185 \text{ orders}} = 1.94 \text{ days}$$

supply.

This implies that each order of 3,893 packs supplies for requirements of 1.94 days only.

(b) Days requirement covered by inventory

$$= \frac{\text{Units in inventory}}{\text{Economic order quantity}} \times \text{(Day's requirement served by an order)}$$

$$\therefore \quad \frac{10{,}033 \text{ packs}}{3{,}893 \text{ packs}} \times 1.94 \text{ days} = 5 \text{ days requirement}$$

(c) Time interval for placing next order

Inventory left for day's requirement – Average lead time of delivery

5 days – 5 days = 0 days

This means that next order for the replenishment of supplies has to be placed immediately.