Chapter -2

Material

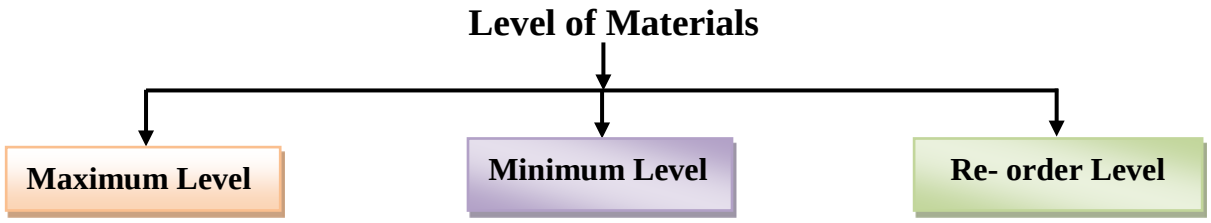
Introduction: -

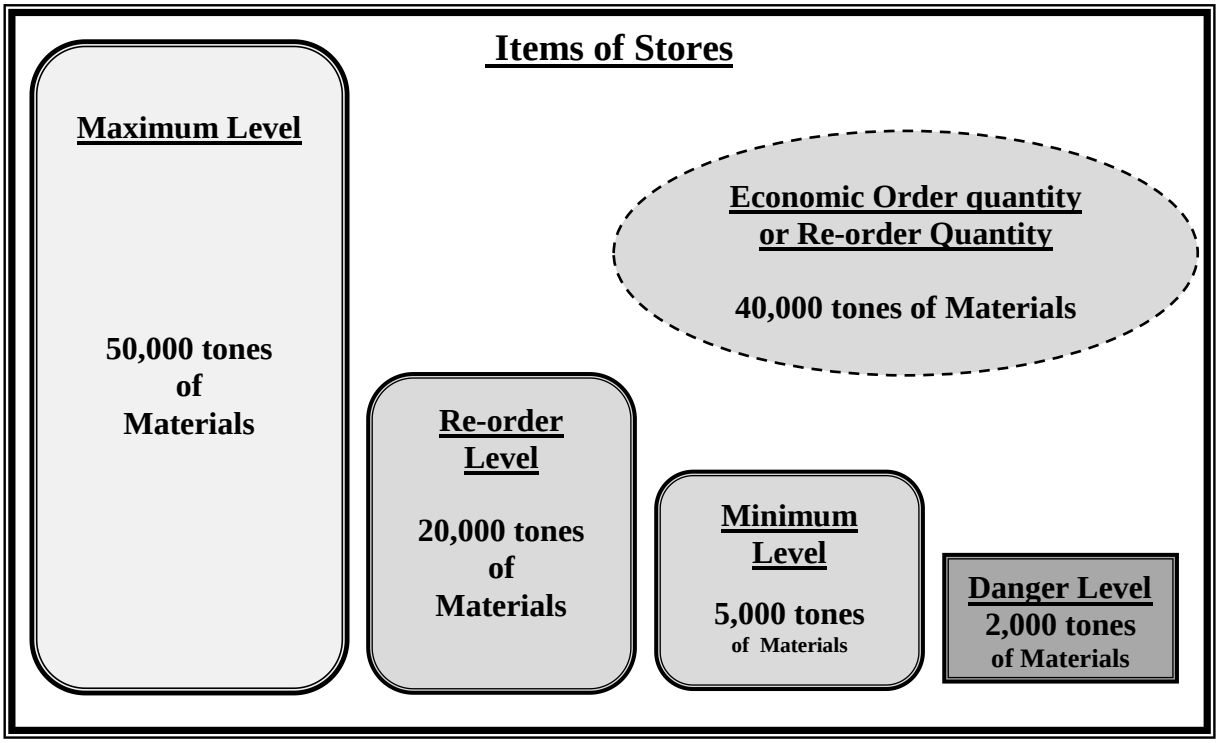
Materials cost form an important Part of the total cost of a Product or Finished Goods. So proper control over Materials is necessary

Materials Cost is directly related with "Storage of Materials" if Materials is kept in larger quantity it block unnecessary capital investment. The function of storage of materials is performed by storekeeper. He is responsible for accepting, identifying and proper placing of Materials. Efficient storage requires the consideration of the following points.

Level of Materials:-

In order to avoid unnecessary investment in Materials the management should decide different levels of Materials to be kept in Stores





Maximum Level: -

It is the largest quantity of a particular material, which should be kept in the Store at "any one time". Factors determine Maximum Level of Materials.

- **Store space**
- **Availability of Working Capital**
- **Seasonal Considerations**
- **Rate of Consumption of Materials and time necessary in obtaining new Materials**
- **Rules framed by government**
- **Economic order Quantity**
- **Cost of Storage, Insurance, Interest on Capital invested in Stocks etc.**

Minimum Level:-

It is the lowest quantities of a particular Materials which must be maintained in store at "all time" so that production may not be stopped on account of non- availabilities of materials . It should be decided by taking into account the following factors.

- **Average Rate of Consumption of Materials**
- **Average time required to obtained delivery of Fresh Supplies.**
- **Re-order Level**

Re- order Level:–

It is that point at which further supplies must be ordered. When Materials reach at a particular level in Stores further supplies of order must be given this level is called Re-order Level.

Danger Level: -

It is that level of Stock maintained in factory where Normal issue of Materials is not allowed. In normal circumstance, only emergency supply of Materials is allowed.

ABC Analysis:-

It is a system of inventory control. It exercises discriminating control over different items of stores classified on the basis of the investment involved. Items are classified into the following categories:

A Category: Quantity less than 10% but value more than 70%
B Category: Quantity less than 20% but value about 20%
C Category: Quantity about 70% but value less than 10%

Economic Order Quantity or Re order Quantity : -

It is that size of order which gives most economy in purchasing of materials. It is the most economical order size at which Ordering Cost and Carrying Cost are equal. This is based on the assumption that all of Materials quantity is purchase on same price or in other words, no quantity discount is allowed at any quantity materials purchased

- **Ordering Cost: - It is the cost of placing an order or Cost involved in purchasing the Materials. It includes transportation and buying cost**
- **Carrying Cost /Storing Cost :-It is Cost of Keeping items in store It includes**
  - ✓ **Store Keeping Cost**
  - ✓ **Insurance Premium**
  - ✓ **Cost of Interest on Investments**
  - ✓ **Cost of Obsolescence and Losses**

At E.O.Q → Ordering Cost = Carrying Cost

Valuation of Materials Issues:-

Several methods of pricing Materials issues have been evolved which are as follows:

a) **First- in First -out method: The Materials received first are to be issued first when Materials requisition is received. Materials left as closing Stock will be at the price of latest purchases.**

b) **Last-in first- out method: The Materials purchased last are to be issued first when Materials requisition is received. Closing Stock is valued at the oldest Stock price.**

c) **Simple Average Method:**

$$\text{Materials Issue Price} = \frac{\text{Total of unit price of each purchases that is available for issue}}{\text{Total No's of purchases that is available for issue}}$$

d) **Weighted Average Price Method: This method gives due weightage to quantities purchased and the purchase price to determine the issue price.**

$$\text{Materials Issue Price} = \frac{\text{Total Cost of Materials received}}{\text{Total Quantity purchased}}$$

Various Materials Losses:-

a) **Wastage: Portion of basic raw Materials lost in processing having no recoverable value**

b) **Scrap: The incidental Materials residue coming out of certain manufacturing operations having low recoverable value.**

c) **Spoilage: Goods damaged beyond rectification to be sold without further processing.**

d) **Defectives: Goods which can be rectified and turned out as good units by the application of additional labour of other services.**

Basic Formulas

Re-order Level or Re –order Point or When the order should be placed =

Maximum Re-order Period x Maximum usage or consumption

Or

Minimum Level + (Average period of delivery or Re-order Period x Average Rate of Consumption)

If Safety stock is given then

Re order Level = Safety Stock Level + Lead Time consumption

$$\text{Lead Time Consumption} = \frac{\text{Annual Consumption}}{\text{No.of Days in a year}} \times \text{Lead Time}$$

- Lead Time means Normal Re-order Period or Average Re-order Period

Safety Stock or Ideal inventory level =

$$\text{Safety Stock} = \frac{\text{Annual Demand}}{365} \times (\text{Maximum Lead time} - \text{Normal Lead Time})$$

Certain times Safety Stock level is given as "Particular Days of Consumption" then safety Stock is calculated by using following formula:-

Safety Stock = Per day Consumption × No. of days

Maximum Level =

Re-order level + Re-order Quantity – (Minimum uses or Consumption x Minimum Re-order Period or Minimum Lead-time)

If Safety stock is given then

Maximum Level = Safety Stock + E.O.Q.

Minimum Level =

Reorder Level – (Average Rate of Consumption or Normal Consumption x Average time required to obtain fresh Delivery or Average Re-order Period or Normal Re-order Period or Normal Lead period)

Danger Level =

Average Uses or Consumption x Lead time or Re-order period for Emergency Purchase (Emergency Delivery Time)

Average Stock Level =

$$\frac{\text{Maximum Level + Minimum Level}}{2}$$

or

Minimum Stock Level + ½ (Re-order Quantity)

Economic Order Quantity or Re –order Quantity =

Economic Order Quantity (E.O.Q) = $\sqrt{\frac{2 \times U \times P}{S}}$

Where U = Quantity (in units or in kg) consumed (used) or Purchased during the Year (If Annual consumption is not given then annual consumption must be find out)

P = Cost of Placing an order or Procurement Cost or Transportation Cost or Buying cost per order

S = Annual Storing Cost or Carrying Cost "per unit" "per annuam"
= Purchase price of Commodity per unit x Average cost of Carrying inventory per annuam

(In normal Case Economic Order quantity is deemed as Re-order Quantity.)

Total Inventory Cost = Cost of Purchase + Inventory Carrying Cost + Ordering Cost

Inventory Carrying Cost = ½ x Order Size or quantity x Carrying Cost p.u. p.a.

(Carrying cost is normally given as a percentage of cost per unit)

Ordering Cost = No. of Orders x Cost per order

No. of Orders = $\frac{Annual\ Demand}{\text{Order Size or E.O.Q.}}$

Inventory Cost = Carrying Cost + Ordering Cost

Inventory Carrying and Ordering Cost =

$$\sqrt{2 \times Annual\ Consumption \times Ordering\ Cost \times Carrying\ Cost\ p.u.p.a}$$

Inventory Turnover Ratio or Stock Turnover Ratio =

Inventory Turnover Ratio = $\frac{\text{Raw Materials Consumed}}{\text{Average Inventory}}$

Materials Consumed = Opening Stock + Purchase – Closing Stock

- **Materials Which turnover is high will be fast moving Materials**

Note: - Inventory Turnover Ratio is the indicator of Rate of Consumption or Fast Moving, Slow Moving and Non-Moving items in the stores

Inventory Turnover Period or No. of Days for which Inventory is Held or Stock Velocity Ratio

$$= \frac{\text{365 days or 12-month}}{\text{Inventory Turnover Ratio}}$$

Interval between two Consecutive optimum runs or Frequency of Placing an order:-

$$\left(\frac{\text{365 days or 12 month}}{\frac{\textit{Annual Demand for Consumption}}{\textit{Optimum Run Size}}} \right)$$

Lead Time Demand

Lead Time Demand = Usages or Demand per Day x Lead Time

Best Order Quantity:-

To decide whether discount on purchase of material should be availed or not, compare total inventory cost before discount and after discount.

Total inventory cost will include ordering cost, carrying cost and purchase cost.

Table Showing Best Order Quantity

1	2	3	4	5	6	7
No. of orders	Order Quantity	Purchase Price per Unit	Cost of Purchase	Inventory Carrying Cost	Ordering Cost	Total Cost
		(given)	3 = 1 × 2	½ × Order Size × Carrying Cost per unit per annuam	No. of orders × Cost per order	6 = 4 + 5 + 6

Total cost of which order quantity is "Least" that order Quantity is deemed as Best order quantity.

Under MODVAT credit system Quantity Discount, Trade Discount and Excise Duty are not considered in Purchase Price per Unit

Following Five methods is called Historical Cost Method:-

1. FIFO Method:-First in First out Method

In this method closing Stock, consist of the latest consignment. In this method Materials are "first out" which are "in first" it means "old Materials are issued first" and as per sequence of entry Materials are issued

Stores Ledger (as per FIFO method)

Date	Particulars	Receipt			Issued			Balance		
		Qt.	Rate	Amount	Qt.	Rate	Amount	Qt.	Rate	Amount
1/1/07	Opening Stock							5000	10	50,000
3/1/07	Purchase	1000	12	12,000				5,000 1,000	10 12	50,000 12,000
5/1/07	Issued 4,000				4,000 Old Materials are issued first	10	40,000	1,000 1,000	10 12	10,000 12,000
8/1/07	Issued 500				500	10	5,000	500 1,000	10 12	5,000 12,000
9/1/07	Purchase	2000	11	22,000				500 1,000 2,000	10 12 11	5,000 12,000 22,000
15/1	Issued 1,000				500 500	10 12	5,000 6,000	500 2,000	12 11	6,000 22,000
15/1	Shortage				50	12	600	450 2,000	12 11	5,400 22,000
18/1	Purchase	1000	15	15,000				450 2,000 1,000	12 11 15	5,400 22,000 15,000
30/1	Issue 2,000				4,50 1,550	12 11	5,400 17,050	450 1,000	11 12	4,950 12,000

Value of Closing Stock is 1,450 units for Rs.16,950

Note: - Treatment for shortage of materials is the same as that for issue of Materials & treatment for return of material is the same as that for receipt of materials.

2. LIFO Method:- Last in First out Method

In this method, Materials are "first out" which are "Last in" it means "New Materials are issued first" and as per sequence of entry of materials are issued.

Stores Ledger (as per LIFO method)

Date	Particulars	Receipt			Issued			Balance		
		Qt.	Rate	Amount	Qt.	Rate	Amount	Qt.	Rate	Amount
1/1/07	Opening Stock							5000	10	50,000
3/1/07	Purchase	1000	12	12,000				5,000 1,000	10 12	50,000 12,000
5/1/07	Issued 4,000				1,000 New Materials are issued first 3,000	12 10	12,000 30,000	 2,000	 10	 20,000
8/1/07	Issued 500				500	10	5,000	1,500	10	15,000
9/1/07	Purchase	2000	11	22,000				1,500 2,000	10 11	15,000 22,000
15/1	Issued 1,000				1,000	11	11,000	1,500 1,000	10 11	15,000 11,000
15/1	Shortage				50	11	550	1,500 950	10 11	15,000 10,450
18/1	Purchase	1000	15	15,000				1,500 950 1,000	10 11 15	15,000 10,450 15,000
30/1	Issue 2,000				1,000 950 50	15 11 10	15,000 10,450 500	1,450	10	14,500

Value of Closing Stock is 1,450 units for Rs.14,500

Note: - Treatment for shortage of materials is the same as that for issue of Materials & treatment for return of material is the same as that for receipt of materials.

LIFO has following advantages:-

(a) The cost of the materials issued will be reflecting the current market price.

(b) The use of the method during the period of rising prices does not reflect undue high profit in the income statement.

(c) In the case of falling price, profit tend to rise due to lower materials cost, yet the finished goods appear to be more competitive and are at market price.

(d) During the period of inflation, LIFO will tend to show the correct profit.

3. Average Price Method or Simple Average Price Method: -

In this method, the price is calculated by dividing total of unit purchase prices of different lots in Stock by the number of prices used in the calculation. Unit prices of latest consignment are taken into account for this purpose. Every time when an issue is made, a new average is worked out. Normally it is presumed that materials received first will be issued first and, therefore, the rate of the Materials not in Stock is ignored while calculating average rate.

Stores Ledger (As per Simple Average Price method)

Date	Particulars	Receipt			Issued			Balance	
		Qt.	Rate	Amount	Qt.	Rate	Amount	Qt.	Amount
1st July	Opening Stock							500	10,000
4 July	Purchase	400	21	8,400				900	18,400
6 July	Issued 600				600	20.50	12,300	300	6,100
8 July	Purchase	800	24	19,200	—	—	—	1,100	25,300
9 July	Issue 500	—	—	—	500	22.50	11,250	600	14,050
13 July	Issue 300	—	—	—	300	24.00	7,200	300	6,850
24 July	Purchase 500	500	25	12,500	—	—	—	800	19,350
28 July	Issue 400	—	—	—	400	24.50	9,800	400	9,550

Note: - Treatment for shortage of materials is the same as that for issue of Materials & treatment for return of material is the same as that for receipt of materials.

Working Note:-

Various issue prices are computed as follows:-

On 6th July = (20 + 21) / 2 = Rs. 20.50

On 9th July = (21 + 24) / 2 = Rs. 20.50

On 13th July = (24 + 1) / 2 = Rs. 20.50

On 28th July = (24 + 25) / 2 = Rs. 20.50

Value of Closing Stock is 400 units for Rs.9,550

In this method Average Rate of those goods are taken which are available in stock

4. Weighted Average Price Method:-

Under weighted Average Price Method, cost of goods available for sale during the period is aggregated and then divided by number of units available for sale during the period to calculate weighted average price per unit. Thus

$$\text{Weighted Average Price per unit} = \frac{\text{Total cost of goods available for sale during the period}}{\text{Total number of units available for sale during the period}}$$

Closing Stock = No. of units in Stock × weighted Average price per unit

Cost of Goods sold = No. of units sold × weighted average price per unit

Techniques of Inventory Control:

1. Setting the various Stock Level

- **Minimum Level**
- **Maximum Level**
- **Re-order Level**
- **Danger Level**

Assignments (50)

Type 1:- Level of Materials **5 Questions**

Type 2:- E.O.Q. & Level of Materials **20 Questions**

Type 3:- E.O.Q at Quantity Discount **5 Questions**

Type 4:- LIFO & FIFO **10 Questions**

Type 5:- Mics. Questions **10Questions**

Type 1:- Level of Materials 5

Q.1

The following information is available in respect of materials number 30:

Re-order quantity	1,500 units
Re-order period	4 to 6 weeks
Maximum consumption	400 units per week
Normal consumption	300 units per week
Minimum consumption	250 units per week

Calculate:

(1) Re-order Level
(2) Minimum Level
(3) Maximum Level and
(4) Average Stock Level

B.Com (P) 2012 (External) [9 Marks]

(i) Re-order Level = Maximum Consumption × Maximum Re-order period
= 400 × 6 = 2,400 units

(ii) Minimum Level = Re-Order Level – (Average Consumption × Average Re-order period)

= 2,400 – (300 × 5) = 2,400 – 1,500 = 900 units

(iii) Maximum Level = Re-Order level + Re-order quantity – (Minimum Consumption × Minimum Re – order period)

= 2,400 + 1,500 – (250 × 4) = 3,900 – 1,000 = 2,900 units

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

= $\frac{900 + 2,900}{2}$ = 1,900 Units

Or

Average Stock Level = Minimum Stock Level + $\frac{1}{2}$ × (Re-order Quantity)

= 900 + $\frac{1}{2}$ × (1,500) = 900 + 750 = 1,650 Units

Q.2

The following information is available in respect of Materials:

Re-order Quantity	**2000 Unit**
Re-order period (lead time)	**4 – 8 weeks**
Consumption (usage)	
Maximum – 500 Units per week	
Normal – 400 Units per week	
Minimum – 300 Units per week	

Calculate (i) Re-order Level (ii) Minimum Stock Level (iii) Maximum Stock Level.

B.Com (P) 2007 (Regular) [3 Marks]

a) Re-order Level = Maximum Consumption × Maximum Re-order Period.
= 500 × 8 = 4,000 Units

b) Minimum Level = Re-order Level – (Average Consumption × Average Re-order period)
= 4,000 – (400 × 6) = 4,000 – 2,400 = 1,600 units

c) Maximum Stock Level = Re-order Level + Re-order Quantity – (Minimum consumption × Minimum Re-order period)
= 4,000 +2,000 – (300 ×4)
= 6,000 – 1,200 = 4,800 units

Q.3

Two Components A and B are used as follows

Normal usage	**50 units per week each**
Minimum usage	**25 units per week each**
Maximum usage	**75 units per week each**
Re-order quantity	**A : 300 Units** **B : 500 units**
Re-order period	**A: 4 to 6 weeks** **B : 2 to 4 weeks**

Calculate for each Component:

(a) Re-order Level
(b) Minimum Level
(c) Maximum Level
(d) Average Stock Level

B.Com (P) 2002

a) Re-order Level = Maximum Consumption x Maximum Re-order Period
A = 6 × 75 450 units
B = 4 × 75 = 300 units

b) Minimum Level = Re-order Level – (Average Consumption × Average Re-order period)
A = 450 – (50 × 5) = 200 units
B = 300 – (50 × 3) = 150 units

c) Maximum Stock Level = Re-order Level + Re-order quantity – (Minimum consumption x Minimum
A = 450 + 300 – (25 × 4) = 650 units
B = 300 + 500 – (25 × 2) = 750 units

d) Average Stock Level = Minimum Stock Level + $\frac{1}{2}$ ×Re-order quantity
A = 200 + ($\frac{1}{2}$ × 300) = 350 units
B = 150 + ($\frac{1}{2}$ × 500) = 400 Units

Or

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

$$A = \frac{650 + 200}{2} = 425 \text{ Units}$$

$$B = \frac{750 + 150}{2} = 450 \text{ Units}$$

Q.4

In manufacturing its products Z, a company uses two types of Raw Materials A and B respect of which the following information is supplied:

One unit Z requires 10 Kg. of A and 4 Kg of B Materials . Price per kg. of A Materials is Rs. 10 and that of B is Rs. 20. Re-order quantity of A and B Materials are 10,000 kg. and 5,000 kg. Re-order level of A and B Materials are 8,000 kg. and 4,750 kg. respectively. Weekly production varies from 175 units to 225 units average 200 units. Delivery period of A Materials is 1 to 3 weeks and B Materials is 3 to 5 weeks.

Compute:

(i) Minimum Stock Level of A

(ii) Maximum Stock Level of B

B.Com (P) 1987

Minimum Stock Level of A

= Re-order Level – (Average Consumption × Average Delivery Period)
= 8,000 – (200 × 10 × 2) = 4,000 kg.

Maximum Stock Level of B

= Re-Order Quantity + Re- Order Level – (Minimum Consumption × Minimum Delivery Period)
= 5,000 + 4,750 – (175 × 4 × 3) = 7,650 kg.

Q.5

In manufacturing its products, a company uses three raw materials A, B and C in respect of which the following apply:

Raw Materials	Usage per unit of product (Kg)	Re-order quantity (Kg)	Price per Kg (Rs.)	Delivery period (weeks)	Order Level (Kg)	Minimum Level (Kg)
A	10	10,000	0.10	1 to 3	8,000 kg	–
B	4	5,000	0.30	3 to 5	4,750 kg	–
C	6	10,000	0.15	2 to 4	–	2,000

Weekly production varies from 175 to 225 units, averaging 200. What would you except the quantities of the following to be:

(i) Minimum Stock Level of A;
(ii) Maximum Stock Level of B;
(iii) Reorder Level of C; and
(iv) Average Stock Level of A

B.Com (H) 2012 [10 Marks]

[(i) 4,000 Kg; (ii) 7,650 Kg; (iii) 5,400 Kg; (iv) 9,000 Kg]

Type 2:- E.O. Q. & Level of Materials 25

Q.6

From the following particulars, find Economic Order Quantity (EOQ)
Annual Demand = 3,200 Units
Unit Cost = Rs. 6
Cost of Carrying Inventory = 25% p.a.
Cost of one procurement = Rs. 150

B.Com (P) 2004 (Supply)

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

= $\sqrt{\frac{2 \times 3{,}200 \times 150}{1.5}}$ = **800 Units**

Q.7

A Factory requires 1,500 units of an item per month, each costing Rs. 27. The cost per order is Rs. 150 and the inventory carrying charges work out to 20% of the average inventory. Find out the economic order quantity and the number of orders per year.

B.Com (P) 2009 (Supply.)

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 18{,}000 \times 150}{5.4}}$ = **1,000 units.**

Number of orders per year = $\frac{\text{Annual Consumption}}{\text{EOQ}} = \frac{18{,}000}{1{,}000} = 18$

Q.8

From the following, calculate Economic Order Quantity and the number of order to be placed per quarter.
Quarterly Consumption 2000 kg.
Cost of placing one order Rs.50
Cost per unit Rs. 4
Storage cost 80% on average inventory.

B.Com (H) 1997 / B.Com (P) 2009 (External) [7 Marks]

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 8{,}000 \times 50}{3.2}}$ = **500 kg.**

No. of order per quarter = $\frac{\text{Quarterly Consumption}}{\text{E.O.Q.}} = \frac{2{,}000}{500}$ = **4 Orders.**

Q.9

From the following information relating to a type of Raw Materials, Calculate EOQ:

Monthly demand	**200 unit**
Unit price	**Rs.5**
Order cost per order	**Rs.12**
Storage cost	**2% p.a.**
Interest rate	**10% p.a.**

B.Com (P) 2007 (Regular) [4 Marks]

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage = 200 x 12 = 2,400 units
P = Cost of placing an order = Rs. 12
S = Cost of storing one unit for a year = (10% + 2%) of Rs. 5 = Rs. 0.60

EOQ = $\sqrt{\frac{2 \times 2{,}400 \times 12}{0.60}}$ **= 309.83 unit (Approx)**

Q.10

From the following information, calculate economic order quantity and the number of orders to be placed in one quarter of the year for product of X:

Quarterly consumption of Materials	**2,000 kg**
Cost of placing one order	**Rs. 50**
Cost per unit	**Rs. 40**
Storage and carrying cost	**80% on average inventory**

B.Com (P) 2012 (Regular) [7 Marks]

E.O.Q. = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Consumption = 2,000 × 4 = 8,000 kg
P = Buying Cost per order = Rs. 50
S = Storage and Carrying Cost = 80% on average inventory

E.O.Q. = $\sqrt{\frac{2 \times 8{,}000 \times 50}{32}}$ **= 158.11 kg (App)**

Number of orders per quarter = $\frac{\text{Quarterly consumption}}{\text{E.O.Q.}} = \frac{2{,}000}{158.11}$ **= 12.65 (app.)**

Q.11

A company manufactures 5,000 units of a product per month. Cost of placing an order is Rs. 100. The purchase price of raw materials is Rs. 10 per kg. The re-order period is 4 to 8 weeks. The consumption of raw Materials varies from 100 kg. to 450 kg per week. The average consumption being 275 kg, the carrying cost of inventory is 20% per annum. You are required to calculate:

(i) Reorder Quantity

(ii) Reorder Level

B.Com (P) 2005 (External) [5 Marks]

(i) Re-Order Level = Maximum Consumption × Maximum Re-order Period.
= 450 kg × 8 weeks = 3,600 kg

(ii) EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

$= \sqrt{\frac{2 \times 14,300 \times 100}{2}}$ **= 1,196 kg (approx)**

Q.12

A Company uses 2,500 units of a material per month. Cost of placing an order is Rs. 150. The cost per unit is Rs. 20. The re-order period is 4 to 8 weeks. The minimum consumptions of raw materials are 100 units whereas the average consumption are 275 unit. The carrying cost of inventory is 20% per annum.
Calculate:

1. **Re-order quantity and**
2. **Re-order Level**

B.Com (P) 2009 (Regular) [6 Marks]

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 30,000 \times 150}{4}}$ = **1,500 units**

Re-order Level = Maximum Re-order Period × Maximum usage
= 8 × 450 = 3,600 units

Average Consumption = $\frac{Minimum\ Consumption + Maximum\ Consumption}{2}$

275 units = $\frac{100 + Maximum\ Consumption}{2}$

Maximum consumption or Maximum usage = 450 units

Q.13

Medical Aids Co. manufactures a special product A . The following particulars were collected for the year 2014.

Cost of placing an order	**Rs.100**
Annual carrying cost per unit	**Rs.15**
Normal usage	**50 unit per week**
Minimum usage	**25 units per week**
Maximum usage	**75 unit per week**
Re-order period	**4 to 6 week**

Compute from the above (i) Re-order quantity (ii) Re-order Level (iii) Minimum Level (iv) Maximum Level (v) Average Stock Level (weeks in a year 52).

B.Com (P) 2011(Regular) [7 Marks]

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

$= \sqrt{\frac{2 \times 2{,}600 \times 100}{15}}$ = 186 units

Annual Demand for input units

= 52 weeks × Normal usage of input unit per week

= 52 × 50 = 2,600 units.

(i) Re-order Level = Maximum Consumption × Maximum Re-order Period.
= 6 weeks × 75 units = 450 units.

(ii) Minimum Stock Level = Re-order Level – (Average Consumption × Average Re-order period)

= 450 units – (50 units × 5 weeks)

= 450 units – 250 units = 200 units.

(iii) Maximum Stock Level = Re-order level + Re-order Quantity – (Minimum consumption × Minimum Re-order Period)

= 450 – (25 × 4) + 186 = 450 – 100 + 186 = 536 units

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

= $\frac{200 + 536}{2}$ = 368 units

Q.14

Calculate:
(i) Maximum Stock Level;
(ii) Re-order Level
(iii) Minimum Stock Level

Form the information of Materials A as given below:
Re-order quantity 3,600 unit
Re-order period:
Minimum 3 weeks
Maximum 5 week
Maximum consumption 900 units per week
Minimum consumption 300 units per week

B.Com (P) 2013(External) [9 Marks]

(i) Re-Order Level = Maximum Consumption × Maximum Re-order Period.

= 900 × 5 = 4,500 units

(ii) Minimum Stock Level = Re-order Level – (Average Consumption × Average Re-order period)
= 4,500 – (600 × 4)
= 4,500 – 2,400 = 2,100 units

(iii) Maximum Stock Level = Re-order Level + Re-order Quantity – (Minimum Consumption × Minimum Re-order Period
= (4,500 + 3,600) – (300 × 3)
= 8,100 – 900 = 7,200 units

Q.15

From the following information, calculate:
(i) Economic Order Quantity
(ii) Total annual carrying and ordering cost at that quantity.
(iii) Re-order Level
(iv) Minimum Level
(v) Maximum Level
(vi) Average Stock Level
(vii) Danger level

Rate of Usage: 5 Kg. per unit of finished products. Weekly production of finished product varies from 50 units to 150 units.
Purchase price of input unit: Rs. 20
Annual carrying cost: 6.5%
Ordering cost per order: Rs. 100.
Lead-time: 3 weeks to 7 weeks, For emergency purchase 2 weeks.

B.Com (P) 2008(External) [10 Marks]

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = 52 weeks × 100 units ×5 kg = 2,6000 unit
P = Rs. 100
S = 6.5% of Rs. 20 = Rs.1.30

E.O.Q. = $\sqrt{\frac{2 \times 26{,}000 \times 100}{1.30}}$ **= 2,000 units**

(ii) Annual Carrying Cost = $\frac{1}{2}$ **× E.O.Q. × Carrying Cost per unit per annum**

= $\frac{1}{2}$ **× 2,000 × 1.3 = Rs. 1,300**

Annual Ordering Cost = $\frac{\text{Annual Consumption}}{\text{E.O.Q.}}$ **× Ordering Cost**

= (26,000 / 2,000) × 100 = Rs. 1,300

Total annual carrying cost and annual ordering cost = Rs. 1,300 + Rs. 1,300 = Rs. 2,600

(iii) Re-order Level = Maximum Usage × Maximum Lead period
= (150 × 5) × 7 = 5,250 units

(iv) Minimum Level = Re-order – (Average usage × Average lead period)
= 5,250 – [(100 × 5) × 5] = 2,750 Units

(v) Maximum Level = Re-order Level + Re-order Quantity – (Minimum usage – Minimum Lead Time)
= 5,250 + 2,000 – (50 × 5 × 3) = 6,500 units

(vi) Average Level = $\frac{\text{Minimum Stock Level + Maximum Stock Level}}{2}$ = $\frac{2{,}750 + 6{,}500}{2}$ **= 4,625 units**

(vii) Danger Level = Average usage × Lead Time for Emergency Purchases
= (100 × 5) × 2 = 1,000 units

Q.16

The following data pertaining to materials X:

Supply period	**4 to 8 month**
Consumption rate	
Maximum	**600 unit per month**
Minimum	**100 unit per month**
Normal	**300 unit per month**
Yearly	**3600 unit**

Stores costs are 50% to Stock value.
Ordering costs are Rs. 400 per order
Price per unit of Materials Rs. 64

Compute:
(i) Re-order Level
(ii) Minimum Stock Level
(iii) Maximum Stock Level
(iv) Average Stock Level

B.Com (P) 2004 (Regular) [8 Marks] / 2004 (External) [7 Marks]

(i) Re-order Level = Maximum Consumption × Maximum Supply Period
= 600 × 8 = 4,800 units

(ii) Minimum Stock Level = Re-order Level – (Normal Consumption × Normal Supply Period)
= 4,800 – (300 × 6) = 4,800 – 1,800 = 3000 units.

(iii) Maximum Stock Level
= Re-order Level + Re-order Quantity – (Minimum Consumption × Minimum Supply Period)
= 4,800 + 300 – (100 × 4) = 4,700 units.

(iv) **Average Stock Level** = $\frac{\text{Minimum Stock Level + Maximum Stock Level}}{2}$ = $\frac{4,700 + 3,000}{2}$ = **3,850 units**

Working Note:

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 3,600 \times 400}{32}}$ **= 300 units**

Q.17

A.S. Ltd. produces a product 'RED' using two components X and Y. Each unit of 'RED' Requires 0.4 kg of X and 0.6 kg of Y. Weekly production varies from 350 units to 450 units averaging 400 units. Delivery period for both the components is 1 to 3 weeks. The economic order quantity for X is 600 kgs and for Y is 1,000 kgs. Calculate.
(i) Re-order Level of X ;
(ii) Maximum Level of X;
(iii) Minimum Level of Y

B.Com (H) 2008 [5Marks]

(i) Re-order Level of X = Maximum Consumption × Maximum Recorder period
= (450 × 0.4) × 3 = 540 kg.

(ii) Maximum Level of X = Re-order Level + Re-order Quantity – (Minimum Consumption × Minimum Reorder Period)
= 540 + 600 – (350 × 0.4 ×1) = 1,000 kg.

(iii) Minimum Level of Y = Re-order Level – (Normal Consumption × Normal Reorder Period)
= (450 × 0.6 × 3) – (400 × 0.6 × 2)
= 810 – 480 = 330 Kg.

Q.18

Z Ltd. provides the following information in respect of Materials –R.

Supply period	**5 to 15 days.**
Rate of Consumption	
Average	**15 units per day**
Maximum	**20 units per day**
Yearly	**5,000 units**

Ordering costs are Rs.20 per order.
Purchase Price per unit is Rs. 50
Storage costs are 10% of unit value

Compute:
(i) Re-order Level
(ii) Minimum Level
(iii) Maximum Level

B.Com (H) 1998 / B.Com (P) 2008 (External) [8 Marks]

(i) Re-Order Level = Maximum Consumption × Maximum Re-order Period
= 20 × 15 = 300 Units.

(ii) Minimum Level = Re-order Level – (Average Consumption × Average Re-order period)
= 300 – (15 ×10) = 150 Units

(iii) Maximum Level = Re-order Level + Re-order Quantity – (Minimum Consumption × Minimum Re-order period)

= 300 + 200 – (10 × 5) = 450 Units.

Working Note:-

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

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

Q.19

From the following information, calculate Re-order quantity:

Maximum re-order period	**8 week**
Average Stock	**400 unit**
Average usage	**50 unit per week**
Maximum usage	**80 unit per week**
Average re-order period	**6 week**

B.Com (P) 2010 (External) [7 Marks]

Re-order Level = Maximum Consumption × Maximum Re-order Period.
= 80 × 8 = 640 units

Minimum Stock Level = Re-order Level – (Average Consumption × Average Re-order period)
= 640 – (50 × 6) = 640 – 300 = 340 units

Maximum Stock Level = Re-order Level + Re-order Quantity – (Minimum Consumption × Minimum Re-order period)

⇒ 460 = 640 – (20 × 4) + Re - order quantity
⇒ 460 = 640 – 80 + Re-order quantity
= 460 – 560 + Re-order quantity

Re-order quantity = 460 –560 = – 100 Units (It is wrong because Re-order quantity never in negative)

Working Note:-

Average Stock = (Minimum Stock Level + Maximum Stock Level) / 2

⇒ 400 = (340 + Maximum Stock Level) / 2
⇒ 800 = 340 + Maximum Stock Level

Maximum Stock Level = 800 – 340 = 460 units

Alternative Solution:-

Re-order Level = Maximum Consumption × Maximum Re-order Period
= 80 × 8 = 640 units

Minimum Stock Level = Re-order Level – (Average Consumption × Average Re-order Period)
= 640 – (50 × 6) = 640 – 300 = 340 units

Average Stock Level = Minimum Stock Level + $\frac{1}{2}$ **× Re-order Quantity**

⇒ 60 = $\frac{1}{2}$ **× Re-order Quantity**

Re-order Quantity = 60 × 2 = 120 units

Q.20

About 50 items of Materials are required every day in a company. A fixed cost of Rs. 50 per order is incurred for placing an order. The inventory carrying cost per item amounts to Rs. 0.02 per day. The lead period is 32 days.

Compute:

(i) Economic order quantity
(ii) Re-order level.

B.Com (H) 2014 External [10 Marks]

[E.O.Q. = 500 units; Re-order level = 1,600 units]

Q.21

A company manufactures 5,000 units of a product per month. The purchase price of raw Materials is Rs. 20 per kg. The re- order period is 4 to 8 weeks. The consumption of raw Materials varies from 200 kg. to 600 kg per week. The cost of placing an order is Rs. 100. The carrying cost of inventory is 20% per annum. You are required to calculate:

(i) Re - order Quantity;
(ii) Re - order Level (assume 50weeks in a year)

B.Com (P) 2013 (Regular) [7 Marks]

[E.O.Q. = 1,000 Kg; Re-order level = 4,800 Kg]

Q.22

A company manufactures products having a monthly demand of 2,000 units. For one unit of finished products 2 kgs of a particulars raw materials items is needed. The purchase price of the Materials is Rs. 20 per kg. The ordering cost is Rs. 120 per order and the holding cost is 10% per annum. Calculate;

(i) Economic order quantity (EOQ) and
(ii) Annual cost of purchasing and storage of the raw materials at that quantity.

B.Com (H) 2004

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 48{,}000 \times 120}{2}}$ **= 2,400 Kg**

Annual Cost = Cost of purchasing + Cost of storage

$= \left(\frac{48{,}000}{2{,}400} \times 120\right) + \left(\frac{1}{2} \times 2{,}400 \times 2\right)$ **= 2,400 + 2,400 = Rs. 4,800**

Q.23

A company manufactures 5,000 units of a product per month. Cost of placing an order is Rs. 100. The purchase price of raw materials is Rs. 10 per kg. The order period is 4 to 8 weeks. The consumption of raw materials varies from 100 kg to 450 kg per week. The average consumption being 275 kg, the carrying cost of inventory is 20% per annum. You are required to calculate:

(i) Reorder Quantity
(ii) Maximum Level
(iii) Minimum Level and
(iv) Average Level

B.Com (H) 2006 (External) [6 Marks]

[(i) 1,196 Kg; (ii) 3,600 kg; (iii) 1,950 Kg; (iv) 3,173 kg]

Q.24

Type 3:- E.O.Q. at Quantity Discount 6

Q.25

A firm is able to obtain quantity discounts on its orders of materials as follows:

Price per tonne	Tonnes	Price	Tonnes
Rs. 6.00	Less than 250	Rs.5.70	2,000 and less than 4,000
Rs. 5.90	250 and less then 800	Rs. 5.60	4,000 and over
Rs. 5.80	800 and less than 2,000		

The annual demand for the materials is 4,000 tonnes. Stock holding costs are 20% of materials cost per annum. The delivery cost per order is Rs.6.
You are required to calculate the best quantity to order.

C.A. Inter November 1990 Adapted

Table showing best order quantity

Ordering quantity	Price per tonnes	No. of Order	Cost of purchase (Rs.)	Annual Carrying Cost $\frac{1}{2} \times Order\ Quantity \times Carrying\ cost\ p.u.p.a.$ (Rs.)	Ordering Cost (Rs.)	Total Cost (Rs.)
200	6	20	4,000 × 6 = 24,000	$\frac{1}{2} \times 200 \times (6 \times 20\%) =$ 120	20× 6 = 120	24,240.00
250	5.9	16	4,000 × 5.9 = 23,600	$\frac{1}{2} \times 250 \times (5.9 \times 20\%)$ = 147.50	16 × 6 = 96	23,843.50
800	5.8	5	4,000 × 5.8 = 23,200	$\frac{1}{2} \times 800 \times (5.8 \times 20\%)$ = 464	5 × 6 = 30	23,694.00
2,000	5.7	2	4,000 × 5.7 = 22,800	$\frac{1}{2} \times 2,000 \times (5.7 \times 20\%)$ = 1,140	2 × 6 = 12	23,952.00
4,000	5.6	1	4,000 × 5.6 = 22,400	$\frac{1}{2} \times 4,000 \times (5.6 \times 20\%)$ = 2,240	1 × 6 = 6	24,646.00

The above table shows that least cost is Rs. 23,694 when the ordering quantity is 800 units. Hence, it is the optimum ordering quantity.

Q.26

YPS Ltd. has received an offer of quantity discount on its order of materials as under:

Price per tonne Rs.	Tonnes 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 materials is 5,000 tonnes. The ordering cost per order is Rs. 1,200 and the carrying cost is estimated at 20% per annum.

You are required to compute the most economical order quantity presenting the relevant information in a tabular form.

B.Com (H) 2001

Calculation of Economic order quantity (EOQ)

Size if order (Tonnes)	Price per tonne	Purchase of 5,000 tonnes	Ordering cost	Carrying cost	Total cost
400	1,200	60,00,000	15,000	48,000	60,63,000
500	1,180	59,00,000	12,000	59,000	59,71,000
1,000	1,160	58,00,000	6,000	1,16,000	59,22,000
2,000	1,140	57,00,000	3,000	2,28,000	59,31,000
3,000	1,120	56,00,000	2,000	3,36,000	59,38,000

Conclusion: When order size is 1,000 tonnes, cost is least at Rs. 59,22,000. Thus EOQ is 1,000 tonnes.

Q.27

Annual requirement of a particular item of inventory is 10,000 units. Inventory carrying cost per unit per year is 20% and ordering cost is Rs. 40 per order. The price quoted by the supplier is Rs. 4 per unit. However the supplier is ready to give a discount of 5% for orders of 1,500 unit or more. Is it worthwhile to avail of the discount offer?

B.Com (H) 2006 Regular [6 Marks]

(a) EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 10{,}000 \times 40}{0.8}}$ **= 1,000 units**

(i) When order is for EOQ of 1,000 unit , total cost will be:

Materials Cost (10,000 units @ Rs. 4)	40,000
Ordering Cost (10,000/ 1,000 ×Rs. 40)	400
Storage cost (1000 × ½ × 4 × 20%)	400
Total cost	40,800

(ii) When ordering quantity is 1,500 unit at 5% discount on price

Materials cost (10,000 units @ Rs. 3.80)	38,000
Ordering cost (10,000/ 1,500 × Rs. 40)	267
Storage cost (1500 × ½ × Rs.3.80 × 20%)	570
Total cost	38,837

It is cheaper to buy quantities of 1,500 unit at 5% discount. Therefore offer of discount should be availed.

Q.28

A company manufactures a special product, which requires a component 'Alpha'. The following particulars are available for 2014:

Annual Demand	8,000 units
Cost of placing an order	Rs. 200 per order
Cost per unit of 'Alpha'	Rs.400
Carrying cost % p.a.	20%

The company has been offered a discount of 4 % on the purchase of 'Alpha' provided the order size is 4,000 components at a time.

Required:

(i) Calculate Economic Order quantity.
(ii) Advise whether the discount offer can be accepted.

B.Com (H) 2013 Regular [8 Marks]

[(i) 200 units (ii) No
(Total Cost without discount Rs. 32,16,000 or Total Cost with discount Rs. 32,26,000]

Q.29

ABC Co. buys in lots of 125 boxes which is a three month's supply The cost per box is Rs. 125 and the ordering cost Rs. 250 per order. The inventory carrying cost is estimated at 20% of unit value per annum. You are required to ascertain.

(i) The total annual cost of existing inventory policy
(ii) How much money would be saved by employing the economic order quantity?

B.Com (H) 2008 [5 Marks] / 2013

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$

U = Annual Usage or Consumption
P = Cost of placing an order
S = Cost of storing one unit for a year

EOQ = $\sqrt{\frac{2 \times 500 \times 250}{25}}$ **=100 units**

Total Cost per annum = (125 × 500) + ($\frac{100}{2}$ × 125 × 20%) + (5× 250)
= 62,500 + 1,250 +1,250 = Rs. 65,000

Existing Annual Cost = (125 × 4 × 125) + (250 × 4) + (125/2 × 125 × 20%)
= 62,500 +1,000 + 1,562.50 = Rs.65,062.50

Money Saved by EOQ = Rs. 65,062.50 - Rs. 65,000 = Rs. 62.50

Q.30

JP Ltd. manufacturers of a special products, follows the policy of EOQ (Economic order quantity) for one its companies. The component's details as follows:

Particulars	Rs.
Purchase price per components	200
Cost of an order	100
Annual cost of carrying one unit in inventory	10% of purchase price
Total cost of inventory and ordering per annum	4,000

The company has been offered a discount of 2% on the price of the component provided the lot size is 2,000 components at a time.

You are required to:
(a) Compute the EOQ
(b) Advise whether the quantity discount offer can be accepted.
(Assume that the inventory carrying cost does not very according to discount policy)

(c) Would your advice differ if the company is offered 5% discount on a single order?

CA Inter November 1994

(a) Computation of EOQ.
Basic Calculations:

(i)	Purchase per components	Rs. 200
(ii)	Cost of an order(P)	Rs. 100
(iii)	Annual cost of carrying one unit of inventory is (s)	10% of cost of Rs.20
(iv)	Total cost of (carrying) inventory and ordering per annum	Rs. 4,000
(v)	Let the total annual usage be U	

In order to compute EOQ by using the above data we require the figure of total annual usage of inventory. This can be done through the following equation

Total Cost of Inventory Ordering and Carrying = $\sqrt{2 \times U \times P \times S}$

⇒ **Rs. 4,000** = $\sqrt{2 \times U \times 100 \times 20}$

⇒ **Rs. 4,000** = $\sqrt{4,000\,U}$

⇒ **4,000 U** = **1,60,00,000**

U = 4,000 units

Thus, annual consumption is 4,000 units

EOQ = $\sqrt{\frac{2 \times U \times P}{S}}$ = $\sqrt{\frac{2 \times 4{,}000 \times 100}{20}}$ **= 200 units**

(b) No of order = 2 (When order size is 2,000)

If a discount of 2% on the price of the components is available if an order in the lot size of 2,000 components is given, the cost shall be:

Ordering Cost (2 × 100)	**Rs. 200**
Add: Storage Cost (1,000 × 20)	**Rs. 20,000**
	Rs.20, 200
Less: Saving on account of discount	**Rs. 16,000**
Net Cost	**Rs. 4,200**

Since the net cost of Rs. 4,200 is higher than the present cost of Rs. 4,000, this offer should not be accepted.

(c) If a discount of 5% on the price of the component is offered if the a single order of 4,000 components is placed, the total cost shall be:

Ordering cost (1× 100)	**Rs. 100**
Add: Storage cost (2,000 × 20)	**Rs. 40,000**
	Rs. 40,100
Less: Saving on account of discount (5 × 4,000 × 20)	**Rs. 40,000**
Net Cost	**Rs. 100**

Since the Net Cost is much less than the present cost of Rs. 4,000, this offer must be accepted.

Type 4:- LIFO & FIFO

10

FIFO

Q.31

From the following information prepare stores ledger account as per FIFO method.

1st January operating Stock	200 pieces @ Rs. 2 each
5th January purchase	100 pieces @ Rs. 2.20 each
10th January purchase	150 pieces @ Rs. 2.40 each
20th January purchase	180 pieces @ Rs. 2.50 each
2nd January issues	150 pieces
7th January issues	100 pieces
12th January issues	100 pieces
28th January issues	200 pieces

B.Com (P) 2004 (Regular) [5 Marks]

Store Ledger FIFO Basis

Date	Particular	Receipt			Issues			Balance		
		Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
1/1	Opening Stock	–	–	–	–	–	–	200	2.00	400
2/1	Issued	–	–	–	150	2.00	300	50	2.00	100
5/1	Purchase	100	2.20	220	–	–	–	50 100	2.00 2.20	100 220
7/1	Issued	–	–	–	50 50	2.00 2.20	100 110	50	2.20	110
10/1	Purchase	150	2.50	360	–	–	–	50 150	2.20 2.40	110 360
12/1	Issued	–	–	–	50 50	2.20 2.40	110 120	100	2.40	240
20/1	Purchase	180	2.50	450	–	–	–	100 180	2.40 2.50	240 450
28/1	Issued	–	–	–	100 100	2.40 2.50	240 250	80	2.50	200

Q.32

From the following information prepare store ledger account as per FIFO method

January 2009	
1 January	Opening balance 500 unit @ Rs. 25 P. u.
3 January	Issue 70 units
4 January	Issue 100 unit
8 January	Issue 80 unit
13 January	Received 200 unit @ Rs. 24 per unit
14 January	Returned to stores, 15 unit @ Rs. 24 PU
16 January	Issue 180 unit
20 January	Received 240 unit @ Rs. 24.75 per unit
24 January	Issue 304 unit
25 January	Received 320 unit @ Rs. 24 per unit
26 January	Issue 112 unit
27 January	Returned to stores 12 unit @ Rs. 24.50 P.U
28 January	Received 100 unit @ Rs. 25 per unit.

On 15th January there was a shortage of 5 units. Again, it was found a shortage of 8 units on 27th January

B.Com (P) 2013(External) [9 Marks]

Store Ledger Account
As per FIFO Method

Date	Receipt			Issues			Balance		
2009	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
Jan. 1	–	–	–	–	–	–	500	25	12,500
Jan. 3				70	25	1750	430	25	10,750
Jan. 4				100	25	2500	330	25	8,250
Jan. 8				80	25	2000	250	25	6,250
Jan. 13	200	24	4800				250 200	25 24	6,250 4,800
Jan. 14	15	24	360				250 200 15	25 24 24	6,250 4,800 360
Jan. 15				5 Shortage	25	125	245 200 15	25 24 24	6,125 4,800 360
Jan. 16				180	25	4500	65 200 15	25 24 24	1,625 4,800 360
Jan. 20	240	24.75	5940				65 200 15 240	25 24 24 24.75	1,625 4,800 360 5,940
Jan. 24				65 200 15 24	25 24 24 24.75	1625 4800 360 594	216	24.75	5,346
Jan. 25	320	24	7680				216 320	24.75 24	5,346 7,680
Jan. 26				112	24.75	2772	104 320	24.75 24	2,574 7,680
Jan. 27	12	24.50	294				104 320 12	24.75 24 24.50	2,574 7,680 294
Jan. 27				8 Shortage	24.75	198	96 320 12	24.75 24 24.50	2,376 7,680 294
Jan. 28	100	25	2500				96 320 12 100	24.75 24 24.50 25	2,376 7,680 294 2,500

FIFO & LIFO

Q.33

From the following information prepare store ledger account as per LIFO and FIFO method;

January 1, 2003	Received	1,000 units	@ Rs. 1 per unit
January10, 2003	Received	260 units	@ Rs. 1.05 per unit
January 20, 2003	Issued	700 units	
January 21, 2003	Received	400 units	@ Rs. 1.15 per unit
January 22, 2003	Received	300 units	@ Rs. 1.25 per unit
January 23, 2003	Issued	620 units	
January 24, 2003	Issued	240 units	
January 25, 2003	Received	500 unit	@ Rs. 1.10 per unit
January 26, 2003	Issued	380 units	

B.Com (P) 2005 (Regular) [7 Marks]

Store Ledger by LIFO Method

Date 2003	Receipt			Issues			Balance		
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
Jan.1	1,000	1.00	1,000	–	–	–	1,000	1.00	1,000
Jan.10	260	1.05	273	–	–	–	1,000 260	1.00 1.05	1,000 273
Jan.20	–	–	–	260 440	1.05 1.00	273 440	560	1.00	560
Jan.21	400	1.15	460				560 400	1.00 1.15	560 460
Jan.22	300	1.25	375				560 400 300	1.00 1.10 1.25	560 460 375
Jan.23				300 320	1.25 1.15	375 368	560 80	1.00 1.15	560 92
Jan.24				80 160	1.15 100	92 160	400	1.00	400
Jan.25	500	1.10	550				400 500	1.00 1.10	400 550
Jan.26				380	1.10	418	400 120	1.00 1.10	400 132

Store Ledger by FIFO Method

Date 2003	Receipt			Issues			Balance		
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
Jan.1	1,000	1.00	1,000	–	–	–	1,000	1.00	1,000
Jan.10	260	1.05	273	–	–	–	1,000 260	1.00 1.05	1,000 273
Jan.20	–	–	–	700	1.00		300 260	1.00 1.05	300 273
Jan.21	400	1.15	460				300 260 400	1.00 1.05 1.15	300 273 460
Jan.22	300	1.25	375				300 260 400 300	1.00 1.05 1.15 1.25	300 273 460 375

Jan.23				300 260 60	1.00 1.05 1.15	300 273 69	340 300	1.15 1.25	391 375
Jan.24				240	1.15	276	100 300	1.15 1.25	115 375
Jan.25	500	1.10	550				100 300 500	1.15 1.25 1.10	115 375 550
Jan.26				100 280	1.15 1.25	115 350	20 500	1.25 1.10	25 550

Q.34

From the following information prepare stores ledger card under LIFO and FIFO system. Calculate the value of closing Stock under both the system:

January 1	Opening Stock	200 pieces	@Rs. 2.00 each
5	Purchase	100 pieces	@ Rs. 2.20 each
10	Purchase	150 pieces	@ Rs. 2.40 each
20	Purchase	120 pieces	@ Rs. 2.50 each
22	Issue	150 pieces	
25	Issue	100 pieces	
27	Issue	100 pieces	
28	Issue	200 pieces	

B.Com (P) 2006 (External) [10 Marks]

Store Ledger Card (LIFO)

Date	Receipt			Issues			Balance		
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
Jan. 1							200	2.00	400
Jan. 5	100	2.20	220				200 100	2.00 2.20	400 220
Jan. 10	150	2.40	360				200 100 150	2.00 2.20 2.40	400 220 360
Jan. 20	120	2.50	300				200 100 150 120	2.00 2.20 2.40 2.50	400 220 360 300
Jan. 22				120 30	2.50 2.40	300 72	200 100 120	2.00 2.20 2.40	400 220 288
Jan. 25				100	2.40	240	200 100 20	2.00 2.20 2.40	400 220 48
Jan. 27				20 80	2.40 2.20	48 176	200 20	2.00 2.20	400 44
Jan. 28				20 180	2.20 2.00	44 360	20	2.00	40

Store Ledger Card (FIFO)

Date	Receipt			Issues			Balance		
2008	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
Jan 1							200	2.00	400
Jan. 5	100	2.20	220				200 100	2.00 2.20	400 220
Jan. 10	150	2.40	360				200 100 150	2.00 2.20 2.40	400 220 360
Jan 20	120	2.50	300				200 100 150 120	2.00 2.20 2.40 2.50	400 220 360 300
Jan. 22				150	2.00	300	50 100 150 120	2.00 2.20 2.40 2.50	100 220 360 300
Jan. 25				50 50	2.00 2.20	100 110	50 150 120	2.20 2.40 2.50	110 360 300
Jan. 27				50 50	2.20 2.40	110 120	100 120	2.40 2.50	240 300
Jan. 28				100 100	2.40 2.50	240 250	 20	 2.50	 50

FIFO & LIFO & Simple Average

Q.35

From the following details in respect of a materials item for the month of December 2014, calculate cost of materials consumed and the value of closing Stock under (I) LIFO and (II) Simple average price method.

December 2014
Opening Stock (1st December) 500 unit @ Rs. 2 per unit
Purchase:
5th December 1000 unit @ Rs. 3 per unit
8th December 1500 unit @ Rs. 4 per unit
Issued production:
10th December 1,600 unit

B.Com (P) 2006 (External) [8 Marks]

LIFO Method

Date	Receipt			Issues			Balance		
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
Dec.1	–	–	–	–	–	–	500	2	1,000
Dec. 5	1,000	3	3,000				500	2	1,000
							1,000	3	3,000
Dec. 8	1,500	4	6,000				500	2	1,000
							1,000	3	3,000
							1,500	4	6,000
Dec. 10				1,500	4	6,000	500	2	1,000
				100	3	300	900	3	2,700

Cost of Materials Consumed = Rs. 6,300

Value of Closing Stock (1,400 units) = Rs. 3,700

Simple Average Method

Date	Receipt			Issues			Balance	
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Amt.
Dec. 1	–	–	–	–	–	–	500	1,000
Dec. 5	1,000	3	3,000				1,500	4,000
Dec. 8	1,500	4	6,000				3,000	10,000
Dec.10	–			1,600	3	4,800	1,400	5,200

Working Note: - Average Rate = $\frac{2+3+4}{3}$ = Rs. 3

Value of Closing Stock (1,400 units) = Rs. 5,200

Q.36

From the following information, prepare store ledger account as per Simple average price method;

January 1, 2013	Opening Stock	500 units	@ Rs. 20 per unit
January 4, 2013	Received	400 units	@ Rs. 21 per unit
January 6, 2013	Issued	600 units	
January 8, 2013	Received	800 units	@ Rs. 24 per unit
January 9, 2013	Issued	500 units	
January 13, 2013	Issued	300 units	
January 24, 2013	Purchased	500 units	@ Rs. 25 per unit
January 28, 2013	Issued	400 unit	

Solution:-

Simple Average Method

Date	Receipt			Issues			Balance	
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Amt.
Jan. 1	–	–	–	–	–	–	500	10,000
Jan. 4	400	21	8,400	–	–	–	900	18,400
Jan. 6	–	–	–	600	20.50	12,300	300	6,100
Jan. 8	800	24	19,200	–	–	–	1,100	25,300
Jan. 9	–	–	–	500	22.50	11,250	600	14,050
Jan. 13	–	–	–	300	24.00	7,200	300	6,850
Jan. 24	500	25	12,500	–	–	–	800	19,350
Jan. 28	–	–	–	400	24.50	9,800	400	9,550

Q.37

From the following information, prepare store ledger account as per Simple average price method;

2010		Units	Price per unit(Rs.)
Jan. 2	Purchased	4,000	4.00
Jan. 20	Purchased	500	5.00
Feb. 5	Issued	2,000	
Feb.10	Purchased	6,000	6.00
Feb.12	Issued	4,000	
March 2	Issued	1,000	
March 5	Issued	2,000	
March 15	Purchased	4,500	5.50
March 20	Issued	3,000	

Hints: Feb 5 @ Rs.4.5; Feb 12 @ Rs.5; March 2 & 5 @ Rs.6; March 20 @ 5.75

FIFO & LIFO & Weighted Average

Q.38

The following transaction took place in respect of a materials item:

	Receipt quantity	Rate (Rs.)	Issue quantity
March 2	200 units	2.00	–
March 10	300 units	2.40	–
March 15	–	–	250 units
March 18	250 units	2.60	–
March 20	–	–	200 units

Prepare a stores ledger sheet using:
(i) LIFO Method
(ii) Weighted Average Method

B.Com (P) 2010 (Regular) [6 Marks]

Store Ledger Account by LIFO Method

Date	Receipt			Issues			Balance		
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
March 2	200	2.00	400	–	–	–	200	2.00	400
10	300	2.40	720	–	–	–	200 300	2.00 2.40	400 720
15	–	–	–	250	2.40	600	200 50	2.00 2.40	400 120
18	250	2.60	650	–	–	–	200 50 250	2.00 2.40 2.60	400 120 650
20	–	–	–	200	2.60	520	200 50 50	2.00 2.40 2.60	400 120 130
							300		650

Store Ledger Account by Weighted Average Method

Date	Receipt			Issues			Balance		
	Qty.	Rate	Amt.	Qty.	Rate	Amt.	Qty.	Rate	Amt.
March	200	2.00	400	–	–	–	200	2.00	400
10	300	2.40	720	–	–	–	500	2.24	1120
15	–	–	–	250	2.24	560	250	2.24	560
18	250	2.60	650	–	–	–	500	2.42	1210
20	–	–	–	200	2.42	484	300	2.42	726

Q.39

Show how the times given ahead relating to purchase and issue of a raw materials will appear in the stores ledger using LIFO, FIFO and Weighted Average Method of pricing the Materials issue.

2010		Units	Price per unit(Rs.)
Feb.1	Opening balance	300	20
Feb. 5	Purchase	200	22
Feb.11	Issue	150	?
Feb.22	Purchase	200	23
Feb.24	Issue	150	?
Feb.28	Issue	200	?
	Shortage	5	?

B.Com (H) 2010 [15Marks]

[LIFO Rs.3,900 ; FIFO Rs. 4,485; Weighted Average Method Rs. 4,212]

Q.40

Oil India is a Bulk Distributor of oil. A periodic inventory of oil on hand is taken when the books are closed at the end of each month. The following summary of information is available for the month of December.

Sales Rs. 9,45,000
General Administrative Cost Rs. 25,000
Opening Stock 1,00,000 liters @ Rs. 3 per litre; Rs. 3,00,000 purchases (including freight in)
December 1, 2,00,000 liters @ Rs. 2.85 per liter
December 30, 1,00,000 liters @ Rs. 3.03 per liter
Closing Stock December 31, 1,30,000 liters

Compute the following by the First in First Out, Weighted average and Last in First out Method of inventory costing.

a) **Value of Inventory on December 31**
b) **Amount of Cost of Goods Sold for December**
c) **Profit or Loss for December**

B.Com (H) 2007 Regular [11 Marks]

First in First Out (FIFO) Method

(a) Closing inventory on December 31

1,00,000 liters @ Rs. 3.03	3,03,000
30,000 liters @ Rs. 2.85	85,500
Closing Stock (value of inventory)	3,88,500

(b) Cost of goods sold

Opening Stock	3,00,000
Add: Purchase December 1 (2,00,000 @ Rs. 2.85)	5,70,000
Add: Purchase December 30 (1,00,000 liters @ Rs. 3.03 per liter)	3,03,000
	11,73,000
Less: Closing Stock (value of inventory)	3,88,500
Cost of Goods sold	7,84,000

(c) Calculation of profit

Cost of goods sold	7,84,500
Add: General Administrative Cost	25,000
Total Cost	8,09,500
Sales	9,45,000
Profit (Sales – Total Cost)	1,35,500

Weighted Average Method

Closing Stock valuation	**3,90,000**
1,30,000 liters @ Rs. 3	

The rate of Rs. 3 is calculated as follows:

On first Receipt $= \frac{(1{,}00{,}000 \times 3)+(2{,}00{,}000 \times 2.85}{1{,}00{,}000 + 2{,}00{,}000} = \frac{8{,}70{,}000}{3{,}00{,}000}$ **= Rs.2.90**

Last Receipt $= \frac{(30{,}000 \times 2.95)+(1{,}00{,}000 \times 3.03}{1{,}00{,}000 + 2{,}00{,}000} = \frac{3{,}90{,}000}{1{,}30{,}000}$ **= Rs.3.00**

Cost of Goods sold (Purchase Cost + Opening Stock)	**11,73,000**
Less: Closing Stock	**(390,000)**
Cost of Goods sold	**7,83,000**
Add: General Administrative Cost	**25,000**
Total sale	**8,08,000**
Sales	**9,45,000**
Profit	**1,37,000**

Last in First Out Method

Particulars	Rs.
30,000 Liters @ Rs. 3	**90,000**
1,00,000 Liters @ Rs. 3.03	**3,03,000**
Value of Closing Stock	**3,93,000**
Value of Purchase + Opening Stock	**11,73,000**
Less: Closing Stock	**(3,93,000)**
Cost of Goods Sold	**780,000**
Add: General Administrative Cost	**25,000**
Total Cost	**8,05,000**
Sales	**9,45,000**
Profit	**1,40,000**

Type 5:- Mics. Questions 9

Q.41

A Consignment consisting of 4 grades of materials was purchased for Rs. 1,20,000. Storekeeper sorted them out an recorded the following:
Grade A – 4,000 Units
Grade B – 8,000 Units
Grade C– 10,000 Units
Grade D – 12,000 Units

Total sales of grade A amounted to Rs. 16,000 (rate of profit being $33\frac{1}{3}$ % of cost) and those of B at price $1\frac{1}{2}$ time that of A, but the rate of profit was $33\frac{1}{3}$ % of sales. Similarly, Grade C Materials was sold for Rs. 50,000, yielding a profit of 20% of sales.
Calculate the purchase price of each grade on the basis of the above information.

B.Com (P) 2004 (Supply) [5 Marks]

Particulars			Rs.
Grade A			
Cost of Grade A sales			16,000
Less: Profit ($33\frac{1}{3}$ % on cost or 25% on sales)			4,000
Total cost of A			12,000
Cost price per unit of A = $\frac{12,000}{4,000}$ = Rs. 3 per unit			
Selling price per unit of A = $\frac{16,000}{4,000}$ = Rs. 4 per unit			
Grade B			
Selling price per unit	Rs.6		
Less: Profit ($33\frac{1}{3}$ % on sales)	Rs. 2		
Cost per unit of B	Rs. 4		
Total cost of B	8,000 × 4		32,000
Grade C			
Total Sales	Rs. 50,000		
Less: Profit (20% on sales)	Rs. 10,000		
	Rs. 40,000		
Total Cost			40,000
Cost per unit	$\frac{40,000}{10,000}$ = Rs. 4 per unit		
Grade D			
Total Cost		1,20,000	
Less: Total Cost of A Rs. 12,000			
B Rs. 32,000			
C Rs. 40,000		84,000	
Cost per unit = $\frac{36,000}{12,000}$ = Rs. 3 per unit		36,000	

Thus, cost details are -

Grade of Materials	Units	Per unit	Total
A	4,000	3	12,000
B	8,000	4	32,000
C	10,000	4	40,00
D	12,000	3	36,000
			1,20,000

Q.42

4,000 lbs. of wool costing Rs. 72,000 was issued for the manufactures of 36" size pullover. On the completion of manufactures of pullovers, the following information furnished:

(i) 1,600 good pullovers 36" size of 2 lbs. each were manufactured.
(ii) 100 lbs. of wool in scrapped and realised Rs. 700.
(iii) 200 lbs. of off cuts were used for the manufactures of another product of hosiery. The market value of this is Rs. 1,800.
(iv) 200 pullovers were found defective and were rectified at an additional materials cost of Rs. 500.

You are required to find out the cost of materials of one pullover.

B.Com (P) 2005 (Regular) [7 Marks]

Particulars	Rs.
Cost of Materials Issued	72,000
Less: Sale of Scrap	700
	71,300
Less: Off cut for the manufacture of another product (Spoilage)	1,800
	69,500
Add: Cost of rectification of 200 defective Pullover	500
Cost of 1,800 (Good 1,600 + 200 defective) Pullover of 2 lbs. each	70,000

Cost of Materials per Pullover = Rs. 70,000 / 1,800 = Rs. 38.89

Q.43

A furniture manufacturer purchased 10,000 cft. Of timber logs on 1st October 2014 @ Rs. 10 per cft. and stored them in his timber yard for six months for seasoning. In this timber yard the following items of expenses were incurred during the period of seasoning:

(i) Rent of the yard (2,000 sq. ft.) Rs. 250 per month.
(ii) Salaries of 2 watchmen and khalasis @ Rs. 250 per month each.
(iii) Incidental expenses of maintenance, lighting etc. @ 150 per month.
(iv) Annual shares of general overheads expenses of the business Rs.2,000.
(v) Insurance charges for the logs to be seasoned @ 1% on the value of unseasoned logs for the period of seasoning – 50% of floor area of the yard had been set apart for seasoning timer and the remaining floor area is occupied by shops making furniture.

Loss in volume of logs due to seasoning: 10%. Calculate the price to be charged on issue of the seasoned logs per cft. to the nearest rupee.

Particulars	Quantity	Rs.
Cost of timber	10,000	1,00,000
Rent (1/2 shares)		750
Salaries of watchmen etc. (1/2 shares)		1,500
Incidental expenses (1/2 shares)		450
Overheads expenses (1/2 shares)		500
Insurance		1,000
Loss in volume (10%)	1,000	–
Total Cost	9,000	1,04,200

Cost per cft. = $\frac{1,04,200}{9,000}$ = Rs. 11.57

Q.44

A consignment consisted of two chemicals A and B. The invoice gave the following data:

	Rs.
Chemical A ; 4 tonnes at Rs. 5 per kg	20,000
Chemical B ; 2 tonnes at Rs. 2 per kg	4,000
Sales Tax	1,200
Freight	900
Total	26,100

A Shortage of 2 quintals in A and 1 quintal in B was noticed and it was considered normal. What rate per kg would you adopt for pricing issues assuming provision of 20% towards further deterioration?

B.Com (H) 2012 [10 Marks]

	Chemical A (Kg)	Chemical B (Kg)
Quantity	4,000	2,000
Less: Shortage	200	100
	3,800	1,900
Further deterioration (20%)	(760)	(380)
Net quantity	3,040	1,520

	(Rs.)	(Rs.)
Cost	20,000	4,000
Sales Tax @ 5 %	1,000	200
Freight (as per weight)	600	300
Total	21,600	4,500

Issue Rate Per Kg $\frac{21,600}{3,040}$ = Rs. 7.10 $\frac{4,500}{1,520}$ = Rs. 2.96

Q.45

A factory use 4000 varieties of inventory – In terms of inventory holding inventory usage the following information is complied.

No. of varieties of inventory	%	% value of inventory holding (Average)	% of inventory usage (in end products)
3,875	96.875	20	5
110	2.750	30	10
15	0.375	50	85
4,000	100.000	100	100

Classify the item of inventory as per ABC analysis with reasons.

B.Com (H) 2003

A Materials, 15 Items representing 50% of the total value and 85% of consumption.
B Materials, 110 Items representing 30% of the total value and 10% usage in the end products.
C Materials, 3875 Items representing 20% in value and 5% in usage in the end products.

Q.46

At what price per unit would part no. A 32 be entered in the Stores Ledger, if following invoice was received from a supplier;

Invoice	Rs.
200 units of Part No. A 32 @ Rs. 5	1,000
Less: 20% Discount	200
	800
Add: Excise duty @ 15%	120
	920
Add: Packing charges (5 non- returnable boxes)	50
	970

Notes:

(i) A 2 % discount will be given for payment in 30 days

(ii) Documents substantiating payment of excise duty is enclosed for claiming MODVAT credit.

CA Inter 1995 Nov.

Computation of Price to be entered in Stores Ledger
(of Part No. A 32)

	Rs.
Cost of 200 units less trade discount	800
Add: Packing Charges	50
Total	850

Cost per unit = Rs.850/200units = Rs.4.25

Q.47

The following data are available in respect of materials X for the year ended 31st March 2014.

Opening Stock	90,000
Purchase 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.

B.Com (H) 2010 [6 Marks]

Cost of Materials consumed = Opening Stock + Purchase – Closing Stock
= 90,000 + 2,70,000 – 1,10,000 = Rs. 2,50,000

Average Stock $= \frac{90{,}000 + 1{,}10{,}000}{2} =$ **1,00,000**

Inventory turnover ratio $= \frac{Cost\ of\ Material\ Consumed}{\text{Average Stock}} = \frac{2{,}50{,}000}{1{,}00{,}000} =$ **2.5 times**

No. of days for which average inventory is held $= \frac{365 \text{ days in the year}}{2.5 \text{ times}} =$ **146 days**

Q.48

From the following data for 2014 you are required to calculate:

(i) Inventory turnover ratio of Materials A
(ii) The Average Stock holding of this Materials in terms of number of days

Opening Stock 1st April 2013	**20,000**
Purchase during the year	**1,04,000**
Closing Stock 31st March 2014	**12,000**

B.Com (H) 2013 [7Marks]

Average inventory $= \frac{\text{Opening Stock + Closing Stock}}{2}$

$= \frac{20,000 + 12,000}{2} = 16,000$ **units**

Cost of Materials consumed = (20,000 +1,04,000) – 12,000 = Rs. 1,12,000

Inventory turnover ratio $= \frac{Cost\ of\ Material\ Consumed}{\text{Average Stock}} = \frac{1,12,000}{16,000} = 7$ **times**

Average Stock $= \frac{\text{No.of days in the year}}{\text{Inventory turnover ratio}} = \frac{365}{7} = 52$ **Days**

Q.49

From the following particulars, work out the issue rate per 1,000 of first class and second class bricks:
(a) Paid for the supply at the kiln site for 30 lakh first class bricks @ Rs. 30 per 1,000 bricks.
(b) Paid for the supply at the kiln site for 60 lakh second class bricks @ Rs.25 per 1,000 bricks.
(c) Paid carriage charges for carrying all bricks from kiln to Stock yard @ Rs. 1.50 per 1,000 bricks.
(d) Paid unloading charges Rs.90 (lump sum)
(e) Paid for Stocking in Stock yard Rs.180 (lump sum)
(f) Breakage in handling – 1% for first class bricks and 2% for second-class bricks.

I.C.W.A. Inter

	First Class bricks (Rs.)	Second Class bricks (Rs.)
Purchase Price		
(a) 30 lakh bricks @ Rs. 30 per 1,000 bricks	**90,000**	
(b) 60 lakh bricks @ Rs. 25 per 1,000 bricks		**1,50,000**
Carriage charges @ Rs. 1.5 per 1,000 bricks	**4,500**	**9,000**
Unloading charges Rs. 90		
Stocking charges Rs. 180		
Rs. 270	**90**	**180**
(apportioned between 1: 2 in ratio of no. of bricks)		
Total Cost	**94,590**	**1,59,180**

	First Class bricks	Second Class bricks
Total bricks	**30,00,000**	**60,00,000**
Less: Breakage (1% and 2%)	**30,000**	**1,20,000**
Goods bricks	**29,70,000**	**58,80,000**
Issue Rate for 1,000 bricks	**31.85**	**27.07**

Q.50

A company has the option to procure a particular material from two sources:

Source 1 assures that defective will not be more than 2 % of supply of quantity.

Source 2 does not give any assurance, but on the basis of past experience of suppliers received from it, it is observed that defective percentage is 2.8%.

The Materials is supplied in lots of 1,000 units. Source 2 supplies the lot of a price, which is lower by Rs. 100 as compared to source 1. The defective units of materials can be rectified for use at a cost of Rs. 5 per unit.

You are required to find out which of the source is more economical.

C.A. Inter

Comparative statement of procuring Materials from two sources

	Materials source 1	Materials source 2
Defective in %	2 [figure estimate]	2.8 [past experience]
Unit supplied [in one lot]	1,000	1,000
Total defective units in a lot	20 [1,000 unit ×2%]	28 [1,000units × 2.8%]
Additional price paid per lot[Rs.] A	100	–
Rectification cost of defect [Rs.] B	100 [20 unit ×Rs. 5]	140 [28 units × Rs. 5]
Total additional cost per lot [Rs.] A+B	200	140

Decision: - On comparing the total additional cost incurred per lot of 1,000 units, we observe that is more economical, if the required materials units are procured from materials source 2.