
UNIT 4 INVENTORY CONTROL

Structure

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Meaning and Objectives of Inventory Control
 - 4.2.1 Meaning
 - 4.2.2 Objectives
- 4.3 Techniques of Inventory Control
 - 4.3.1 ABC Analysis
 - 4.3.2 Stock Levels
 - 4.3.3 Re-Order Quantity
 - 4.3.4 Stores Records
 - 4.3.5 Perpetual Inventory System
 - 4.3.6 Inventory Turnover Ratio
- 4.4 Let Us Sum Up
- 4.5 Key Words
- 4.6 Answers To Check Your Progress
- 4.7 Terminal Questions/Exercises

4.0 OBJECTIVES

After studying this unit, you should be able to:

- define the term inventory control and list its objectives
- enumerate the various techniques of inventory control
- explain the various stock levels, and the methods of their calculation
- define the term ordering quantity and list the factors on which it depends
- explain the record maintained by the store keeper and the costing department
- define perpetual inventory system and explain its advantages
- determine the stock turnover ratio to determine the fast and slow moving stocks.

4.1 INTRODUCTION

You have learnt that inventories constitute a significant part of the total production cost of a product. An inadequate stock of inventory leads to holding up of production thereby leading to customer dissatisfaction, loss of revenue etc. Excessive investment in inventory, on the other hand, leads to locking up of capital results in losses due to deterioration and obsolescence of products. Thus, control of inventory will go a long way in reducing the cost of production and improving the profitability of a concern. In this unit you will study the various methods by which a firm exercises proper control over inventories and avoids losses arising from understocking and overstocking of materials.

4.2 MEANING AND OBJECTIVES OF INVENTORY CONTROL.

4.2.1 Meaning

Inventory control includes control over raw materials, stores supplies, spare parts, partly finished goods and finished goods. It is a system which ensures the required quantity of inventories of the required quality, at the required time and with the minimum amount of capital. The function of inventory turnover is to obtain maximum inventory turnover with sufficient stock to meet all requirements. The quantum of inventory to be kept is decided after taking into consideration the availability of finance, the quantum of discount allowed, the cost of storage and storage space available etc.

4.2.2 Objectives

The main objectives of inventory control are as follows:

- i) To provide continuous flow of inventory for efficient and uninterrupted flow of production .
- ii) To avoid excessive investment in inventory and consequently reducing carrying costs
- iii) To keep ,surplus and obsolete items to the minimum
- iv) To relieve the management in taking inventory decisions for various items of inventory from time to time.

4.3 TECHNIQUES OF INVENTORY CONTROL

The following are the common techniques of inventory control:

- 1) ABC analysis
- 2) Setting of various stock levels
- 3) Economic order quantity
- 4) Use of perpetual inventory records and continuous stock verification
- 5) Use of control ratios and review of slow and non-moving items.

4.3.1 ABC Analysis

For the purpose of exercising selective control over materials, manufacturing concerns find it useful to divide materials into three categories. An analysis of the annual consumption of materials of any organisation would indicate that a handful of top high value items (less than 10 per cent of the total number) will account for a substantial portion of about 70 per cent of total consumption value. Similarly, a large number of bottom items (over 70 per cent of the total number of items) account for only about 10 per cent of the consumption value. Between these two extremes will fall those items the percentage number of which is more or less equal to their consumption value. Items in the top category are treated as 'A' items, items in the bottom category are called as 'C' category items and the items that lie between the top and the bottom are called 'B' category items. Such an analysis of materials is known as 'ABC analysis' or 'Proportional parts value analysis'.

The logic behind this kind of analysis is that the management should study each item of stock in terms of its usage, lead time, technical or other problems and its relative money value in the total investment in inventories. Critical i.e., high value items deserve very close attention and low value items need to be devoted minimum expense and effort in the task of controlling inventories.

The material manager by concentrating on 'A' class-items is able to control inventories and show visible results in a short span of time. By controlling 'A' items and doing a proper inventory analysis, obsolete stocks are automatically pinpointed. ABC analysis also helps in reducing the clerical costs and results in better planning and improved inventory turnover. ABC analysis has to be resorted to because equal attention to A, B and C items will not be worthwhile and would be very expensive.

The following steps will explain to you the classification of the items into A, B and C categories.

- 1) Calculate the unit cost and the usage of each material over a given period.
- 2) Multiply the unit cost by the estimated usage to obtain the net value.
- 3) List out all the items by rupee annual issues and arrange them in the descending value.
- 4) Accumulate value and add up number of items and calculate percentage on total inventory in value and in number.

- 5) Draw a curve of percentage items and percentage value.
- 6) Mark off from the curve the rational limits of A,B and C categories.

The graphical representation of ABC analysis is shown in Figure 4.1.

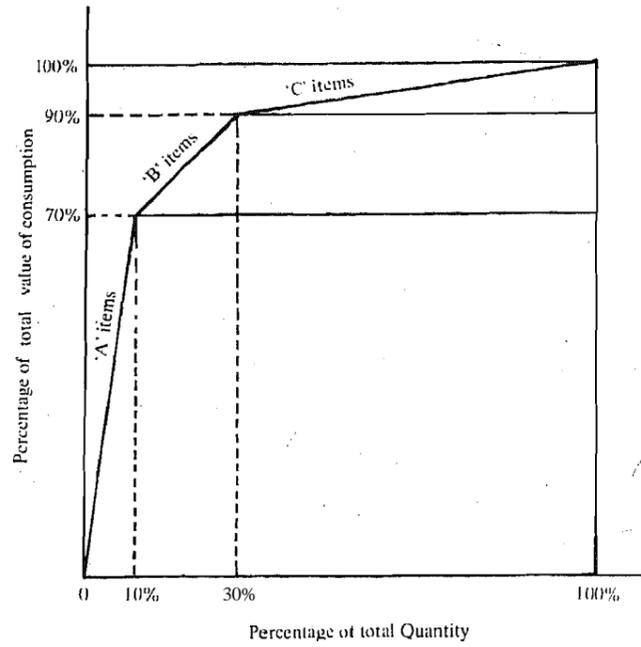


Figure 4.1: ABC Analysis

Check Your Progress A

- 1) Indicate whether the following statements are True or False:
 - i) In ABC analysis 'A' group of items consist of those inaterials the vlaue of which is not high but which are used in large quantities
 - ii) ABC analysis is based on the principle of management by exception.
- 2) Define Inventory Control.

- 3) List the main objects of inventory control.

4.3.2 Stock Levels

You know that the maintenance of proper stock of each item of stores is one of the main functions of stores department. If large quantity of stores is maintained it would lead to huge investment, large space coverage, dangers of deterioration in quality, etc. On the other hand, less stock will result in frequent purchases, higher costs, loss of production etc. It implies that there is always a limit to the minimum and maximum quantity of materials in stores.

In order to ensure that the optimum quantity of material is purchased and stored, neither more nor less, the **storekeeper** applies scientific technique of material management. Fixation of certain levels for each item of materials is one of such techniques. The following levels are generally fixed:

- 1) Minimum stock level
- 2) Maximum stock level
- 3) Re-ordering level
- 4) Danger level

Re-ordering level

You should know the level at which the storekeeper will initiate the requisition for the purchase of **materials** for fresh supplies. This level is referred to as 're-order level' or 'ordering level'. This level normally lies between the **maximum** and minimum stock level. This level will usually be higher than the **minimum** stock level to cover for emergencies as **abnormal** usage of material or unexpected delay in delivery of fresh supplies. The fixation of this level normally takes into consideration the lead time (period of supply or re-order period), rate of consumption and the economic ordering quantity.

Re-ordering level can be calculated according to any one of the following formulas:

$$\text{Re-order level} = \text{Maximum consumption} \times \text{Maximum re-order period}$$

OR

$$\text{Re-order level} = \text{Minimum level} + \text{consumption during the time required to get fresh deliveries}$$

The following **illustrations 1 and 2** will explain to you the calculation of the re-order level.

Illustration 1

Calculate the re-order level from the following **information**:

$$\text{Maximum consumption} = 400 \text{ units per week}$$

$$\text{Minimum consumption} = 250 \text{ units per week}$$

$$\text{Re-order period} = 4 \text{ to } 6 \text{ weeks}$$

Solution

$$\begin{aligned} \text{Re-order level} &= \text{Maximum consumption} \times \text{Maximum re-order period} \\ &= 400 \times 6 = 2,400 \text{ units} \end{aligned}$$

Illustration 2

Find out the order level from the following information:

$$\text{Maximum stock} = 2,500 \text{ units}$$

$$\text{Minimum stock} = 1,000 \text{ units}$$

$$\text{Time required for receiving the material} = 10 \text{ days}$$

$$\text{Daily consumption, of material} = 50 \text{ units}$$

Solution

$$\begin{aligned} \text{Re-order level} &= \text{Minimum stock level} + \text{consumption during the period required for fresh delivery} \\ &= 1,000 + 50 \times 10 \\ &= 1,000 + 500 = 1,500 \text{ units} \end{aligned}$$

Minimum Stock level

Minimum stock level **points** to the level of an **item** of material below which the stock in hand is not normally allowed to fall. In other words, it refers to the minimum quantity of a particular item of **materials** which must be **kept** in stores at all times.

This limit is fixed so as to avoid the possibility of suspension of production due to shortage of material. In **fixing** this level the following important factors, among others are taken into consideration:

- i) Lead **time** i.e., time lag between indenting and receiving of material
- ii) Rate of consumption of material during the lead **time**
- iii) Re-order level

Minimum stock level can be determined by applying the following formula:

$$\text{Minimum stock level} = \text{Re-order level} - (\text{Normal consumption} \times \text{Normal re-order period})$$

Illustraion 3 will explain to you the calculation of the minimum stock level.

Illustration 3

Calculate the **minimum** stock level from the following **data**:

Net normal consumption	=	400 units per week
Normal re-order period	=	5 weeks
Re-order level	=	3,500 units
Minimum stock level	=	Re-order level - (Normal consumption X Normal re-order period)
	=	3,500 - (400 X 5)
	=	3,500 - 2,000 = 1,500 units

Maximum stock level

It is that quantity of material above which the stock of any item should not be allowed to exceed. The main object of fixing the maximum stock level is to avoid undue investment in stock and to use the working capital in a proper way.

Maximum stock level is fixed by taking into consideration the following factors:

- 1) Amount of working capital available
- 2) Normal rate of consumption of materials during the lead time
- 3) Time necessary to obtain deliveries
- 4) Availability of storage space
- 5) Economic ordering quantity
- 6) Cost of carrying the inventory
- 7) Possibility of loss due to evaporation, deterioration etc.
- 8) Extent to which price fluctuations may be important.
- 9) Possibility of change in fashion, habit etc., which may necessitate the change in the specification of materials
- 10) Incidence of insurance costs which may be important for some materials.

The following formula is generally used for the calculation of mximum stock level.

$$\text{Maximum stock level} = \text{Re-order level} + \text{Re-order quantity} - (\text{Minimum consumption} \times \text{Minimum re-order period})$$

Danger level

This is generally a level below the minimum level. When stock reaches this level, urgent action is needed for **replenishment** of stock. If no emergency steps are taken to restock the materials, the stores will be **completely** exhausted and normal production stopped. At this level no further issues are made by the storekeeper except on special requisition approved by the works manager. The level is generally calculated by taking into account the time required to get the materials by the

quickest possible means of transport i.e., minimum time required for obtaining supplies from any possible source. It is calculated as follows:

$$\text{Danger level} = \text{Average consumption} \times \text{Maximum re-order period for emergency purchases}$$

Average stock level

Average stock level is usually calculated with the help of the following formula:

$$\frac{1}{2}(\text{Minimum stock level} + \text{Maximum stock level})$$

Depending upon the availability of information average stock level can also be calculated as follows:

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

Illustration 4 will explain to you the calculation of the various stock levels.

Illustration 4

From the following information, calculate:

- Re-ordering level
- Minimum stock level
- Maximum stock level

Re-order quantity	=	30,000 units
Time required for delivery	=	2-4 months
Maximum consumption	=	8,000 units per month
Normal consumption	=	5,000 units per month
Minimum consumption	=	3,000 units per month

Solution

- Re-ordering level
 - = Maximum consumption \times Maximum re-order period
 - = $8,000 \times 4 = 32,900$ units
- Minimum stock level
 - = Re-order level $-($ Normal consumption \times Normal re-order period)
 - = $32,000 - (5,000 \times 3)$
 - = $32,000 - 15,000 = 17,000$ units

NOTE: Normal re-order period = $\frac{2+4}{2} = 3$ months
- Maximum stock level
 - = Re-order level + Re-order quantity $-($ Minimum consumption \times Minimum re-order period)
 - = $32,000 + 30,000 - (3,000 \times 2)$
 - = $32,000 + 30,000 - 6,000$
 - = $62,000 - 6,000 = 56,000$ units

4.3.3 Re-Order Quantity

It is helpful to determine in advance to how much should the storekeeper buy when the stock reaches the re-order level. This quantity is known as 're-order quantity' (ROQ). The quantity ordered must be such that when the same is received the stock level will not exceed the maximum stock to be carried at any point of time.

The re-order quantity is also referred to as the economic order quantity. It is called 'economic order quantity' (EOQ) because the purchase of this size of materials is most economical. Purchase of material larger than the economic order quantity of material will result in increase in the carrying cost. If on the other hand small quantities of materials are purchased at frequent intervals the ordering cost will increase and will lead to disruption in the production due to inadequate inventory. The economic order quantity is fixed at such a level as to minimise the cost of

ordering and carrying the stock. It is the size of the order which produces the lowest cost of material ordered.

Carrying cost includes the interest on investment, obsolescence losses, space costs, storage charges such as warehouse rent, insurance, heating and lighting expenses on stores staff, pilferage, breakage etc. The cost of ordering is independent of the size of the order and includes costs due to extra purchasing, handling and transportation costs, higher price due to small order quantities, frequent stock outs, resulting in disruption of production schedules, overtime and extra set up time, loss of sales and customer goodwill etc.

The economic order quantity can be calculated by making use of the following formula:

$$EOQ = \sqrt{\frac{2UO}{I}}$$

- where EOQ = Economic order quantity
 U = Annual usage in units
 O = Cost of placing one order including the cost of receiving the goods
 I = Cost of carrying one unit of inventory for one year

Diagram representing the Economic Order Quantity is shown in Figure 4.2

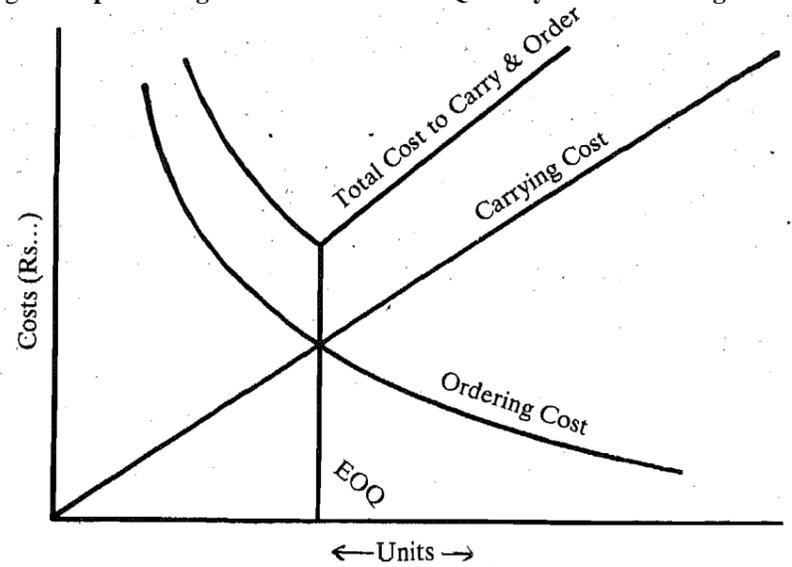


Figure 4.2: Economic Order Quantity

Assumptions in the calculation of economic order quantity

The calculation of economic order quantity is subject to the following conditions:

- 1) The quantity of the item to be consumed during a particular period is known.
- 2) Cost per unit is known and is constant. Further quantity discounts are not involved
- 3) Ordering cost and carrying cost are known. They are fixed per unit and will remain the same throughout
- 4) Quantity ordered is delivered immediately. The following illustration will explain to you the calculation of economic order quantity.

Illustration 5

From the following particulars calculate the economic order quantity

- | | | |
|---|---|------------------------|
| Annual usage | = | 6,000 units |
| Cost of the material per unit | = | Rs. 2.50 |
| Cost of placing and receiving one order | = | Rs. 15.00 |
| Annual carrying cost of one unit | = | 20% of inventory value |

Solution

Economic order quantity = $\sqrt{\frac{2UO}{I}}$

U = 6,000 units

O = Rs. 15.00 per unit

I = 20% of Rs. 2.50 to Rs. 0.50

Substituting the values in the above formula

EOQ = $\sqrt{\frac{2 \times 6,000 \times 15}{0.50}}$
 = $\sqrt{\frac{1,80,000}{0.50}} = \sqrt{3,60,000}$
 = 600 units

Check Your Progress B

- 1) Indicate whether the following statements are True or False:
 - i) When **maximum** stock level is fixed, the stock in hand should never exceed this level.
 - ii) Re-ordering level is always fixed some where between maximum and **minimum** stock levels.
 - iii) Minimum **stock level** is the level of materials at which a new order for material is to be placed.
 - iv) Economic order quantity is **the re-order** quantity.

2) How do you compute average stock level?

3) List the assumptions made **while** fixing the re-order quantity.

4.3.4 Stores Records

In order to exercise **proper** control over materials, it is necessary to record the physical movement of every item of materials. One of the main functions of the storekeeper is to maintain records for receipts, issues and balances of various items of materials. Bin card and stores ledger are the **two-important** stores records that are generally kept for **making** a record of the various items of stores.

Bin Card

A bin card **provide**s a quantitative record of the receipts issues and balance of material. A bin is a place where the goods are stored. A bin may be a shelf, an almirah, open space etc. depending upon the nature of **the** commodity. These cards are **usually attached** to or place near the bin so that receipts and the issues may be entered therein as soon **as** they take place. **Separate bin cards are prepared for each item of stores** and if two different materials are kept in one **almirah**, **two** bin cards one for each item are prepared, treating the almirah as two bins.

The bin card provides a continuous record of **the stock** in each bin and assist the storekeeper to control the stock. For each material the **maximum** stocks to be held are noted on the card. Where the materials are **of** a kind requiring advance ordering,

an ordering level is also indicated therein so that fresh supplies **may** be ordered before the **minimum** is reached. These cards also **provide an** independent **check** on the stores ledger.

In large organisations, the storekeeper also maintains 'store control cards' which are similar to **bin cards** and are kept by him close at hand. **This** obviates **the** difficulty of going to bins for obtaining the necessary information as and when required.

A specimen of the bin card is given in Figure 4.3.

Figure 4.3 : Specimen of Bin Card

BIN CARD

Name Maximum level
 Description Minimum level
 Bin No. Ordering level
 Location code Re-order quantity
 Stores ledger folio Unit

Receipts			Issues			Balance Quantity	Audit	
Date	G. R. No.	Qty.	Date	Req. No.	Qty.		Date	Initials

Stores ledger

This ledger is kept in the costing department and is identical with the bin card except that **the receipts, issues and balances are shown along with their money values.** Stores ledger contains **an** account for each class of material and facilitates **ascertainment** of all details relating to the material in minimum time. It provides a continuous record of stores received and issued and discloses the balance in hand at any time both in quantity and value. It thus furnishes management with a perpetual inventory.

Stores ledger is generally maintained in the form of loose leaf cards. These cards should be serially numbered to obviate the risk of removal or loss.

A specimen of the stores ledger is given in Figure 4.4.

Figure 4.4: Specimen of Stores Ledger

STORES LEDGER
ABC Co. Ltd.

Name Maximum level
 Description Minimum level
 Location code Ordering level
 Re-order quantity
 Unit

Date	Received			Issued			Balance			Remarks	
	G.R.N. No.	Quantity	Rate	Amount	Reqn. No.	Quantity	Rate	Amount	Quantity		Rate

Bin Card	Stores Ledger
1 Bin Card is not an accounting record	1 Stores ledger is the basic accounting record.
2 It is a record of quantity only	2 It is a record of both quantity and value
3 It is kept inside the stores	3 It is kept outside the stores
4 It is maintained by the storekeeper	4 It is maintained by the costing department
5 Each transaction is Individually posted	5 Transaction may be posted Periodically and in total.

It should be noted that documents like goods received note, materials requisition slip, materials returned note, etc. also form part of stores records.

Check Your Progress C

- 1) Fill in the blanks.
 - i) Stores ledger is maintained in the
 - ii) Bin Card is a record ofonly.
 - iii) Bin Card is maintained by
 - iv) Quantities of materials on hand as shown by bin cards should agree with quantities actually on

- 2) Indicate whether the following statements are True or False:
 - i) Bin Card shows the quantity and value of material at any moment of time
 - ii) Bin cards are not a part of accounting records
 - iii) The bin card and stores ledger are written up with the help of same basic documents
 - iv) Stores control card is used as an alternative to bin card.
 - v) Documents like materials requisition and goods received note also form part of stores records

4.3.5 Perpetual Inventory System

In order to facilitate regular checking and to obviate closing down of work for stock taking, a method of recording stores balances after each receipt and issues, is adopted. This method is known as perpetual inventory system. Bin cards and the stores ledger help the management in maintaining this system as they make a record of the physical movements of the stock on the receipts and issues of materials and also reflect the balance in the stores. **To ensure the accuracy of perpetual inventory records, physical verification of stores is made by a programme of continuous stock taking.**

It is advisable that a number of items should be counted and checked daily or at frequent intervals and compared with the bin cards or stores ledger.

The actual stock of material should not differ from the recorded stock under normal circumstances. However, differences do arise on account of the following reasons which may be classified as unavoidable and avoidable causes.

The usual **unavoidable causes** are:

- i) Shrinkage and evaporation
- ii) Climatic conditions causing deterioration, e.g., absorption of moisture, etc.

- iii) **Losses** arising out of breaking up bulk material as in case of sawing wood.
- iv) **Losses** due to accident, fire, etc.

The avoidable causes are:

- i) **Errors** in posting or calculation of receipts, issues or balances on bin cards or on stores ledger.
- ii) Pilferages and breakages
- iii) Entering transactions in the wrong bin card or in wrong stores ledger.

Advantages

The following are the advantages of the perpetual inventory method:

- 1) It is possible to prepare monthly and quarterly profit and loss statements and balance sheet without physical inventory being taken for all the items. This is possible because the figure of the **closing** stock can be taken from the bin cards or the stores ledger.
- 2) It obviates the necessity for physical checking of all items of stores at the end of the year and thereby avoids dislocation of production.
- 3) Actual stock can be compared with the authorised maximum and minimum levels, thus keeping the stock within the prescribed limits. The disadvantages of excess stock are avoided and capital tied up in stores material cannot exceed the target.
- 4) The method has a moral effect on the staff, makes them disciplined and careful and acts as a check against dishonest actions.
- 5) As the work of recording and continuous stock taking is carried out systematically and without undue haste, the figures are more reliable.
- 6) **Discrepancies** and errors are **promptly** discovered and remedial action can be taken to prevent **their** reoccurrence in the future.
- 7) A detailed and more reliable check on the stores is obtained.
- 8) Stock figures are available for insurance purposes.
- 9) It reveals the existence of surplus, obsolete and slow moving material and hence remedial action **can** be taken.
- 10) A system of internal check remains in operation. **Bin** card and stores ledger act as a cross check on **each** other. As such the errors are detected as and when they are committed.

4.3.6 Inventory Turnover Ratio

It is one of the techniques for exercising control over inventory. The ratio expresses the relationship between the cost of the material consumed to the average inventory held during that period. The ratio is calculated as follows:

$$\text{Inventory turnover ratio} = \frac{\text{Cost of material consumed during the period}}{\text{Cost of average stock held during the period}}$$

Average stock can be calculated by adding opening and closing stocks and then dividing it by **two**.

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

The inventory **turnover** ratio indicates the index of the **efficiency** or inefficiency **with which** inventories are maintained. It is in the best interest of the organisation to compare the turnover of different types and grades of material as a measure of detecting stock which does not move regularly thereby minimising capital or investment in undesirable stock. A low ratio indicates bad buying, accumulation of obsolete stock, carrying of too much stock etc. On the other hand a high ratio is an indicator of fast moving stock and less investment in stock.

Illustration 6 will explain to you the **calculation** of inventory turnover ratio and indicate the period for which the average inventory is held.

Illustration 6

Calculate the inventory turnover ratio for the year 1989 from the following information and express the same in number of days the average inventory is consumed for each material and comment on the purchasing procedure.

	Material X Rs.	Material Y Rs.
Opening stock	40,000	60,000
Purchases during the period	2,80,000	80,000
Closing stock	20,000	40,000

Solution

	Material X	Material Y
Cost of material consumed		
opening stock	40,000	60,000
Add purchases	2,80,000	80,000
	<u>3,20,000</u>	<u>1,40,000</u>
Less closing stock	20,000	40,000
	<u>3,00,000</u>	<u>1,00,000</u>

Average stock		
opening stock	40,000	60,000
Closing stock	20,000	40,000
Average stock	$= \frac{60,000}{2} = \text{Rs. } 30,000$	$= \frac{1,00,000}{2} = \text{Rs. } 50,000$

Inventory turnover ratio

$$\frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$= \frac{3,00,000}{30,000} = 10 \text{ times} \quad \frac{1,00,000}{50,000} = 2 \text{ times}$$

Thus material X is fast moving and material Y is slow moving. Stock level of material Y may be refixed considering the turnover ratio and purchases of this time may be reduced.

Check Your Progress D

- 1) Fill in the blanks.
 - i) A method of recording stores balances after every receipt and issue to facilitate regular checking and to obviate the closing down for stock taking is known as
 - ii) The two perpetual inventory records are
 - iii) Perpetual inventory system acts a on staff in the stores.
 - iv) Physical verification of stores under perpetual inventory system is called
 - v) Difference in actual stock and recorded stock arises on account of some causes and causes.

2) What is the purpose of calculating inventory turnover rate?

.....

.....

.....

.....

4.4 LET US SUM UP

Inventory control is a system which ensures the required quantities of inventories in stores so that materials are available at the required time and with the **minimum** amount of investment. A proper control over inventory goes a long way in reducing the cost of production and improving the profitability of concern.

Some of the common techniques of inventory control are (i) ABC analysis (ii) Setting of various stock levels, (iii) Economic order quantity (iv) Use of perpetual inventory records and continuous stock verification (v) Use of control ratios and review of slow and non-moving stock.

Under the ABC analysis, the material manager by concentrating on 'A' class items is able to control inventories and show visible results in a short span of time. ABC analysis helps in reducing clerical cost and results in better planning and improved inventory turnover.

Fixation of various stock levels for each item of material is one of the scientific techniques of material management, and helps to ensure that optimum quantity of material is purchased, **and** stored neither more nor less.

The fixation of economic order quantity helps in the determination of the quantity of material for which order should be placed when the stock reaches the re-order level. The economic order quantity is fixed at a level which **minimises** the cost of ordering and **carrying** the stock.

The perpetual inventory control system is a method of recording stores balances after each receipt and issue, to facilitate regular **checking** and to obviate closing **down** of work for stock taking.

Inventory turnover ratio expresses the relationship between the cost of the material consumed to the average inventory held during that period. The number of times an inventory is used within a particular period is a good measure of the efficiency of material control and material utilisation. Thus knowing the turnover of different items it is possible to avoid keeping capital locked up in undesirable stocks.

4.5 KEY WORDS

Inventory control: A system which ensures the provision of the required quantity of inventories of the required quality at the required time with the minimum amount of investment.

ABC analysis: A system of stock control based on the annual consumption value.

Maximum level: It represents the maximum quantity above which stock should not be held at any time.

Minimum level: It represents the minimum quantity of stock that should be held at all times.

Danger level: Normal issues of stock are usually stopped at this level and made only under specific instructions.

Ordering level: The level of stock at which indents should be placed for replenishing stocks.

Re-order quantity: It is the quantity to be ordered when the stock reach the re-order level. It is also called economic order quantity.

Lead time: Time lag between the indenting and receipt of material. It is also called re-order period.

Carrying cost: Cost of holding the material in the stores.

Ordering cost: Cost of placing an order for the purchase of materials.

Bin card: Is a card which provides a continuous record of the receipt, issues and balance of each item of materials.

Stores ledger: A record kept in the costing department which contains information

regarding receipts, issues and balance of each item of material along with their money values.

Perpetual inventor. system: A system of ascertaining current balance after recording every receipt and issues of materials through stock records.

Stock turnover ratio: Ratio of the value of material consumed during a period to the average value of inventory during the period.

4.6 ANSWERS TO CHECK YOUR PROGRESS

- A 1 i) False ii) True
- B 1 i) True ii) True iii) False iv) True
- C 1 i) Cost Accounting Department ii) quantities iii) storekeeper iv) hand
2 i) False ii) True iii) True iv) False v) True
- D 1 i) perpetual inventory system ii) bin card and stores ledger iii) moral check
iv) continuous stock taking v) avoidable, unavoidable

4.7 TERMINAL QUESTIONS/EXERCISES

Questions

- 1) What do you understand by inventory control? What are its objectives?
- 2) What do you understand by ABC analysis? How is the control of stores items effected through ABC analysis?
- 3) Explain the terms minimum level, maximum level, and ordering level of stock, What are the factors that govern the fixation of these levels.
- 4) What is economic order quantity? How is it calculated?
- 5) What is a bin card? Give its specimen form and discuss its utility.
- 6) What is meant by perpetual inventory control system. Describe its advantages.
- 7) What is meant by inventory turnover? Discuss the importance of inventory turnover ratio in the control of inventory.

Exercises

- 1) Two components A and B are used as follows:

Normal usage	50 per week each
Minimum usage	25 per week each
Maximum usage	75 per week each
Re-order quantity	A 300 B 500
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.
 (Answer: A a) 450 units b) 200 units c) 650 units
 B a) 300 units b) 150 units c) 750 units
- 2) Calculate economic ordering quantity from the following particulars:

Annual usage	6,000 units
Cost of material per unit	Rs. 20.00
Cost of placing and receiving one order'	Rs. 60.00
Annual carrying cost of one unit	10 per cent of inventory value

 (Answer 600 units)

Materials and Labour

- 3) From the following data for an accounting year calculate the inventory turnover and express the same in number of days the average inventory is consumed for each material

	Material X Rs.	Material Y Rs.
Opening stock	1,000	1,200
Purchases during the year	5,200	4,600
Closing stock	600	1,600

(Answer: Inventory turnover ratio X = 7 times Y = 3 times
Number of days average inventory is consumed X = 52 days,
Y = 122 days)

Note: These questions will help you to understand the unit better. Try to write answers for them. But do not send your answers to the University. These are for your practice only.

UNIT 5 PRICING THE ISSUE OF MATERIALS

Structure

- 5.0 Objectives
- 5.1 Introduction
- 5.2 Ascertaining the Cost of Materials
- 5.3 Problem in Pricing the Issue of Materials
- 5.4 Methods of Pricing
 - 5.4.1 First in First Out Method
 - 5.4.2 Last in First Out Method
 - 5.4.3 Weighted Average Price Method
 - 5.4.4 Pricing of Materials Returned to Vendors
 - 5.4.5 Pricing of Materials Returned to Stores
 - 5.4.6 Treatment of Shortage of Materials
- 5.5 Let Us Sum Up
- 5.6 Key Words
- 5.7 Answers to Check your Progress
- 5.8 Terminal Questions/Exercises

5.0 OBJECTIVES

After studying this unit you should be able to:

- ascertain the cost of materials issued for production
- identify the problems associated with pricing the issue of materials
- list the various methods of pricing
- assess the pros and cons of FIFO, LIFO and weighted average methods of pricing
- prepare the stores ledger under FIFO, LIFO and weighted average methods.

5.1 INTRODUCTION

You have learnt that the stores ledger is one of the important store records which is maintained by the costing department and that in addition to quantities it also records the prices at which the materials have been received and issued. As for the receipts of materials, they may be recorded at prices at which they are purchased after making necessary adjustment for discounts, transportation charges, cost of containers, etc. But, when it comes to the issues of materials, the problem arises with regard to the price at which each issue should be recorded because different consignments of materials might have been purchased at different prices. For this purpose, accountants have developed a number of methods based on various materials flow assumptions. In this unit, you will learn about these methods of pricing the issue of materials and also the preparation of stores ledger account according to some of the prominent methods.

5.2 ASCERTAINING THE COST OF MATERIALS

The basic document used for ascertaining the cost of materials received is invoice. It contains the basic price as well as the items like discount, freight, insurance, sales tax, cost of containers, etc. The organisation also incurs some expenditure of cartage, receiving, inspecting and storage of materials. Now the question arises as to which of these items should be taken into account in arriving at the cost of materials. Let us discuss them one by one.

Cash discount: Cash discount represents an allowance made by the supplier if the payments of bills are made within the specified period. Opinions differ as regards the