



Inventory Management

SYLLABUS

- UNIT-I** **Inventory Management** : Concept, meaning, Inventory Management Process, Why inventory management is important? Principles of Inventory Management, How to improve inventory management, perpetual inventory system and Periodic Inventory System, inventory costs, Role of Inventory Management, Methods of Inventory Management, Benefits of good Inventory Management.
- UNIT-II** **Concept and Valuation of Inventory** : Concept and Objectives of Inventory, Need for holding Inventory, Planning and controlling Inventory Levels, Effects of excess inventory on business, Product Classification, Product Coding, Lead Time, Replenishment Methods.
Provisions of Accounting standard-2 (As-2) for valuation of Inventories.
- UNIT-III** **Accounting for Material Losses and Obsolescence** : Material Losses- Waste, Scrap, Spillage, Defective work, Rejections.
Obsolescence : Meaning, Reasons, Disposal of obsolete and scrap items, Control of obsolescence and scrap.
- UNIT-IV** **Inventory Control** : Concept and Meaning of Inventory Control, Objectives and Importance and Essentials of Inventory Control, Types of Inventory, Techniques of Inventory Control—EOQ, ROP, ABC, VED, JIT, Determination of Inventory levels, Impact of Inventory Inaccuracy.

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UNIT-I

Introduction to Inventory Management

SECTION-A (VERY SHORT ANSWER TYPE QUESTIONS)

Q.1. What do you mean by inventory management?

Ans. The supervision of assets or inventory and stocks present in the production house of an organisation is called as inventory management. The main aim of inventory management is to supervise the flow of goods from the manufacturer to the warehouse and from various facilities to the point of sale. The main function of inventory management is to keep a detailed record of each items when it enters or leaves a warehouse or any point of sale. For any organisation it is very important to manage their inventory properly in order to maximum utilise the available resources.

Q.2. What is meant by the term 'inventory'?

Ans. All goods and services including raw material used by a company for production or sell may be termed as inventory. To ensure the optimum level of stock in hand it is very important for all the business to practice inventory management so that they are able to identify where the shortage is? The word inventory simply means and act of listing items. In accounting inventory refers to the current assets and stock present in various stages of production. For manufacturer and retailer it is very important that they should have optimum stock so that they can continue with selling and production. However, inventory is considered as an asset in the balance sheet, in the same way it become a practical liability if you are having too much of inventory.

Q.3. What do you mean by raw material?

Ans. Raw materials are those material which any company used to create finished products to the end consumer. When the product is completed it is very difficult to recognise its original form, such as various oils are used to create shampoo.

Q.4. What is meant by safety stock?

Ans. Safety stock includes those inventory which are company holds in order to face any uncertain event like transportation problem, hindrance in production, safety stock has the risk of carrying cost but it also essential to maintain in order to provide maximum customer satisfaction.

Q.5. Discuss the term 'Anticipated stock'.

Ans. Anticipated stock comprises of those finished items or raw materials which a company purchases on the basis of current production trends. If there is a chance of increasing in the price of raw material during pic time so in such situation company maintain anticipated stock of such raw material to gain price advantage.

Q.6. Is it possible to improve inventory management?

Ans. Some days, it may appear that managing the goods used to create your products is a greater challenge than selling them to your customers. However, while inventory management can be difficult, it does not have to be frustrating. Investing in the right inventory management software and putting it to use to execute a well developed inventory management process is the surest way to ensure you have the inventory you require when you need it while eliminating waste, expense, and inefficiency from your workflows.

Q.7. Discuss the stages involved in process of inventory management.

Ans. Following are the main stages involved in the process of inventory management.

1. **Purchasing** : You must keep records of the raw material inflow for your products that will be sold later.
2. **Manufacturing** : This refers to the number of products manufactured by your company (irrelevant for companies involved only in sales).
3. **Storing** : This is the critical stage of inventory management in which raw materials and finished goods are stored.
4. **Sales** : This is when the products are exchanged, and the seller is paid.
5. **Reporting** : The dossiers on the amounts of sales and payments are compiled and processed at this stage.

Q.8. What are order costs?

Ans. Ordering costs involve payroll taxes, benefits, and the wages of the procurement team, as well as labor costs, among other items. These costs are typically rolled into an ongoing cost pool and allocated depending on the number of units produced in each time frame.

1. Transportation expenses
2. Costs associated with locating suppliers and expediting orders
3. Receiving expenses
4. Purchase order preparation clerical costs
5. The price of electronic data exchange.

Q.9. What is inventory storage fees?

Ans. This is simply the amount of rent a company pays for the storage space where they keep their inventory. This can be either the straightforward rent paid by the company for all storage facilities combined or a percentage of the total rent of the office space used for inventory storage.

1. Inventory service fees.
2. Inventory risk expenses.
3. The opportunity cost is the cash spent on inventory storage space.
4. Inventory financing expenses

Q.10. What is ABC evaluation?

Ans. ABC analysis is an abbreviation for Always Better Control Analysis. Inventory items are categorized into three parts :

1. **Category A** : High-value items with a low frequency of sales,

2. **Category B** : Moderate-value items with a moderate frequency of sales.

3. **Category C** : Low-value items with a high frequency of sales.

ABC analysis determines which items you should stock more frequently and which you should stock less commonly, ABC analysis improves inventory turnover and lessens old inventory.

Q.11. Discuss the LIFO and FIFO methods.

Ans. LIFO and FIFO are methods for calculating inventory costs. The principle of the FIFO, or First In, First Out, a process is that the first object on the inventory is the first one to go out. FIFO is an excellent way of keeping a list fresh.

The principle of the LIFO, or Last-in, First-Out, the method is that the last object on the stock is the first one to go out. LIFO helps to keep inventory from spoiling.

Q.12. What do you mean by FSN (Fast, Slow and Non-moving) analysis?

Ans. The FSN inventory process categorizes items based on their consumption rate, quantity, and use rate. Articles are divided into three categories : fast starting to move, slow-moving, and non-moving.

1. **Fast Moving (F)** : This refers to items with a high usage frequency.

2. **Slow Moving (S)** refers to things with a slow usage frequency.

3. **Non-Moving (N)** : This relates to items only utilized for a specific duration.

Q.13. Discuss the Just-in-Time method of inventory management.

Ans. Many businesses use the "Just-in-Time" (JIT) process to avoid overstocking costs. They use this strategic plan to order only what is required to meet the requirement. The company saves money on storage and insurance by not having excess stock. When the old inventory stock is nearing replenishment, the company orders inventory level. This is a risky method because even a minor delay in ordering new merchandise can result in a stock out situation. As a result, this method necessitates meticulous planning for new commands to be placed on time.

Q.14. How can you say that inventory management is helpful in inventory planning and ordering?

Ans. It is very important for any organisation to maintain the balance between demand and supply, thus, inventory management plays a vital role in planning and ordering of the stock items. If you have huge demand for the particular product but because of insufficient inventory, you are unable to make the optimum supply then it would be the worst nightmare for you. With the proper inventory management system you can mitigate this issue as inventory management allow warehouse managers to keep an eye on the stock and to refresh inventory when needed so that you will be never go out of stock when demand comes.

Q.15. Give any three benefits of inventory management.

Ans. Following are the three benefits, of inventory management :

1. **Improved Inventory Accuracy** : With good inventory management, you know what's in stock and order only what you need to meet demand.

2. **Reduced Overselling Risk** : Stock control keeps track of what's in stock and what's on backorder, allowing you to avoid grossly overstating products.

3. **Savings** : Stock costs money until it is sold. Storage, handling, transportation fees, insurance, and staff wages are all part of the carrying costs. Inventory is also vulnerable to theft, natural catastrophe loss, and obsolescence.

SECTION-B (SHORT ANSWER TYPE) QUESTIONS

Q.1. What are the major types of manufacturing enterprise's inventories?

Ans. A manufacturing enterprise's inventories can be divided into three types :

1. **Raw Materials** : These are goods that have been purchased and stored for future use. These items have not yet been decided to commit to production.
2. **Work-in-Progress** : These are goods that have been committed to manufacturing but have not yet been finished. Work-in-progress inventory levels, in other words, refer to semi-manufactured interests.
3. **Finished Goods** : These are the products that have been finished after the manufacturing method. Assume these are final products from the manufacturing process ready for sale. In the case of a small retailer, inventories are commonly known as merchandise inventory.

Some businesses also keep a fourth type of inventory, namely supplies. Office and plant cleaning supplies, oil, fuel, light bulbs, and other items are instances of supplies. These items are required for the production process. These supplies represent a minor portion of total inventory and require little investment. As a result, a highly sophisticated inventory control technique is not needed.

Q.2. Explain briefly the concept of inventory management.

Ans. **Concept of Inventory Management**

Every business relies on inventory to keep its day-to-day processes going correctly. It impacts various stages of the supply chain, including manufacturing, storage of goods, and sales. The amount of corporate inventory sector should be sufficient to ensure that multiple business actions are not jeopardized.

Similarly, excessive investment in inventories should be avoided. This is because excessive investment can result in idle stocks. As a result, working capital would be blocked. As a result, inventory is critical in managing the business's multiple operations. So, before we collect the stock, let's define the list and the different kinds of merchandise.

Q.3. Define the term 'inventory management'.

Ans. **Meaning of Inventory Management**

Inventory management may be defined as a systematic approach to acquiring, storing, and selling inventory, including raw materials (components) and finished goods (products).

Inventory management in terms of business means having the right stock at the proper levels, in the right place, at the right time, and at the correct cost of the product.

As part of your supply chain, inventory management includes aspects such as supervising purchases-both from suppliers and customers-maintaining stock space, controlling the amount of product for sale, and order fulfillment.

Naturally, your corporation's precise inventory management meaning will vary depending on the types of products you are selling and the channels through which you sell them. However,

as long as those essential ingredients are present, you will have a solid foundation for the building.

Small-to-medium-sized businesses (SMBs) frequently use Excel, Google Sheets, or other manual tools to maintain track of inventory databases and end up making ordering decisions.

Q.4. Discuss the inventory control in retail sector.

Ans. Inventory Control in Retail Sector

Retail is the most general term for business-to-consumer (B2C) sales. There are essentially two types of retail, distinguished by how and where a sale occurs :

1. First, there is online retail (e-Commerce), where the acquisition is made digitally.
2. The second is offline retail, which involves making a physical buying from a storefront or a salesman.

In contrast, wholesale refers to business-to-business (B2B) sales. Understanding the distinctions and best-practices between retail and wholesale is vital to success.

The majority of businesses consist of regular in multiple channels and locations. The variety of retail managing inventory adds to its complexity while emphasizing its importance to your product.

Q.5. Elaborate the process of inventory management.

Ans. Process of Inventory Management

Working in procurement entails taking on a wide variety of related tasks. Supply chain management—and the inventory management process is one of the most important and often most difficult of these tasks (IMP). The methods you use to record, track, and manage your inventory significantly impact various critical business processes. Everything in your physical inventory, from manufacturing necessities like raw materials to indirect but critical items like office supplies and promotional materials, can boost or deplete your bottom line based on how they're managed.

As a result, effective inventory management is critical to a healthy and competitive level successful business. Mercifully, you can optimize your processes for maximum efficiency, productivity, and profitability by working to develop a thorough comprehension of the inventory management process, employing the proper inventory management techniques, and investing in useful tools, including inventory management software.

Q.6. What are the two main advantages of an effective inventory management system?

Ans. Advantages of an Effective Inventory Management System

Every step of the inventory management process, when done correctly, has the potential for value. Consider the following advantages :

1. **Process Improvements and Staff Efficiency** : With an inventory management system, your squad will spend less time on low-value, time-consuming inventory tasks and more time innovating and adding value. This is especially true with the assistance of process automation, which eliminates the need for human intervention while also eliminating human error.
2. **Reduced waste and reduced costs** : You can more effectively optimize inventory levels when you have completely accurate inventory data available in real-time. This reduces inventory holding costs, write-offs, and the likelihood of overbuying.

Bloated inventory levels can charge your company much over time, especially if you're devoting storage space, time, and money to low-demand items.

On the other hand, the same accuracy of inventory data will protect you against overselling. You'll be able to meet customer and vendor demand as it arises while maintaining a positive reputation.

Q.7. What should be kept in mind while selecting an inventory management system?

Ans. When selecting an inventory management system, keep the following in mind :

1. Automation of processes, aided by artificial intelligence. (Smarter automation makes it much easier to relieve your team of menial tasks while improving accuracy and lowering costs, waste, and delays.)
2. Complete data transparency leads to more accurate and complete information analytics, good decision making and invoice predicting, and more valuable strategic insights.
3. Sales, advertising, accounting, and the entire procure-to-pay (P2P) process, as well as supply chain and supplier relationship management, are fully integrated with your existing software environment.
4. A track record of durability and performance.
5. True success and endorsements from clients of various sizes in your industry.
6. Training and educational tools to aid in implementing any cultural changes required to support the procedural changes in your IMP.

Q.8. What are the objectives of an effective inventory management system?

Ans. Objectives of an Effective Inventory Management System

A robust inventory management system is the foundation of any successful digital marketing or online retail brand. Companies achieve inventory management advantages by utilizing a strategic plan that optimizes the process of overseeing and managing inventory, such as real-time data on inventory circumstances and levels.

1. **Order Fulfillment Accuracy** : Consider the following scenario: A customer places an order, and an e-Commerce brand receives the order. The potent reminder it to the warehouse, only to discover it is out of stock. Alternatively, the e Commerce brand may ship the incorrect item. This is not an uncommon occurrence if an inventory is not managed correctly. Investing in a more robust plan can help brand names avoid incorrectly filled commands, high return volumes, and client base loss.
2. **More Efficient Inventory Planning and Ordering** : It is difficult to determine which products are required when there is no clear way to tell which products are already stocked. If online retailers do not adequately manage their existing inventory, they can easily overstock items, some of which may not be strong vendors. These issues are mitigated by careful inventory management, allowing warehouse managers only to replenish inventory when necessary. It saves both space and money.
3. **Enhanced Customer Satisfaction** : Customers who shop online anxiously anticipate their orders, and nothing is more frustrating than receiving orders that are not as

described, arrive late, or are damaged. Buyers are less likely to buy from the brand again if this occurs. On the other hand, good inventory management results in orders being filled more quickly.

Q.9. What are the benefits of an effective inventory management plan?

Ans. Benefits of an Efficient Inventory Management Plan

There are numerous significant benefits to appropriately managing inventory. Here are some additional advantages to consider :

1. **Improving Inventory Order Accuracy** : The accuracy of product orders, status, and tracking are essential to effective inventory management. An effective fulfillment partner will have real-time software systems to ensure that no product is lost or misplaced during the fulfillment process.
2. **Improved Warehouse Organization** : A well-planned inventory management strategy results in a well-organized distribution warehouse. A well-organized warehouse leads to greater efficiency in current and future fulfillment plans. This includes cost savings and better product fulfillment for business owners that use the warehouse to manage inventory.
3. **Improved Warehouse Productivity** : When proper inventory management is in place, less effort and money are invested in inventory management and can be apportioned to other areas. Techniques are frequently used to accelerate data capture and fulfillment operations while ensuring inventory records are accurate.
4. **Inspires Repeat Purchases** : Effective inventory management and control safeguards against the shipment of faulty or damaged goods to the customer. This improves the customer experience, protects against issues like refunds, and inspires repeat purchases.

Q.10. Give the various importances of inventory management system.

Ans. Importance of Inventory Management System

Following are the main advantages of inventory management system :

1. **Profit Maximization** : Profit increases are unavoidable for small businesses that can make sound business decisions. This is because the stock in their inventory will be currently selling securities. Other supply that does not pique customers' interest may be deemed obsolete and discarded. This improves the overall efficiency of business procedures.
2. **Business Intelligence** : Small businesses can gain insights into hot-selling products by using an inventory control and planning solution. This enables each other to modify their product line and make quick and wise strategic decisions.
3. **Flow of Cash** : Inventory management and planning enable small businesses to manage their cash flow opportunities better. Due to limited capital, SMEs cannot always buy large amounts of inventory. They can better control their list by knowing exactly how much stock they will need and if they will need it. This may free up extra capital for reinvestment in other business areas.
4. **Helps in Reducing Employee Misbehavior** : Inventory planning and control limit employees' ability to steal from the inventory. Employees frequently use items from a

company's stock for personal use. The company owner would be in the dark without inventory control. This practice eventually reduces the company's profitability. The company reduces potential 'hidden' costs by reducing the employee's ability to steal.

5. **Helps in Reducing Labor Costs** : Improved inventory planning and control methods enable small businesses to reduce labor costs. These include stock counting time and stock transportation time. These labor intensive activities can be significantly reduced by using an intelligent inventory monitoring and scheduling remedy.

Q.11. What is perpetual inventory?

Ans. **Meaning of Perpetual Inventory**

Perpetual inventory may be described as a type of inventory accounting in which the selling or buying of inventory is recorded instantly using computerized point-of-sale systems and enterprise resource planning software. The perpetual inventory offers a highly comprehensive version of inventory changes and instant reporting of the amount of inventory in stock and accurately reflects the level of goods inventory. A company makes no attempts to maintain detailed inventory records of products on hand in this system; instead, purchases are recorded as debits to the inventory database. In exercise, the cost of goods sold involves direct labor and material costs and direct factory overhead costs.

A perpetual inventory system differs from a periodic inventory system, in which a business maintains track of its stock through regularly scheduled making lists.

A perpetual inventory system outperforms the older periodic inventory system because it allows for close monitoring of sales and inventory levels for single pieces, reducing stock outs.

A perpetual inventory does not require to be manually adjusted by the firm's accountants unless it differs from the physical inventory count due to loss, breakage, or theft.

Q.12. What are the main advantages of inventory management?

Ans. **Advantages of Inventory Management**

Major advantages of inventory management are as follows :

1. **Increase in Profits** : A better understanding of availability and demand leads to higher inventory turnover, which leads to higher profits.
2. **Helps in Reducing Overselling Risk** : Stock control keeps track of what's in stock and what's on backorder, allowing you to avoid grossly overstating products.
3. **Savings** : Stock costs money until it is sold. Storage, handling, transportation fees, insurance, and staff wages are all part of the carrying costs. Inventory is also vulnerable to theft, natural catastrophe loss, and obsolescence.
4. **Assists in Improving Inventory Accuracy** : With good inventory management, you know what's in stock and order only what you need to meet demand.
5. **Avoiding Stockouts and Excess Inventory** : Better development and scheduling can help a business decrease the number of days an item is out of stock and avoid carrying too much inventory.
6. **Increased Insights** : Inventory tracking and stock control allow you to easily spot sales trends and track recalled products or expiry dates.

- 7. Helps in Improving Relationships with Vendors and Suppliers :** Inventory management also provides information about which products sell and in what quantities. Use that understanding as a bargaining chip with suppliers to get better prices and terms.
- 8. Increased productivity :** Effective inventory management solutions save time that could be spent on other tasks.

SECTION-C LONG ANSWER TYPE QUESTIONS

Q.1. "For any organisation, its inventory is considered to be the most valuable asset." Comment on the statement.

Ans. For every organisation whether it is manufacturing firm, retail firm, food services or any other inventory intensive firm, finish products and input are considered to be the core part for their business. A firm should have optimum level of inventory so that it would never be in the position of under production. On the other hand if you have maximum level of inventory then it may cause over production of goods, which is also not a good sign of proper management. So for any organisation it becomes very essential that they should have optimum level of inventory.

An inventory is considered asset for the firm but at the same time, it is also considered a liability because holding large amount of inventory carries the risk of theft, damage, spoilage or even shift in demand. It is very important that inventory should be managed properly and it should be sold within time and if it is not able to sold in proper time then it should be sold at the clearance price or simply be destroyed. Inventory management is said to be a key to success for any business house and that is why inventory management is considered an important aspect for any size of business firm. A business should know when to restock the inventory and in what amount you should purchase or produce the product and on what price it has to sell in the market. Some of the small businesses keep track of their stock manually and determine the reorder points by using various Excel formulas. On the other hand larger organisation deals with more product and services use modern software's like enterprise resource planning (ERP), Software as a service (SaaS) and various application to keep a track on their stock and inventory.

Different industry adopt different inventory management strategy depending upon their size of business and the products they dealt with. There are several methods of inventory management have developed depending upon their needs and requirement including material requirement planning (MRP) and just intime (JIT).

Q.2. What are the major types of inventory?

Ans. Types of Inventory

Following are the major types of inventory :

- 1. Work in Progress (WIP) :** All the items used in production such as raw material, component, packing material and labour falls under this category.
- 2. Component :** It is also kind of raw material that is used by the farm to make finished products. The only difference is that it is recognisable when the product is completed or become a finished product, such as screw.

3. **Raw Materials** : These are those material which any company used to create finished products to the end consumer. When the product is completed it is very difficult to recognise its original form, such as various oils are used to create shampoo.
4. **Finished Products** : Finished products are said to be the products available to end consumer for the purpose of selling.
5. **Safety Stock** : Safety stock includes those inventory which are company holds in order to face any uncertain event like transportation problem, hindrance in production, safety stock has the risk of carrying cost but it also essential to maintain in order to provide maximum customer satisfaction.
6. **Theoretical Inventory** : Theoretical inventory means the least amount of stock a company required to complete the process of production without waiting. It is also called book inventory and theoretical investigation is mostly used in the food industry and in the production house.
7. **Transit Inventory** : As the name suggests transit inventory include those inventory which moves between warehouses, manufacturer and distribution centres. Transit inventory may take few weeks to move among the facilities.
8. **Service Inventory** : This concept is useful for service industry which means how much service a firm can provide under a particular given period of time. For example, a hotel having 5 rooms so it has a service Inventory of 35 one night stays in particular week.
9. **Excess Inventory** : Excess inventory includes all those unused goods, unsold goods or raw material which is no longer in use by the firm. It is also known as absolute inventory as the company does not expect to sell those stock but has to pay its storage cost.
10. **Anticipated Stock** : Anticipated stock comprises of those finished items or raw materials which a company purchases on the basis of current production trends. If there is a chance of increasing in the price of raw material during pic time so in such situation company maintain anticipated stock of such raw material to gain price advantage.
11. **Cycle Inventory** : Most of the companies order cycle inventory in regular period of time in lots in order to get the correct amount of stock at the lowest storage cost.

Q.3. What are the main advantages and disadvantages of inventory management?

Ans. Advantages of Inventory Management

Accurate inventory management is key to running a successful product business. Tracking stock regularly can help avoid stock errors and other problems. The following are the benefits of strong inventory management :

1. **Better Inventory Accuracy** : With solid inventory management, you know what's in stock and order only the amount of inventory you need to meet demand.
2. **Reduced Risk of Overselling** : Inventory management helps track what's in stock and what's on backorder, so you don't oversell products.

3. **Cost Savings** : Stock costs money until it sells. Carrying costs include storage handling and transportation fees, insurance and employee salaries. Inventory is also at risk of theft, loss from natural disasters or obsolescence.
4. **Avoiding Stockouts and Excess Stock** : Better planning and management helps a business minimize the number of days, if any, that an item is out of stock and avoid carrying too much inventory. Learn more about solving for stockouts in our “Essential Guide to Inventory Control.”
5. **Greater Insights** : With inventory tracking and stock control, you can also easily spot sales trends or track recalled products or expiry dates.
6. **Better Terms With Vendors and Suppliers** : Inventory management also provides insights about which products sell and in what volume. Use that knowledge as leverage to negotiate better prices and terms with suppliers.
7. **More Productivity** : Good inventory management solutions save time that could be spent on other activities.
8. **Increased Profits** : A better understanding of both availability and demand leads to higher inventory turnover, which leads to greater profits.
9. **A More Organized Warehouse** : An efficient warehouse with items organized based on demand, which items are often sold together and other factors reduces labor costs and speeds order fulfillment.
10. **Better Customer Experience** : Customers that receive what they order on time are more loyal.

Disadvantages of Inventory Management Systems

The disadvantages of inventory management systems are the same as for other software. Solutions can be expensive, hard to learn and subject to hacks. However, simple safeguards can mitigate weaknesses :

1. **Expensive for Small Businesses** : The cost of inventory management software can seem daunting to a small business, but the investment often pays for itself in increased profits and improved customer loyalty. Additionally, cloud-based systems have made software that was once the domain of large enterprises available to smaller businesses.
2. **Complex to Learn** : Business software is sometimes tricky to learn. However, managers can help by investing in online training to quickly bring users up to speed.
3. **Risk of System Crashes** : Software does crash. However, you can remove the risk of data and productivity loss by using cloud-based platforms.
4. **Malicious Hacks** : Malicious hacks are a risk to all businesses. The Internet of Things (IoT) adds even more complexity. Cloud-based software typically has greater security than a single company would offer on its own because of the risk a breach would have on the vendor.
5. **Reduced Physical Audits** : When you automate some warehouse operations, it's easy to skip a physical inventory check. Solve this by instituting regular audits.

Q.4. What are five basic inventory management principles?**Ans. Basic Inventory Management Principles**

The basic principles of inventory management are as follows :

1. **Forecasting of demand** : The cost of inventory can rank among the top five expenses for a business, depending on the industry. Inventory management principles offer the highest potential for savings when it comes to accurate demand forecasting. Inventory oversupply and undersupply can have a significant impact on business costs. A more accurate forecast depends on whether to stock end items or to source raw components.

Making sure you have safe stock levels and setting max-mins for each item in your inventory, based on lead times, is essential to ensuring you have what you need when you need it. By doing so, you avoid costly overstocks, handling idle inventory, and loss of storage space for fast-moving inventory increase incremental costs.

2. **The Flow of warehouse materials** : Warehouses are outdated and expensive when they are disorganized and dirty. The principles of lean manufacturing, including 5S, have made their way into warehouse operations. It is crucial to sort, set up an order, clean systemically, standardize, and maintain discipline so that there are no dollars lost due to poor processes.

Inventory management functions in much the same way as other industrial processes. When there is disorganization, money is wasted. For the purpose of ensuring consistently outstanding results, every process should be based on a formal, standardized process.

3. **Turning of inventory/rotation of stocks** : Managing inventory to the level of lot numbers is vital for minimizing costs in certain business sectors, such as pharmaceuticals, foodstuffs, and chemical warehousing. Among the key metrics used to evaluate the effectiveness of your inventory management program is the inventory turn rate.

Analyzing your demand forecast and warehouse flow requires defining the success level for stock rotation.

4. **Counting the number of cycles** : In order to maintain accurate inventory, cycle counting is a critical component. In addition, this will allow you to measure the success of your current processes and ensure that your processes are accountable for potential sources of error. Cycle counting is not without its financial implications. Some industries mandate periodic 100% validations. These usually occur when the inventory itself is counted perpetually or the entire building.

5. **Process Auditing** : Early and frequent auditing is one of the cornerstone principles in inventory management. Process audits are the first step toward identifying error sources. From receipt to shipping and each inventory transaction in between, an audit of the process should be conducted at each step.

Q.5. What are the five concepts and techniques for inventory management.**Ans. Five Concepts and Techniques for Inventory Management**

Inventory management is critical to the success of any business. Inadequate inventory planning will limit your company's ability to grow and expand. Overstocking inventory harms sales, cash flow, and profits. Let's look at five inventory practices that can help you avoid such catastrophes.

1. **Data** : It is impossible to make an informed inventory management decision without the correct data. You should be tracking your inventory and sales data to achieve this goal. You must obtain the following data :
 - (i) How long were the units on the market?
 - (ii) What is the difference in sales between last month and last year?
 - (iii) How is the sales velocity currently?
 - (iv) Are the profits on the product too thin or non-existent, or was it lucrative?
 - (v) Is a product running low on inventory, and what products are oversupplied and need to be removed?

Make confident that you are not so preoccupied with restocking that you overlook inventory that is not moving. Acting quickly will provide you with more potential options for clearing out stuck inventory.

2. **Trend** : In addition to the numbers, you will need to provide some context. For example, what are the current industry trends? What are your predictions for the industry's future? Is there a plan to expand your product line, and how will this affect sales of current products? What marketing or promotional events will be held shortly? What marketing or promotional events do your competitors host? You can improve your sales depending on the type of product sold, the weather, politics, sports, etc.
3. **Timing** : Timing is always critical. You must estimate how long it will take to manufacture and ship your product. It is essential to understand how much lead time every order requires to avoid overstock. It's a terrible feeling to realize you only have two weeks' worth of product left and that the restocking order will take two months to arrive.
4. **Tools** : What is the most efficient method of storing all of the information at hand? Starting with a simple spreadsheet or pencil and paper is fine, but as your inventory management grows, so will the number of items and suppliers.

An automation process will be required at some point to perform complex and straightforward calculations. Keep your long-term and short-term goals in mind when deciding on a system. Before investing money into trying to implement an inventory system, consider the future. What works for you today may not work for you the following year.

5. **Put your Mind to Use** : When using operating systems or automated systems, please put your data into context. Software or automation processes should not make all of your decisions for you. You should go over the suggestions and make any necessary changes.

Your input is also critical in making the suggestions as accurate as possible. If you suspect something is wrong with your data, such as cost, lead time, case pack versus unit cost, etc., you should double check it. Incorrect input data could lead to severe problems.

Q.6. Discuss the various ways of improving inventory management.

Ans. Ways to Improve your Inventory Management

Different ways to improve your inventory management are as follows :

1. **By Removing Slow-moving Inventory :** Some product lines have been sitting on the shelves for a long time, sometimes indefinitely. It eats up your storage capacity and ties up your finances, which you could be spending elsewhere. Examine the lists of such products to remove the junk.
2. **By Establishing Minimum and Safety Stock Levels :** All inventory management staff must answer the critical question, "How much is enough?" It can be difficult to balance the risks of running out of stock and the horrible prospect of unsold items taking up storage space and collecting dust on the warehouse shelf.

You should identify and closely monitor safety stock and minimum stock indices to address the issue. The aforementioned is the number of extra items you'll need to be safe. The latter is also known as the reorder point formula, and it allows you to order and receive the new batch before the current one runs out. It should consider both the quantity and the quality.

3. **Understanding Bulk Shipment and EOQ :** Both methods have the potential to reduce delivery charges. Bulk shipment necessitates palletizing items so that carriers can transport more significant quantities in a single trip. EOQ is an abbreviation for economic order quantity, and it determines the optimal number of items per order. This figure is determined by the overall cost of production, shipping distance, demand rate, and several other factors.
4. **By Keeping Shrinkage to a Minimum :** While your goods are in the warehouse, they may be damaged, lost, broken, or stolen. However, because staff frequently forget or neglect to make the appropriate corrections to the inventory log, the actual number of available items is lower than the register claims. As a result, identifying the minimum stock level is flawed, resulting in reverb.
5. **Understand your Supply Chain :** Several steps must be completed before an item can be found on the shelves of your warehouse. First, you must place an order, and the supplier must verify that the product is available in the required quantity. Then you either pay the total price or an ahead time sum. Then you have to wait for the products. They are recorded in the inventory logs when they arrive.

If any of the cogs in this well-gearred process stops spinning, the entire chain is in jeopardy. Of course, you can't anticipate every prospective stumbling block in your product's path to completion. However, imagining the product's progress is needed to identify likely bottlenecks and padded potential blows while minimizing risks.

Q.7. What are the major steps involved in the process of inventory control?

Ans. Steps involved in inventory control are as follows :

Step 1 : To decide the minimum level of inventory : A production team must maintain a good equation with the sales and marketing teams since the latter two teams work closely with customers. It will help them decide the levels of inventories, such as the maximum and minimum limits. A business owner can understand whether or not raw materials are going to get obsolete before production begins. Also, this information helps them stock up scarcely available raw materials to produce finished goods without delays.

Step 2 : Setting the re-order levels : With ever-changing customer tastes and preferences, there may be increased demand for a product to meet as a business. It requires advanced preparation and decision to produce the ideal quantity to meet the demand. This step requires planning to re-stock the raw materials within a committed time to produce the finished products to the customer.

Step 3 : Opting for a sound inventory control method : The method that a business chooses must help it determine the re-order quantity at any given time. Businesses can pick any popular inventory control methods such as ABC analysis, Just In Time (JIT), FSN method known as Fast, slow, and non-moving classification, and the Economic order quantity (EOQ).

Q.8. Discuss the various popular inventory control methods.

Ans. **Inventory Control Methods**

Some of the popular inventory control methods are as follows :

1. **Economic Order Quantity :** Economic order quantity, also called EOQ, refers to a formula. It is the ideal inventory quantity that a company must purchase considering various variables such as total production costs, demand rate, etc.
It helps to free up any tied cash in inventory for most entities and reduces the direct costs. Also, **inventory management software** can also be used to manage inventory in a better way.
2. **ABC Analysis :** It involves categorising inventory into three buckets called A, B and C depending upon the importance of the inventory to its profit. A category consists of expensive items, and hence a small inventory is held. B category has average-priced inventory with medium sales frequency. Category C inventories are low in value but with high sales frequency. It requires less inventory control compared to A or B.
3. **Just-in-Time (JIT) Inventory Management :** It is a technique to arrange raw material orders from suppliers in sync with the production schedules to reduce inventory costs. There will be no excess inventory stored beyond the production requirements, and hence it leaves no scope for deadstock in the organisation.
4. **Safety Stock Inventory :** Businesses can order an extra quantity of inventory as buffer stock above the projected demand. It acts as a correction for underestimating demand.
5. **Fast, Slow, and Non-moving (FSN) :** It involves the classification of inventories into fast-moving, slow-moving and non-moving stock for deciding the pace at which a business can place orders.

6. **Implementing Inventory Control Systems** : Organisations can use technology-based inventory control systems. Such systems integrate various inventory tasks such as purchasing, shipping, receiving, warehousing or storage, tracking, and re-ordering. The system will ensure the availability of the right inventory at the required locations when needed to meet product demand. Two types of inventory control systems are available to choose from. These are perpetual and periodic systems depending upon whether a business wants to track inventory daily or not.

Q.9. What are the main types of inventory costs?

Ans.

Types of Inventory Costs

The different types of inventory costs are as follows :

1. **Ordering cost of inventory** : The ordering cost of the inventory occurs whenever an order for inventory is placed. It is also referred to as setup costs and includes :
 - (i) **Receiving costs** : The receiving costs are those expenses that incur when goods are unloaded at the warehouse and inspected to see that they are the correct items or the ones that were ordered and are free of any defect.
 - (ii) **Clerical costs of preparing purchase orders** : As the name suggests it refers to various clerical costs for instance communication costs, accounting, invoice processing.
 - (iii) **Cost of electronic data interchange (EDI)** : It is a system that is used by large businesses to minimize the ordering process costs.
 - (iv) **Transportation costs** : The transportation costs are those expenses that are incurred while moving or transporting goods from one place to another, for instance, to the outlet or the warehouse. It is variable to a higher degree and is dependent on items and industries.
 - (v) **Cost of finding suppliers and expediting orders** : These are essential costs for the business and are generally inconsistent.

No matter how small or big an order is, you have to incur an ordering cost. The total amount increases with the number of orders placed. The overall ordering cost can be minimized by placing a large blanket order for an extended period and issuing releases against them as needed.

Ordering cost is inversely related to carrying cost of inventory because low carrying cost means high ordering cost and vice-versa. A business entity willingly tolerates high ordering costs if it results in low inventory carrying costs. It is the responsibility of the organization to keep a watch on its ordering as well as moving costs to maintain a balance in order sizes and ultimately minimize overall costs.

Ordering costs are included in the overhead cost pool and are allocated to the units produced in every period.

2. **Carrying Cost of Inventory** : Carrying costs of inventory refers to the expenses that incur for inventory storage and its maintenance. It is also known as holding costs because of its nature of maintaining the inventory for the interim period. The carrying costs of inventory before it is sold typically includes :

- (i) **Storage space costs** : The storage space costs incur when the inventory is stored in a place. It is never fixed because space can vary by location. The inventory costs include the cost of storage facility, facility maintenance costs that include ventilation, heating and lighting, lease payments, property tax, and depreciation.
- (ii) **Inventory risk costs** : The inventory risk cost is associated with the loss of goods that can incur because of several reasons, for instance, damage in transit, shipping error, vendor fraud or theft.
- (iii) **Inventory service costs** : The inventory service costs are the costs that incur in the physical handling of the goods. It also includes costs related to cycle counting and inventory control, security, insurance, IT hardware and applications if used.
- (iv) **The opportunity cost of the money invested in inventory** : This type of inventory costs can be derived by looking at the lost alternatives that have tied up cash in inventory for instance investments in mutual funds or term deposits.
- (v) **Inventory financing costs** : Inventory financing costs are complex by nature and are dependent upon the type of business an entity is involved in. These types of inventory costs are related to the investments made in the name of inventory and include costs like interest on working capital.

The carrying cost of inventory is related to managing inventory, either in house or via third-party service providers and outsourced vendors.

Carrying costs are included in the overhead cost pool and allocated to the number of units that have been produced in every period

3. **Shortage of Stockout Costs** : The shortage costs refer to the situation when a business is out of the stock for whatever the reason. It is also known as stock-out costs because of its nature. Some of the shortage costs are :
- (i) **Emergency shipments** : This type of costs incurs when you have to pay an additional sum to change suppliers or to get delivery on time so that the goods reach their destination without hassles.
 - (ii) **Disrupted production** : Some business entities are involved with the production and selling of products. Shortage of stock-out costs for such entities means paying for things for instance factory workers who are sitting idle even during the times when the factory is manufacturing nothing.
 - (iii) **Customer loyalty and reputation** : If the customer is unhappy, it will be reflected via their shift in allegiance and loyalty. This will lead to loss of business as the customers will try to find greener pastures that suit them better and the company will take a hit in terms of customer loyalty.

When the demand exceeds the supply of the inventory that is available to the business entity, then the shortage costs will incur. Internal issues, market shortage and late supplier lead times are some essential reasons for shortage costs.

Q.10. What are the various types of inventory costing method?

Ans.

Types of Inventory Costing Method

The various inventory cost methods are as follows :

1. **First in First Out** : This method of inventory costing is also referred to as the original purchase method because of the way it operates. The assumption in this method is that the goods that have been purchased at first are the ones that will be sold first and so on. The first in first out method ensures that no profit or loss occurs on this account. This is the best system when the **product** prices are stable, but what happens during adverse or unstable conditions. During a period of inflation, the operating statement will reflect inventory profits and during deflation, it will show a narrowing of profits. Both GAAP and IFRS accept the FIFO or first in first out method and it becomes the right choice for brands that are considering overseas or global expansion.
2. **Last in Last Out** : The last in last out is one of the significant methods for inventory costing and is also referred to as the replacement cost method. This method is based on the assumption that the goods which are sold are the ones that have been purchased last or most recently. It is merely a reversed method of first in first out method that emphasizes on everything first. The best part of the last in last out method of inventory costing is that it tries to level the profit as well as loss during both deflation and inflation periods. This is because the materials are issued at cost and they relate to the current price levels closely as possible. It can maintain the real capital intact. This is why the new requisitions lower the **profit margin** because of high costs during inflation and during deflation, the fall of profit margin is minimized due to the low cost of the last unit that an entity has purchased. The organizations that deal with **perishable** products do not follow the LIFO or last in last out method of inventory costing because it does not reflect the actual flow stock. The GAAP accepts LIFO but IFRS does not accept it as an approved accounting method of inventory costing. This is because bookkeeping is a bit difficult with LIFO and as the cost of goods sold is high, it can result in the low-profit margin and lower income taxes.
3. **Special Identification** : Organizations that assigns a unit cost to every single unit uses the specific identification inventory cost method. The amount is applied to the accounting records after the sale of every item. As the cost of goods sold will fluctuate depending upon the shipping, production and other relevant costs that change over time, the unit cost of every unit will automatically vary. This method is used for expensive and exclusive products for instance artwork, boats, fine jewelry, luxury cars, etc. The organization has to keep a detail-oriented and diligent record-keeping in this method.
4. **The Average Inventory Cost Method** : The average inventory cost method is a middle ground of both FIFO and LIFO methods. It does not use the first-recorded or the last-recorded prices but takes out the average unit cost for its calculations. It can be subdivided into :
 - (i) **Weighted average inventory cost** : In the weighted average inventory cost method, the business entity has to make proper calculations at the time of every purchase. To minimize or eliminate the effect of earlier prices that were incurred, it considers both the total costs and total quantities.

- (ii) **Simple average inventory cost** : In the simple average inventory cost method, the materials are not charged at actual cost. The method of calculation is different as it wants to determine the approximate figure by dividing the total of the prices by the number of rates which may lead to either profit or loss.
 - (iii) **Periodic weighted average inventory cost** : In the periodic weighted average inventory cost method calculations are made at the end of the period by dividing the total cost of purchase by the total quantities purchased. It is considered a better option because it includes both overall cost and total amounts.
 - (iv) **Periodic simple average inventory cost** : In the periodic simple average inventory cost method the issue price is calculated at the end of a given period by dividing the total material price by the number of prices periodically.
5. **Base Stock Inventory Costing Method** : This method has several similarities with the FIFO inventory costing method along with some additions and modifications. It takes into account the fixed minimum quantity of stock that has to be maintained regularly and should be carried forward at the actual cost at the end of every fiscal year.

Most organizations have a minimum stock inventory in store which is released at the time of an emergency. The base stock inventory costing method is mostly used in industries that have to use a variety of raw materials. The technique helps to lessen violent and sudden fluctuations in the gross profit.

Q.11. Elaborate the role of inventory management.

Ans. Role of Inventory Management

Following points highlight the role of inventory management :

1. **To Monitor the Level of Inventory** : Monitoring the current inventory level is another essential aspect of the inventory management process. If each company participates in this process regularly, inventory depreciation can be avoided.
Set a minimum amount of stock that must always be present, so the company should reorder when the stock is nearing that limit. Avoid overstocking because it can lead to the discontinuation of existing supplies. As a result, it is beneficial for every company to conduct forecasting to select the correct amount of stock.
2. **Warehouse Security Enhancement** : Last but not least, warehouse security optimization is critical. Increasing the location's security where the company stores its inventory will defend the entire manufacturing chain from undesirable things.
3. **Person in Charge of Inventory Selection** : The person in charge is the first component that plays an essential part in a company's inventory system. This is due to the importance of the items that exist, so the company must choose a person in charge who is dependable and comprehends part numbers.
The business is expected to receive a complete and periodic inventory report that includes data such as the amount of inventory available, inventory in and out, and product stock valuation.
4. **Inventory Management Automation** : The production chain will not be much more effective with inventory management automated processes in each company. It is because manually checking inventory ends up taking a long time.

The presence of software will assist industrial governance in doing many things quickly, such as inventory monitoring, procurement control, order time to providers, and completing stock reports.

5. **Using SKU Codes and Barcodes for Goods :** Stock Keeping Unit (SKU) and Barcode codes for each item is one of the proper steps to make it easier for businesses to track inventory. This method helps ensure that all existing stocks are adequately recorded.

Q.12. Discuss the points highlighting the importance of inventory management.

Ans. Importance of Inventory Management

Following are the points highlighting the importance of inventory management :

1. **Helps in Providing Maximum Customer Satisfaction :** With the efficient inventory management system, manager will have a comprehensive idea about the stock present in the warehouse. In retail sector it has been seen that when a customer find his desired goods not present in the site or show "out of stock", than those customers with never return to those website which in turn provide great loss to the company as they may lost their loyal customer for life. On the other hand with the good inventory tracking system, an organisation aware about the stock level and before it goes out of stock, they refill those stock so that their customer will get their desired products whenever they want, hence they gain maximum satisfaction from the organisation. This is more beneficial for e-Commerce and online retail stores as proper inventory management system helps them to hold their loyal customer and encourage them to coming back formore.
2. **Order fulfillment :** With the proper inventory management system the warehouse manager can easily track available stock in the warehouse and the company gets rid from overstocking or under stocking of goods. Proper and robust inventory management software you can make an optimum plan for your stocks to avoid inaccurate filled orders and maintain optimum level of inventory to provide high return volume and earn customer satisfaction by meeting their needs at proper time with right supply of goods and services.
3. **Organised warehouse :** With the proper planning of inventory management, a firm will have an organised warehouse with optimum stock of goods to be arranged properly. An organised warehouse help the warehouse manager how to make better plans for present and future fulfillment of goods.
4. **Assists in inventory planning and ordering :** It is very important for any organisation to maintain the balance between demand and supply, thus, inventory management plays a vital role in planning and ordering of the stock items. If you have huge demand for the particular product but because of insufficient inventory you are unable to made the optimum supply then it would be the worst nightmare for you. With the proper inventory management system you can mitigate this issue as inventory management allow warehouse managers to keep an eye on the stock and to refresh inventory when needed so that you willbe never go out of stock when demand comes.

5. **Flexibility** : An adequate inventory management system allowed the manager to be flexible enough and to adapt different situation as they arise. Today's business is dynamic in nature and it is unpredictable at the same time. If any unpredictable situation arises related to manufacturing issue, warehouse accidents or incorrect shipment then to deal with such situation inventory management gives you the idea about how to rectify those issue.
6. **Assists in Maximising profits** : Inventory management also helps the business to maximize its profit and to take better business decisions related to warehousing and stocking of goods and services. With the optimum level of inventory the small business stocked with optimum level of inventory only that is meant for selling and does not overstocked obsolete inventory that block the business funds and in this way inventory management helps the business to maximize the profit for the firm.
7. **Helps in Reducing Labour Costs** : With improved and proper inventory management planning and technique allowed to reduce their labour cost associated with the inventory. The labour cost is reduced by getting rid from time spent on the transportation of stock and the counting of goods. With proper inventory management technique a business will be able to reduce all these labour intensive cost which helps in increasing the overall profit for the firm as well.
8. **Proper employee management** : Sometimes the employees also misused the inventory present in the warehouse and without proper inventory management technique the firm is unaware about the stock present in the firm and sometimes employees may use those inventory for their personal use. But with inventory management techniques, firm is aware about the number of items present so, it become difficult for the employee to make any changes to inventory for their personal use hence inventory management techniques help a lot to limit employee mishandling of those inventory.
9. **Increased information transparency** : With the good inventory management the information flow is transparent. This includes information related to the items were received, packed, shipped, manufactured etc. With the proper inventory management you will also get the information about reordering of the goods. You will also be informed about the over stopping or under stocking of the items.
10. **Helps in Reducing the blockage of financial resources** : Inventory management also helps the warehouse manager to get rid from overstock. If your warehouse has overstock goods, it means those good are blocking the financial resources as you have to pay the cost of good as well as the cost of storing it. With proper inventory management plan it reduce the unnecessary blocking of funds in excess inventory that also affect the liquidity position of the firm.

Q.13. What is meant by periodic inventory method? How it works?

Ans. Meaning of Periodic Inventory Method

One of the most simple and oldest inventory management methods, the periodic inventory system, like its name, calls for 'periodic' inventory counts after a set timeframe. These periods can be decided according to you; it could range from a few hours to monthly to annually. This

type of method is generally used by small companies that don't have many stocks to track or slow sales rate.

In the write up ahead, you would understand everything about the Periodic Inventory method and whether you should choose this method or not.

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In the write up ahead, you would understand everything about the Periodic Inventory method and whether you should choose this method or not.

How it Works

As opposed to the perpetual inventory system, in periodic inventory methods, the inventory is not tracked each time a sale or a purchase is made. Here, inventory is monitored at the beginning and end of the accounting period.

Periodic inventory system is about accounting stock for its valuation after the designated time frame. Warehouse employees take a physical count of their products periodically according to the set period.

The information gathered during the physical count is used for accounting and balance the ledgers. Accountants then add the balance to the beginning inventory in the next new period.

Calculation of the ending inventory, profits, and COGS are done at the end of the year for periodic inventory by performing a count of stock physically. Businesses utilize estimates like monthly, quarterly, and half-yearly reports that were recorded a few times during the year.

General Ledger account Inventory is not updated whenever the purchases of goods to be resold are made. Instead, the temporary account purchases are debited. For this, a temporary account is considered that begins each year with a zero balance. And the ending balance is removed to another account at the end of the year.

Adjustments are made from purchasing goods to general ledger contra accounts. Contra account offsets the balance in their related account and is considered in the final statement.

Contra accounts generally consist of purchase discounts or purchases returns, allowances accounts, etc.. Adding these accounts gives the total amount spent on purchases. Moreover, the delivery cost is also kept in a separate account from the central inventory account. Companies track delivery costs related to incoming inventory in Transport In accounts Freight In accounts.

Q.14. What types of industries should use periodic inventory method?

Ans. Generally, the industries with less amount of stock and fewer number warehouses or probably only one warehouse should use this because there is a lot of physical work involved in this type of inventory management. Small scale industries who have just started can use this method provided they are aiming for slow growth.

Businesses that don't have a large number of frequent sales or purchases can also adopt periodic inventory management. And, for companies that are willing to adopt periodic inventory method, many periodic inventory management software help you track you inventory.

You need to first figure out what type of inventory management business you need. Catherine Milner and Geoff Relph, the co-authors of "Inventory Management : Advanced Methods for Managing Inventory within Business Systems," "The Inventory Toolkit : Business Systems Solutions," and the owners of Inventory Matters Ltd. They always advise their clients to choose software that satisfies their needs and not gets carried away by the fancy features of the software.

Milner beautifully explains: "We see many companies trying to implement inventory management business systems that do not have the features or requirements they need. The most important thing is to know what you need precisely. When someone comes to sell you a system, their measures of success may not be the same as your business's measure of success. Whether it is your business, the sales business, or the hosting business, each has a different focus. So ensure yours is the one that drives the sale."

Furthermore, Relph adds, "For example, when you buy a car, you know what you want. The salesperson may have a vehicle that does not exactly fit your request. His job is to persuade and sell you more than you need. When you drive away, you realize you cannot operate the vehicle effectively. As a buyer, beware. You should buy what you need and not an approximation of what you think you want. Whether this happens as a matter of choice or misunderstanding, it hardly matters. This is not a criticism but is reflective of the industry."

Thus, you need to be very clear about the nature of your business before choosing a type of inventory management method. At the end of this article, we will compare the Perpetual and Periodic Inventory to give you a clearer picture.

Q.15. Discuss the perpetual inventor system of accounting inventory. What types of business should use perpetual inventory method?

Ans. Perpetual Inventory System

The perpetual inventory method of accounting inventory, as the name suggests, is about tracking inventory 'perpetually' as it moves throughout the supply chain. In this approach, warehouse managers keep a continuous track of inventory balances, which means the stock is updated automatically every time an item is received or sold through every point of sale.

In the perpetual inventory system, purchases and returns are also recorded automatically in the inventory count.

Perpetual inventory system utilizes barcodes scanning, radio frequency identification (RFID) Scanners, and inventory management software integrated with POSes, CRMs, Market Places like Amazon FBA, purchase, order, and return management softwares to track inventory in real-time.

This ability of modern cloud-based inventory management softwares to get integrated with all the systems makes perpetual inventory system more practical. It empowers businesses to speed up their financial and accounting matters. Inventory being an essential asset to the companies, perpetual inventory system also enables the accounting teams to create more accurate tax and regulatory reports.

Perpetual inventory formula is straightforward :

Beginning inventory (usually from a physical count) + receipts – shipments
= Ending inventory.

Types of Business should use Perpetual Inventory Method

Huge businesses with multiple warehouses and large amounts of inventory generally resort to perpetual inventory method. However, SMBs looking to grow fastly also can adopt this method to track inventory.

Physically counting inventory or carrying out cycle count frequently is almost next to impossible for a large scale industry with thousands and lakhs of SKUs. Hence perpetual inventory tracking is the most app inventory management method.

For instance, let's assume you have a business of t-shirts and jackets. You keep your inventory distributed in 8 warehouses. One day you get an order for a woolen coat that has been very rarely asked, and it's a summer season.

What are you going to do? Well, if you are managing your inventory perpetually, all you have to do is just sit and chill because the warehouse having that jacket will get the notification about the order. They would do the rest of the job. It's as simple as that since the systems are connected, and new data is flowing to each warehouse manager through an interlinked system.

But if you have a periodic inventory system, you will have to call your warehouses and tell them to find that jacket and ship it. It would take more time and cause problems. Another type of business that requires perpetual inventory method is dropshipping companies. Their products move from the manufacturer or supplier to customers all the time, and there are returns and exchanges. Their inventory is always moving, and to know which product is in stock and which one is not, they need to track the flow of inventory perpetually.

Q.16. Elaborate the major tips for managing your inventory.

Ans. Tips for Managing your Inventory

Here you'll find the 10 essential tips to effectively manage your inventory for increased profitability and cash flow management.

- 1. Prioritize your inventory :** Categorizing your inventory into priority groups can help you understand which items you need to order more of and more frequently, and which are important to your business but may cost more and move more slowly. Experts typically suggest segregating your inventory into A, B and C groups. Items in the A group are higher ticket items that you need fewer of. Items in the C category are lower-cost items that turn over quickly. The B group is what's in between: items that are moderately priced and move out the door more slowly than C items but more quickly than A items.
- 2. Track all product information :** Make sure to keep records of the product information for items in your inventory. This information should include SKUs, barcode data, suppliers, countries of origin and lot numbers. You might also consider tracking the cost of each item over time so you're aware of factors that may change the cost, like scarcity and seasonality.
- 3. Audit your inventory :** Some businesses do a comprehensive count once a year. Others do monthly, weekly or even daily spot checks of their hottest items. Many do all of the above. Regardless of how often you do it, make it a point to physically count your inventory regularly to ensure it matches up with what you think you have.

4. **Analyze supplier performance** : An unreliable supplier can cause problems for your inventory. If you have a supplier that is habitually late with deliveries or frequently shorts an order, it's time to take action. Discuss the issues with your supplier and find out what the problem is. Be prepared to switch partners, or deal with uncertain stock levels and the possibility of running out of inventory as a result.
5. **Practice the 80/20 inventory rule** : As a general rule, 80% of your profits come from 20% of your stock. Prioritize inventory management of this 20% of items. You should understand the complete sales lifecycle of these items, including how many you sell in a week or a month, and closely monitor them. These are the items that make you the most money; don't fall short in managing them.
6. **Be consistent in how you receive stock** : It may seem like common sense to make sure incoming inventory is processed, but do you have a standard process that everyone follows, or does each employee receiving and processing incoming stock do it differently? Small discrepancies in how new stock is taken in could leave you scratching your head at the end of the month or year, wondering why your numbers don't align with your purchase orders. Make sure all staff that receives stock does it the same way, and that all boxes are verified, received and unpacked together, accurately counted, and checked for accuracy.
7. **Track sales** : Again, this seems like a no-brainer, but it goes beyond simply adding up sales at the end of the day. You should understand, on a daily basis, what items you sold and how many, and update your inventory totals. But beyond that, you'll need to analyze this data. Do you know when certain items sell faster or drop off? Is it seasonal? Is there a specific day of the week when you sell certain items? Do some items almost always sell together? Understanding not just your sales totals but the broader picture of how items sell is important to keeping your inventory under control.
8. **Order restocks yourself** : Some vendors offer to do inventory reorders for you. On the surface, this seems like a good thing you save on staff and time by letting someone else manage the process for at least a few of your items. But remember that your vendors don't have the same priorities you do. They are looking to move their items, while you're looking to stock the items that are most profitable for your business. Take the time to check inventory and order restocks of all your items yourself.
9. **Invest in inventory management technology** : If you're a small enough business, managing the first eight things on this list manually, with spreadsheets and notebooks, is doable. But as your business grows, you'll spend more time on inventory than you do on your business, or risk your stock getting out of control. Good inventory management software makes all these tasks easier. Before you choose a software solution, make sure you understand what you need, that it provides the analytics important to your business and that it's easy to use. ●

UNIT-II

Concept and Valuation of Inventory

SECTION-A (VERY SHORT ANSWER TYPE) QUESTIONS

Q.1. What do you mean by the term 'inventory'?

Ans. Inventory refers to all of the goods, supplies, merchandise, and materials held by a firm to resell in the market for a profit.

For instance, if a newspaper supplier uses a vehicle to deliver newspapers to the customer base, just the newspaper is considered inventory. The vehicle will be sorely needed.

Q.2. What are finished products?

Ans. Finished goods are completed items that are ready for a business sale. These items have been through all stages of the process and quality control. For the cookie producer, the finished goods are the final envelopes of cookies that are sent to the market to sell after passing quality checks.

The three major types of inventory that are accounted for in a corporation's economic accounts are raw materials, quasi goods, and finished goods. Many other types are kept as a security precaution or for another specific reason.

Q.3. What is meant by cycle inventory?

Ans. Cycle inventory refers to items that are purchased in lot sizes and regularly. Cycle inventories are typically components that are directly used in manufacturing or are part of a routine process.

Q.4. Explain inventory of MRO.

Ans. MRO stands for Upkeep, Repairing, and Operating Supplies, and this type of inventory is most commonly found in manufacturing industries. MRO items are not taken into account as inventory items in account books, but they play an important role in a group's day-to-day operations. MRO supplies are used for the maintenance, repair, and upkeep of machines, tools, and other processing equipment. Lubricants, coolants, jerseys and gloves, nuts, bolts, and screws are instances of MRO items.

Q.5. What do you mean by buffer inventory?

Ans. Fluctuations and market motions cannot always be predicted in the industrial production or trading industries. Such changes can harm the selling or manufacturing processes, resulting in situations. Buffer inventory needs to compensate for this by adhering to the old saying that prevention is better than cure. Buffer inventory (also known as safety stock) refers to items stashed in a store's or factory's warehouse to buffer the impact of unforeseen events. A rapid increase in demand, a delay in transportation, or a labor strike can all be managed if a sufficient buffer stock is kept on hand.

Q.6. Discuss one disadvantage of turnover method of planning inventory levels.

Ans. Stock to Sales Ratio calculates planned inventory using a single time significance and does not take into account the motion of a sales trend over time. The higher a large amount of time being planned (i.e., quarter versus month), the more the fluctuations throughout sales and inventory over time are squashed.

Q.7. Give one advantage and disadvantage of percentage of sales method?

Ans. Main advantages is : **Connects inventory consumption to sales** : Sell Through Percentage depicts the relationship between sales data, historical data, and production practices.

Main disadvantages is : **Only considers one time period** : Sell Through Percentage calculates projected inventory using a single period and does not take into account the change in a sales trend over time. The higher the level of the dimension of time is anticipated (i.e., quarter versus month), the more flattened the sales and inventory variations across time.

Q.8. Give the meaning of excess inventory.

Ans. Excess inventory is a result that has not yet been sold and exceeds the product's predicted customer demands.

Over-buying, erroneous projections, cancelled orders, a bad economy, unpredicted weather changes, unpredictable consumer spending, or late or early delivery of goods are all examples of stock requirement mismanagement.

Q.9. Give one advantage of excess inventory.

Ans. When purchasing greater amounts of units, many company owners can benefit from lower wholesale costs. This makes sense for regular items that the employer knows will sell because the company is convinced it will move the successful product and not be stuck with it. Depending on the product's price, the savings could be significant.

Q.10. What do you mean by product classification?

Ans. Product classification refers to a company of the various products bought by customers. Understanding these classifications can assist marketers in developing advertisements for their company's goods and services. Product categorization can assist professionals at all levels of business by defining requirements, pricing, and the primary demographic to which advertisers can direct their advertising campaigns.

Q.11. What is mean by term 'lead time'?

Ans. The portion of time that elapses between the start of a procedure and its finalization is referred to as lead time. They can identify inefficiencies by making comparisons to formed benchmarks.

The lead time depends all over supply chain sources, making it difficult to assess when items will be delivered and coordinate manufacturing. Excess inventory is typically the result, putting a strain on a company's budget.

Q.12. What is net realisable value?

Ans. Net Realisable Value is the value that can be obtained on the sale of the asset less the costs incurred for completing as well as making such a sale. In other words, it is the selling

price of inventory in the normal course of business less the approximate cost associated with completion and sale of such inventory.

Q.13.What is fair value?

Ans. Fair value of inventory is the amount for which inventory can be exchanged between willing and knowledgeable buyers and sellers in a market place. This exchange, however, must be an arm's length transaction. Thus, net realisation value of inventory may or may not be equal to fair value less cost of selling of the inventory.

Q.14.Discuss the cost of conversion.

Ans. Cost of conversion of inventories comprises of costs that are directly associated with converting the raw material into finished goods. For example direct labor. Such costs are bifurcated into two types :

1. A fixed cost of production and
2. Variable costs of production.

Q.15.Explain briefly method of reordering points as a method of inventory replenishment.

Ans. Inventory reorder points to aid in ensuring that you want enough stock on hand to meet customer demand. Reorder points do provide greater financial flexibility by establishing a constant amount of inventory on hand at all points of time.

Based on historical order data, the reorder point factor (demand during lead time + safety stock) assists you in calculating the appropriate stock levels to meet customer needs.

Keep in mind that a solitary reorder point will not work for every SKU; each product has a unique reorder point which should be estimated accordingly.

SECTION-B SHORT ANSWER TYPE QUESTIONS

Q.1. What are fixed costs and variable costs?

Ans. Fixed costs and variable costs are as follows :

Fixed Costs : These are the indirect costs of production that do not change with the change in the level of output. For example depreciation, management and administration expense, factory building maintenance etc.

Fixed production cost is allocated to the conversion cost based on the normal production capacity of a business entity. Normal production capacity is nothing but the amount of production likely to be achieved on an average over the number of seasons or production periods under normal circumstances. This also takes into consideration loss of capacity from planned maintenance.

Variable Costs : These are the costs that vary with the volume of output. For instance indirect labour, materials etc.

Such costs are allocated to conversion cost based on the actual utilization of the production facilities.

Q.2. What are the cost of inventories of a service provider?**Ans. Cost of Inventories of a Service Provider**

The cost of inventories for a service provider are measured at the cost of production. These costs mainly include labor cost and cost of personnel who are directly involved in providing the service. This includes supervisory personnel and overhead costs related to providing such a service.

Costs associated with labour and other costs with respect to sales and general administration are not included in cost of inventory. However, such costs are recognized as expenses in the period in which they are incurred.

Further the cost of inventories of a service provider also does not include profit margins or overheads not attributable to such a service. These are often taken into consideration in the prices demanded by the service providers.

Q.3. Discuss the disclosure in financial statements with regards to inventories.**Ans. Disclosure in Financial Statements**

As per Accounting Standard 2 (AS 2), the financial statements must disclose the following details with regards to inventories :

1. Accounting policies used to measure inventories. This also includes the method of inventory valuation followed.
2. Amount of inventories taken as an expense in a given period.
3. Total carrying amount of inventories and carrying amounts in classification such as raw material, work in progress, finished goods and spares as is applicable to the entity.
4. Carrying amount of inventories carried at fair value less cost to sell.
5. Any amount of write down of inventory recognized as an expense in the period.
6. Any amount of reversal of a write down that is identified as a reduction in the amount of inventories identified as an expense in the period.
7. Events that lead to a reversal of write down of inventories.
8. Carrying amount inventories pledged as a security for liabilities.

Q.4. What is Weeks of supply? What are its advantage and disadvantages?**Ans. Weeks of Supply**

WOS is an inventory metric that is obtained by dividing current inventory by average sales. WOS teaches a planner to believe in inventory in terms of time.

Advantages

Advantages of weeks of supply are as follows :

Simple computation : Weeks of Supply is a simple calculation that divides the stock levels for a period (i.e., month) by the average sales. Because WOS equates past trends to forecasted requirements, it does not necessitate complex behavior for exhausted sales.

Disadvantages

Disadvantages of weeks of supply are as follows :

1. **Not suitable for accurate inventory planning** : WOS cannot be used to plan weekly inventory levels because it determines using average sales values. WOS can only

exhibit values at the aggregated time level (month) and functions as an analytics way of measuring rather than a planning measure.

2. **Looks at past trends rather than future projections :** WOS is not an appropriate metric for calculating stock levels. WOS illustrates an inventory position based on where the company has been, not where the future revenue trend is going, by using sales data.

Q.5. Discuss 'stock to sales ratio' as a method to plan inventory values. Discuss its advantages and disadvantages.

Ans. Stock to Sales Ratio

It is suitable for designing effective inventory levels in monthly plans. The Stock to Sales Ratio anticipates how much inventory is needed to meet the sales forecast. SSR is the ratio of products on the side at the start of a period to predicted sales for that time frame. SSR is computed by dividing the stock at the start of the period by the period's sales.

Advantages

Advantages of 'Stock to Sales Ratio' are as follows :

1. **Estimates the annual turnover :** The Stock to Sales Ratio gives a planner an idea of the average yearly inventory turnover.
2. **Inventory is proportional to sales values :** The Stock to Sales Ratio is the most rational key performance indicator to use when making plans inventory values regularly. SSR calculates inventory levels to meet scheduled sales, reducing the possibility of excess inventory situations.

Disadvantages

Disadvantages of 'Stock to Sales Ratio' are as follows :

Only considers one time period : Sell Through Percentage calculates scheduled inventory using a single time significance and does not take into account the movement of a sales trend over time. The higher the level of time dimension being started planning (i.e., quarter versus month), the more flattened the inventory and sales volatility all over time.

Q.6. What do you mean by 'turnover'? Discuss its advantages and disadvantages.

Ans. Turnover

It refers to the number of times the average inventory is sold and replaced during a given period. Turn is a sales-to-inventory ratio over a long period, usually a season or year. While turn is the most frequently used performance indicator, it is best suited for analysis instead of planning due to the flattening of stock volatility over time. Typically, the turn is computed by dividing sales by the average stock.

Advantages

Advantages of Turnover are as follows :

It serves as a starting point for planned inventory : In the nonappearance of all other inventory performance indicators, turnover can help guide the inventory planning process. Turn targets are usually determined early in the planning process and can be used to approximate inventory levels by month.

Disadvantages

Disadvantages of Turnover are as follows :

Only considers one time period : Stock to Sales Ratio calculates planned inventory using a single time significance and does not take into account the motion of a sales trend over time. The higher a large amount of time being planned (i.e., quarter versus month), the more the fluctuations throughout sales and inventory over time are squashed.

Q.7. What are the advantages and disadvantages of keeping a low or no inventory?

Ans. Advantages of Keeping a Low/no Inventory

Advantages of keeping a Low/no Inventory are as follows :

1. In case, the inventory is edible and the lead time is limited, this approach is best.
2. Working capital is less tied up in inventory, which helps increase profitability.
3. The cost of keeping the goods safe and secure is lower.
4. Inventory incompatibility is low or non-existent.
5. It is a versatile approach to stock management that will allow you to avoid the hassles of large inventory management.

Disadvantages

Disadvantages of keeping a Low/no Inventory are as follows :

1. If the lead time is extended, the production efficiency may suffer even more.
2. If the cost of ordering is higher, the business's profitability may suffer.
3. In case the supplier fails to deliver, the company suffers.
4. A minor hiccup in the process can disrupt the entire business chain.
5. Going out of stock can cost a company not only profit but also goodwill and customer loss.

Q.8. What are the causes of excess inventory?

Ans. Causes of Excess Inventory

Excess inventory can be caused by a variety of disruptions in the production cycle. These elements can be classified into three categories :

1. **Shipment delays of 60% :** Delays due to the factors such as processing times, steadily over the years, and international laws.
2. **25 percent Technical challenges :** Problems caused by system assimilation, purchase orders, EDI handling, and a lack of economic visibility.
3. 15% Other factors, such as rates of return or quality requirements.

Excess inventory can also be caused by changes in consumer behaviour and market trends. Excessive stock can occur in the retail and home goods industries as soon as temporary trends shift.

SECTION-C LONG ANSWER TYPE QUESTIONS

Q.1. Give the meaning and definition of inventory.

Ans. Meaning and Definition of Inventory

In dictionary meaning of inventory is a "detailed list of goods, furniture etc." Many understand the word inventory, as a stock of goods, but the generally accepted meaning of the word 'goods' in the accounting language, is the stock of finished goods only. In a manufacturing organization, however, in addition to the stock of finished goods, there will be stock of partly finished goods, raw materials and stores. The collective name of these entire items is 'inventory'. The term 'inventory' refers to the stockpile of production a firm is offering for sale and the components that make up the production. The inventory means aggregate of those items of tangible personal property which :

- (i) are held for sale in ordinary course of business.
- (ii) are in process of production for such sales.
- (iii) they are to be currently consumed in the production of goods or services to be available for sale.

Inventories are expandable physical articles held for resale for use in manufacturing a production or for consumption in carrying on business activity such as merchandise, goods purchased by the business which are ready for sale.

Q.2. Discuss the various major types of inventory.

Ans. Types of Inventory

Following are the major types of inventory :

1. **Raw Materials** : Raw materials are the materials a company uses to create and finish products. When the product is completed, the raw materials are typically unrecognizable from their original form, such as oil used to create shampoo.
2. **Components** : Components are similar to raw materials in that they are the materials a company uses to create and finish products, except that they remain recognizable when the product is completed, such as a screw.
3. **Work In Progress (WIP)** : WIP inventory refers to items in production and includes raw materials or components, labor, overhead and even packing materials.
4. **Finished Goods** : Finished goods are items that are ready to sell.
5. **Maintenance, Repair and Operations (MRO) Goods** : MRO is inventory often in the form of supplies that supports making a product or the maintenance of a business.
6. **Packing and Packaging Materials** : There are three types of packing materials. Primary packing protects the product and makes it usable. Secondary packing is the packaging of the finished good and can include labels or SKU information. Tertiary packing is bulk packaging for transport.
7. **Safety Stock and Anticipation Stock** : Safety stock is the extra inventory a company buys and stores to cover unexpected events. Safety stock has carrying costs, but it supports customer satisfaction. Similarly, anticipation stock comprises of raw materials or finished items that a business purchases based on sales and production

trends. If a raw material's price is rising or peak sales time is approaching, a business may purchase safety stock.

8. **Decoupling Inventory** : Decoupling inventory is the term used for extra items or WIP kept at each production line station to prevent work stoppages. Whereas all companies may have safety stock, decoupling inventory is useful if parts of the line work at different speeds and only applies to companies that manufacture goods.
9. **Cycle Inventory** : Companies order cycle inventory in lots to get the right amount of stock for the lowest storage cost. Learn more about cycle inventory formulas in the "Essential Guide to Inventory Planning."
10. **Service Inventory** : Service inventory is a management accounting concept that refers to how much service a business can provide in a given period. A hotel with 10 rooms, for example, has a service inventory of 70 one-night stays in a given week.
11. **Transit Inventory** : Also known as pipeline inventory, transit inventory is stock that's moving between the manufacturer, warehouses and distribution centers. Transit inventory may take weeks to move between facilities.
12. **Theoretical Inventory** : Also called book inventory, theoretical inventory is the least amount of stock a company needs to complete a process without waiting. Theoretical inventory is used mostly in production and the food industry. It's measured using the actual versus theoretical formula.
13. **Excess Inventory** : Also known as obsolete inventory, excess inventory is unsold or unused goods or raw materials that a company doesn't expect to use or sell, but must still pay to store.

Q.3. Elaborate the various objectives of the inventory management system.

Ans. Objectives of an Inventory Control System

The objective of inventory management is to provide information. Inventory control systems can consist of simple spreadsheets for small start-ups to elaborate, detailed computer database programs for gigantic companies. These inventory control systems track millions of units from the time they're originally purchased until they leave in the hands of a customer.

Following are the main objectives of inventory management system :

1. **Reducing Excess Inventory Costs** : A company's optimized inventory level walks a fine line between too much and too little. Many companies strive to avoid holding excess inventory while simultaneously trying to meet customer demand. This helps prevent having too much money tied up in inventory that sells slowly, and frees up capital to reinvest in hot-selling items. Many firms have moved to just-in-time inventory systems and advanced software solutions to achieve these goals.

Carrying too much inventory in distribution centers or retail stores can become costly because of storage, transportation and other costs, aside from the amount of money locked up in the stock. It takes up space, employee time and utility costs, and limits floor space for selling. Additionally, if you carry perishable items, over-stocking can result in having to discard perishable items or products with expiration dates if you can't sell them.

2. **Methods for Tracking Inventory Systems** : As an objective of inventory control and part of a company's goal to record inventory costs correctly, various methods exist for tracking inventory units to help with properly accounting for them and for determining how to store them as well. Using an inventory control system makes it possible to track inventory using either the LIFO (Last-in-First Out) or FIFO (First-in-First-Out) methods. Additionally, inventory tracking can help manage warehouse space, by determining which inventory units need to be stored for quick access, and which items can be held at a warehouse located further away, or in the same warehouse but at the back or in a more difficult-to-reach location.

3. **Maximize Overall Profit Margin** : Well-managed inventory can become an important key in meeting a company's overall profit margin objectives. A firm's gross profit margin is the difference between revenue earned from sales and the cost of goods sold. From there, deduct fixed costs including buildings, utilities and labor and you get to operating margin.

The goal of inventory control is to track and manage inventory items to highlight slow selling items, customer favorites, seasonal products, and items that are vulnerable to theft. Using this information to plan future inventory purchases while meeting other business objectives can make a significant difference in a company's ability to earn a healthy profit and grow the business.

4. **Avoiding Stock-Outs and Lost Sales** : Making sure that your customers can buy your products when they need or want to underlies one of the greatest reasons for inventory control. An effective inventory control system typically includes a well-planned replenishment system.

For example, when the software detects pre-determined low-inventory levels at a store location, it can trigger shipments from your distribution center or from a vendor to your store to replenish the stock. Given the costs, time and effort put into promoting products to attract customer interest, it makes sense to control inventory so that you have enough units on hand when they come to buy.

5. **Keep Goods Moving Efficiently** : Efficiency in inventory means the ability to quickly receive and store products as they come in and retrieve and ship when they go out. Every extra second spent in these processes adds to the costs of inventory management. Tracking inventory and moving it efficiently also means that units don't end up lost, hidden or stolen without the company's knowledge. Efficient distribution also boosts customer satisfaction. Retailers expect suppliers to meet their promised delivery timetables, and customers expect retailers to deliver their orders and products on time as well.

Q.4. Explain the need for holding inventory.

Ans. Need for Holding Inventory

Need for holding Inventory are as follows :

1. **Lowens the Risk of Production Shortages** : An inventory is required to store a large number of raw materials and unprocessed elements. If a single piece becomes unavailable, the entire manufacturing line may be halted.

To avoid the risk of success of the entire shortages during a large production process, the company should maintain stock levels. This will prevent a shortage of critical raw materials and components required to manufacture goods. The system will manage and inform of any shortages before those that occur.

Inventory management methods are great for stockpiling large quantities of goods and keeping a firm's inventory in verification.

2. **Results in Volume Discount** : In case the company orders a large quantity of a particular material, the provider will provide generous quantity discounts by lowering the price. This price reduction will lower the firm's cost of goods and improve sales profits.
3. **Prevents Sales Losses** : In case a company keeps an accurate stock, it can fulfill the orders of its customers without postponement, avoiding the threat of losing consumer loyalty and thus sales.
4. **Lowers Order Costs** : With the help of ordering in large quantities a company's cost can be reduced. Forms must be completed, approvals must be acquired, and the goods must be accepted, inspected, and tallied as part of the cost of placing an order. Then a receipt must be generated and payment made.

The cost of receiving metals may differ depending on the number of orders placed. Making bulk orders decreases the number of orders and thus the cost involved.

5. **Allows for more Efficient Production Runs** : When a company sets up its labor/manpower and automated systems to produce goods, it incurs start-up costs. When production begins, the cost will be soaked up. When the production line is stretched, the cost will decrease.

When the company sets up the production line regularly, it raises its startup costs. Keeping an inventory so that the production line never runs out of raw materials will ensure a long run in the manufacturing line, lowering the startup cost.

Q.5. Discuss the reasons why businesses keep raw material inventories.

Ans. Reasons why Businesses Keep Raw Material Inventories

The reasons to keep inventories differ from case to case :

1. **Procurement Scale Economies** : Purchasing raw materials in larger lots and stockpiling them has proven to be less expensive for the company than purchasing small lots regularly. In such cases, bulk purchases are made and inventories are kept at the plant warehouse.
2. **Provide for Cyclical and Seasonal Demand** : Market demand and supply are seasonal, depending on factors such as weeks of the season, festivals, and so on, and past sales data assist companies in anticipating a massive surge in market demands well in advance. As a result, they stockpile raw materials and keep inventories to increase production and rush supplies to the market to meet the growing demands.
3. **Adapt to Changes in Production Demand** : Sales, estimates, orders, and stocking patterns all influence the production schedule. As a result, the demand for raw

material sourcing varies with the product plan in terms of specific SKU as well as batch quantities.

Keeping inventory in a nearby warehouse allows you to send the required quantity and item to production on time.

4. **Reduce Transit Costs and Times :** When importing raw materials from a foreign country or a distant seller within the country, buying in bulk and hauling as a container load or a full truckload could save a lot of money on transportation costs. Parts deliveries can be more costly.

In terms of travel times, a full container shipment or a full truckload has a direct and faster transit time than a partial shipping load, which requires the freight forwarder to wait for the other loads to fill the container, which can take weeks or months.

There could be a variety of factors causing shipping and transportation delays, which can wreak havoc on the supply chain, forcing businesses to stockpile emergency supplies.

5. **Profit from Price Increases and Quantity Discounts :** If a price increase is predicted a few months down the road due to changes in the market in the international or domestic market, the impact of taxes and budgets, and so on, companies tend to buy raw materials in advance and hold stocks as a hedge against cost increases.

Companies buy in bulk and keep raw - materials inventory levels to take advantage of quantity discounts offered by suppliers. In these cases, the savings.

Q.6. Explain the forward weeks of supply (FWOS) method for designing effective inventory levels. Also discuss its advantages and disadvantages.

Ans.

Forward Weeks of Supply

It is the best method for designing effective inventory levels in weekly plans. Using FWOS allows a planner to consider their inventory placed above a white time, which is critical for efficiently managing inventory levels. The purpose of good inventory management is to always have enough inventory on hand to support scheduled sales until the next delivery arrives. The multitude of weeks of planned sales from the next week forward that the current inventory value symbolizes is used to calculate FWOS. When FWOS is entered into a plan, the ending period inventory (EOP) is measured by calculating the forward number of weeks of sales and adding up the value to determine the minimum ending inventory.

Advantages of FWOS

Advantages of FWOS are as follows :

1. When using FWOS, estimated sales trends are the driving factor. Inventory levels are arranged to meet future demands, reducing the possibility of overstock situations. FWOS focuses on maximizing the return on inventory investment by directly connecting inventory levels to planned sales.
2. Forward Weeks of Supply provides deeper insight into how each product and/or category will add value to inventory objectives by providing explicit visibility of the quantity of stock required to meet sales objectives.

Disadvantages of FWOS

Disadvantages of FWOS are as follows :

1. Plans must be prepared to the week level to calculate FWOS. When developing high-level top-down plans, weekly planning may not always be possible.
2. Forward Weeks of Supply generates a set of weeks of planned sales from the following week forward that the existing stock represents. To address behavior when there are not enough forward weeks of sales obtainable in a plan, a statement must be added to the computation. There are three methods :

Allow the computation to wrap around the beginning of the time horizon of the current strategy. This solution means that preparation for the end of the current plan is based on the start of the current strategy, which is less than ideal for businesses undergoing sales growth or retraction, or for plan horizons that are less than a full year.

For the entire plan horizon, use the average weekly sales. These solutions offer a less-than-ideal FWOS value for the end of the design time horizon, but it is the most straightforward in most planning.

Q.7. What do you know about controlling inventory levels? Also state various advantages of keeping a low or no inventory.

Ans. Controlling Inventory Levels

Inventory level control is defined as attempting to control the inventory threshold to avoid production delays. It is the level of stock that should always be available in the storage facility.

The creation of a balance between capital tied up in inventory and the availability of inventory for production at all times is an important principle of inventory level controls.

Adequate inventory management aims to guarantee that surplus working capital is not tied to the cash flow and that inventory is always available to produce.

The concept of inventory level control begins with the question of how much inventory should be held to meet expected/unexpected production/sales requirements. The answer depends on the nature of the business, stock management policies, business resources, inventory lead time, cost of ordering and cost of holding, and so on.

Inventory control applies to all kinds of inventory, including raw materials, finished goods, and spare parts, among others. Typically, businesses have two stock management options: keep almost no inventory and keep a larger stock.

Advantages of Keeping a Low/no Inventory

Advantages of keeping a low/no inventory are as follows :

1. If the inventory is edible and the lead time is limited, this approach is best.
2. Maintaining a low inventory requires a smaller cost of holding.
3. It is a versatile approach to stock management that will allow you to avoid the hassles of large inventory management.
4. Inventory incompatibility is low or non-existent.
5. The cost of keeping the goods safe and secure is lower.
6. Working capital is less tied up in inventory, which helps increase profitability.

Q.8. State the various advantages and disadvantages of excess inventory.

Ans. Advantages of Excess Inventory

Advantages of Excess Inventory are as follows :

1. **Low Risk of Shortages :** There are times when demand skyrockets. Demand for some goods may be cyclical around a specific vacation or season. When you have excess inventory, you shouldn't have to worry about being the company that ran out of stock when everyone was searching for a particular product.
2. **Full Shelves :** When you only keep enough inventory to get through the normal sales cycle, racks can appear sparse as the next order date approaches. Full shelves send a strong signal to customers that business is good and the store is open for business. Keeping a shop stocked with items to sell necessitates a sufficient inventory. The company should consider various types of inventory.
3. **Advantage of Wholesale Pricing :** When purchasing greater amounts of units, many company owners can benefit from lower wholesale costs. This makes sense for regular items that the employer knows will sell because the company is convinced it will move the successful product and not be stuck with it. Depending on the product's price, the savings could be significant.
4. **Quick Fulfillment :** Customers receive products much quicker when they are in stock. Even if the consumer does not have an instant need for the product, once the purchase is made, the customer prefers to walk out with the good or service in hand. This is an integral part of providing exceptional customer service.

Disadvantages of Excess Inventory

Disadvantages of excess inventory are as follows :

1. **Storage Costs :** The more items you have, the more and more space you will require, Commercial space is rented on a per-square-foot basis. Think about the cost of storing excess inventory versus the cash reserves from wholesale orders. It also costs to perform more inventory control and audits, which may require additional warehouse staffing.
2. **Obsolete Inventory of Excess Inventory :** Overstocking product lines increases the likelihood of the product becoming obsolete. This is especially true in technology sectors like smartphones and televisions, but no industry is immune. Even the new craze in children's games may inspire you to place a large order. If the buzz fades quickly and kids stop looking for the game, you'll be stuck with a lot of stock that you can't move.
3. **Investing Capital :** You pay for the order, storage, and medical coverage when you have excess stock. This cannot be avoided. Because they don't have cash on hand, businesses with tiny margins and tight monthly budgets may find it hard to make business development choices.
4. **Insurance Costs Rise :** Insurance costs rise as storage rooms and inventory values grow larger. This component must be regarded and weighed against wholesale

savings. If there is a fire, theft, or another natural disaster, the company will not only have to recover but will also have to pay higher premiums as health coverage rates rise.

Q.9. Discuss the various categories in which a product can be classified.

Ans.

Categories of Products

There are four major product categories. These classifications are created by specialists due to consumer habits, costs, and general features. The four possible categories are as follows :

1. **Convenience Goods** : These are those type of products and services that customers buy regularly without much thought. Unless forced to do otherwise by a commercial or availability, consumers typically use the same or similar products for consumer items. Dish soap, for example, is a convenience item. Another feature of convenience products is their accessibility. Most people can buy dish soap without doing any studies or making a special shopping trip.

When marketing comfort products, marketers may employ more methods that overpay other brands in their candidacies. This is because if customers are persuaded, such as through a compared advertisement, they may change their purchasing habits and switch to a different brand. A business, for instance, may market its dish soap as being more effective at removing grease from dishes. Marketing companies may also devote more time to customer test objectives to determine how their brand compares to others or to develop marketing strategies that capture a consumer's attention by surprising them.

2. **Purchase made with Knowledge** : These are the purchases that customer makes infrequently and usually do information before deciding. These products can range from more expensive items like a house or car to more mundane items purchased like a pair of shoes. Consumers usually take more time to make informed purchases, which can alter how marketers advertise to them.

For instance, because consumers usually conduct more studies or have better expectations for these purchases, marketing efforts may include more information and target extra particular demographic groups. When creating and campaigns for laptops, for example, a marketing team may decide to target college-aged consumers because this target audience frequently requires the product. More knowledge about the laptop's capabilities, such as graphics quality or system, may also be included by the marketing division.

3. **Items of Interest** : These are one-of-a-kind products that marketing departments can promote to a specific demographic of consumers without fear of competition. These product lines may include novel items that are one-of-a-kind on the market or well known brands with a devoted following. While these items may be more expensive than others. consumers feel constantly less compelled to premeditate or research their purchase of a specialty item.

A well-known luxury fashion brand's marketing team, for example, would not need to create advertisements that compare their clothes to other brand names or even encompass detailed information. Rather, the brand's public reputation can entice

customers to buy its products. These business owners can concentrate their efforts on acquiring and retaining customers.

4. **Mandatory Purchases** : Consumers buy mandatory purchases, also known as unsolicited goods, out of necessity rather than ambition. These are typically household or security items that consumers are uninterested in purchasing, such as batteries, smoke detectors, air filters, and cleaning supplies. Consumers may purchase these items out of fear or obligation, such as purchasing a fire extinguisher or a repairs and maintenance member status just in case of an emergency.

Q.10. What are the reasons behind categorising of products?

Ans. Reasons of Classification of Products

Following are the major causes of classifying products :

1. **Invention** : A company is considering product classifications when deciding which goods to produce. Because of marketing efforts for each type of product differentiation, a company may choose to specialize in one type of advertisement, limiting the product lines they produce. The demand for a product, which influences how experts generate product classifications, can also influence a firm's decision to develop a good.
2. **Pricing** : The classification of a product can affect how distributors price this same item. Convenience items and required purchases are frequently less expensive than specialty items or educated purchases because customers buy the availability and necessity of these goods.

Convenience and imperative objects are also more abundant in plants and include lower-priced items such as food. Even though consumers have less customer loyalty to products in these categories, it is more crucial for firms that sell convenience and are required by law purchases to assign a cheaper price to these items to compete with the other brands.

3. **Demand** : The quantity demanded frequently varies depending on its categorization. In general, consumers purchase required and convenience goods more frequently than specialty and informed goods. This affects how companies manufacture these items as well as how marketing teams promote them. Companies selling specialty and educated purchase products may need to devote more time & expense to marketing their products because customers may require more inspiration to make purchases that they require less frequently.
4. **Marketing** : The methodologies used by marketing teams to advertise a product are frequently determined by its classification type. Product categorization can alter a marketing budget and campaign focus. When marketing a specialty item, for example, a business is less likely to spend forming a focus group to test its product. They could instead devote their resources to product marketing.

Q.11. What is meant by product coding?

Ans. Meaning of Product Coding

Running a successful business necessarily requires organization and effectiveness, both of which product coding provides. At its most basic, product coding is the use of a distinct series

of numbers to identify and distinguish a specific product from others. When it comes to designing or selecting these rules, nevertheless, there is more leeway. Similarly, trying to decide how to apply these codes to your product lines or packaging necessitates determining the correct equipment.

Product codes can vary greatly. While barcodes are the most well known, you can also select a code for internal use only. The SKU, or "Stock Keeping Unit," is a common company-specific code. These codes, as the name implies, assist businesses in keeping track of merch. Individual segments of the longer number sequence can identify particular characteristics of the unique product, such as color or size. SKU lengths can vary, but it's best to keep them between 4 and 12 characters. SKUs can also contain both numbers and letters, which means the creator can use prefixes or other constructive abbreviations to make the sequence easier to understand.

The Universal Product Code, or UPC, is a normalized barcode that can be used by retailers and distributors alike. UPC numbers assigned by GS1 are always 12 digits long and contain only numbers. These codes are required for brands who want to sell their products in bigger stores and are frequently required for internet retail.

It's time to sign up your codes for the product now that you've acquired them. You'll need a printer capable of producing clear, legible images for this. If you only need to print simple numbers, such as best by dates, a circuit board printer may meet all of your needs. Inkjet printers are the most popular good for large prints of more complex images such as barcode technology. You must also decide on the substance on which you will print. While many printers have been modified to work better with such a range of surfaces, this should still be taken into account.

Handheld coders are the perfect solution for companies that require portable coding. These coders generate high-quality pictures and can be carried in an all-around storage facility for quick labeling, saving original equipment time and money.

Q.12. What are the merits of inventory replenishment for e-commerce retailers?

Ans. Merits of Inventory Replenishment for E-commerce Retailers

Restocking inventory efficiently is a crucial factor that directly impacts an online brand's ability to meet customer requirements, fulfill orders, and make a profit. Here are three reasons why online sellers need to replenish their inventory.

1. **Shipping Costs may be Reduced** : Assume a customer decided to order multiple items from you at an identical time. If one item is out of stock at the nearest warehouse location to the customer but available at another, you must send a split shipment (sending different items from one order in different packages, often from a different location or at a different time) to satisfy the customer's order form.

Sending items from a single order in multiple shipments raises shipping costs, tends to increase packaging waste, and may confound customers. Based on history, you can forecast demand and decide how much inventory to store at the SKU level at each warehouse location.

2. **Assists in Avoiding Overstocking :** A smart inventory replenishment procedure can also help prevent excessive inventory on inventory that may become impossible to sell if left unattended for too long, such as food and beverages or cosmetics with expiration dates. Overstocking, like not having enough inventory, can harm your bottom line.

Replenishing stock too soon or even without regard for changing customer demands or seasonality can result in dead stock, which raises having to carry costs by allowing unsold inventory to sit on racks for too long.

The economic order quantity (EOQ) formula is a simple way to find the ideal amount of inventory to have on hand to meet purchase demand and avoid overstocking and high warehouse storage logistics.

Calculating EOQ helps you to understand how much inventory, including stock, you should keep on hand while keeping online store warehousing costs as minimal as possible.

3. **Helps in Preventing Stockout :** If a retailer fails to order stock on time, they risk having a stockout, which happens when items are out of stock at the time of acquisition.

Backorders are also possible, which implies that an order has a set date for whenever the item will be ready to ship. Stockouts and excess inventory can both be extremely inconvenient for one's customers.

The best way to avoid prevalent stockouts is to keep a lot of rear or emergency inventory on hand at all times. This is also a good idea in case of an unexpected supply chain issue (which many merchants experienced when the COVID-19 pandemic hit).

Q.13. What are the three best practices for inventory replenishment procedure? Also discuss the various methods of inventory replenishment.

Ans. Best Practices for Inventory Replenishment

It takes time and effort to develop an effective inventory replenishment strategy. When the strategic plan, always conduct research and incorporate the three best practices listed below into the inventory replenishment procedure.

1. **Utilising Inventory Replenishment Information :** Having real-time inventory data allows you to see which items are slow-moving versus fast-moving, allowing you to make sound choices about when to reorder stock.

You will be capable of improving demand forecasting, calculating safety stock quantities, identifying inventory turnover for your products, and other financial concerns with this data.

2. **Using the Appropriate Technology :** Having the right online shopping tech stack in place can aid in supply chain optimization.

Implementing an inventory management system, for example, is a simple way to gain real-time visibility into inventory levels in various locations, allowing you to make improved stock decisions.

You can easily stay on top of stock control, track inventory trends and avert common stock issues by using inventory automated processes for stock management.

3. **Improving Inventory Management Techniques** : Inventory replenishment is only one element of the overall inventory system. It will be difficult to decide when to reorder inventory without the need for a proper inventory management procedure.

Regular inventory audits, basic warehouse receiving practices, and warehousing best practices can all aid in more effective stock tracking.

Holding costs, which include warehouse staffing, storage, shrinkage, amortization, should be closely monitored and determined by calculating to ensure that profits are not significantly reduced.

Methods of Inventory Replenishment

Depending on their marketing strategy, monthly order volume, and products, distinct e-Commerce retailers use different resupply methods. If your current replenishment tactic isn't working, here are mainly three inventory replenishment methods to try.

1. **Method of Periodic Inventory Replenishment** : Inventory is resupplied at regular intervals using the periodic inventory replenishment method. Levels of inventory are only evaluated at specific times or dates, irrespective of how low stock levels may fall before that point. This method is commonly used in extra storage warehouses.
2. **Method of Top-off** : When you have a lot of fast-moving SKUs in your stock, the top-off technique is usually the best inventory replenishment strategy.

Using this strategy, inventory levels for a given item are "topped off" in their respective storage locations during slower cycles or downtime, allowing you to keep a strong inventory turnover rate without experiencing picker stockouts.

3. **Method of Reordering Points** : Inventory reorder points to aid in ensuring that you want enough stock on hand to meet customer demand. Reorder points do provide greater financial flexibility by establishing a constant amount of inventory on hand at all points of time.

Based on historical order data, the reorder point factor (demand during lead time + safety stock) assists you in calculating the appropriate stock levels to meet customer needs.

Keep in mind that a solitary reorder point will not work for every SKU; each product has a unique reorder point which should be estimated accordingly.

Q.14. Discuss the main goals of inventory management.

Ans. **Goals of Inventory Management**

Inventory management is essential for a business to succeed. Good management of company's stock decreases excess inventory and ensures that you have enough product on hand to meet customer demand. Develop an inventory management plan to streamline ordering and reduce wasted time on inventory control.

Following are the main goals of inventory management :

1. **Ensuring Safety of Inventory** : One of the goals of inventory management is to keep products safe. Inventory should be kept in a safe area, where it is protected against theft. Depending on the size of your company, this could mean using surveillance equipment, guards or alarm systems. The inventory should be handled carefully, as well, to avoid breakage. Broken or lost inventory means a financial loss for your company.
2. **Tracking Sales** : Track and review company sales on a regular basis as part of your inventory management plan. Note the items that don't sell and have a tendency to sit for prolonged periods of time. Also, track the best sellers and seasonal items that experience increased sales at different times of the year. Use this data to manage the quantity of items and when to order them. Although you want to avoid excess stock, don't be too safe with ordering inventory. You don't want to be out of stock when new orders are requested.
3. **Ensuring Accuracy of Inventory Systems** : Manage your computer inventory systems. Incorrect information displayed on inventory databases can cause problems in your company. A goal of inventory management should be to keep the inventory database up to date. Each item sold should be removed from the inventory log promptly. Stock receipts should be entered into the inventory database within a 24-hour period.
4. **Eliminating Excess Products** : Inventory control also will keep dead stock off of the shelves. Stock that does not sell drains company's resources because it takes up space in your store or warehouse. Sales events can be used to push stock that has not been performing well. Another strategy would be to return stock that is not selling or offer the products at a discounted rate to another company.

Q.15. What are the major effects of excess inventory on business.

Ans. Effects of Excess Inventory on Business

Following are the major effects of excess inventory on business :

1. **Excess Inventory can Create Storage Issues** : If you're holding onto an inventory of products, you'll soon discover that excess stock takes up valuable storage space. Be wary of how much space it takes up and find a solution for dealing with it quickly.
For example, an e-commerce company might want to capitalize on a trend and order extra products. But what happens to excess inventory if the trend fizzles out? It can cause backup and take up too much space in your storage facility or stock room.
2. **Excess Inventory can Cost you more** : If you're not able to move your excess inventory, it may accumulate and become a storage issue and storage space isn't free. Even worse, you must also consider the costs to keep up with your inventory :
 - (i) Storage costs such as rent, maintenance, utilities and insurance,
 - (ii) Employee wages to manage, audit and maintain the extra goods,
 - (iii) Depreciation costs as your inventory's value depreciates over time.

Additionally, having more inventory than you can sell leaves cash tied up instead of using it to invest in your business or expand operations with new hires.

3. **Excess Inventory can Hurt the Environment :** Too much product impacts more than your bottom line. It can hurt the environment, too. Think about this: The inventory has a carbon footprint because it took energy and water to produce. When demand is over-estimated, carbon emissions go up and manufacturers waste resources not to mention the excess that may end up in a landfill.

Better business forecasts can reduce the waste of energy, material and money on needless inventory. Businesses need to be mindful of their footprint on Earth and avoid creating excess waste whenever possible.

4. **Excess Inventory can Tie up Cash Flow :** Cash flow is the lifeblood of any business. It is important to keep cash flowing to invest in the future. Too much inventory ties up cash flow and can hurt your business.

For example, let's say you own a bike shop and invested in several items of performance jerseys, shorts and other bike clothing and accessories. But your sales aren't as high as you'd hoped, and you're not seeing a return on the cash you spent to buy the items. With your money tied up in products, your cash flow can suffer. You may not have the funds to cover the company's day-to-day expenses.

5. **Excess Inventory can Lead to Stock Obsolescence :** The idea of having too much inventory is nothing new. It's a problem that has existed for as long as there have been businesses. But you need to act fast so it doesn't sit too long and become obsolete.

Technology retail is a good example. Suppose you sell computers or electronic items. You ordered plenty according to your sales forecast, but a new model was released before you could sell off your inventory. In this case, your items have become devalued or worse.

Too much stock usually means you have low inventory turnover. Your products aren't selling as quickly as you forecasted. Why are large amounts of inventory considered wasteful? Excess inventory doesn't last forever. Items will degrade and lose their value over time. In fact, it's a common retail business insurance claim.

6. **Excess Inventory can Reduce Profits :** Excess inventory can cut into your profitability. If you're sitting on a ton of product, you may be tempted to cut prices to sell off that excess stock. You may move some products, but you'll also likely reduce your margins and make less profit overall.

While selling items to capture a partial profit is better than no profit at all, you're still adding stress to an already difficult situation. ●

UNIT-III

Accounting for Material Losses and Obsolescence

SECTION-A (VERY SHORT ANSWER TYPE QUESTIONS)

Q.1. What do you mean by the term 'waste'?

Ans. Waste is the portion of basic raw material lost in processing, having no recoverable value. Waste may occur due to evaporation, breaking the bulk, loading and unloading, leakage, inefficient handling, fire, etc. It may be visible or invisible, for example, gases, dust, and smoke and unsaleable residues. The effect of waste is to increase the unit cost of production, since the total cost is spread over a smaller number of good units.

Q.2. Discuss the accounting treatment of waste.

Ans. The accounting treatment of waste depends upon whether the waste is normal or abnormal. For normal waste arising from breakage, evaporation, deterioration, shrinkage in production, the total cost incurred is distributed over the good output. The treatment is based on the principle that normal losses should be borne by good output. Abnormal wastage of material arising due to abnormal reasons, i.e. theft, fire, careless handling, etc., is not added to the cost of production but is transferred to costing profit and loss account. This is necessary to avoid any fluctuation in cost of production.

Q.3. What are normal losses?

Ans. Losses which are unavoidable are called normal losses. Normal losses of material can not be completely avoided but may be controlled to a limited extent. These losses are transferred to factory overheads.

Examples of material losses are :

1. Losses by evaporation.
2. Loss due to loading and unloading.
3. Losses due to breaking the bulk.

Q.4. Discuss the term 'normal spoilage'.

Ans. Normal spoilage is what arises under efficient operating conditions. It is an inherent result of the particular process and is thus uncontrollable in the short-run.

Normal spoilage is planned spoilage that management is willing to accept and is controllable by higher level of management which determines the nature of products and processes.

Q.5. What do you mean by the term 'obsolescence'?

Ans. Obsolescence refers to an asset's life or lack thereof. When an asset becomes old and outdated, it is considered obsolete and useless. This is a big problem for both manufacturers and retailers.

Q.6. What is obsolete inventory?

Ans. Obsolete inventory refers to stock that has seen no demand for a prolonged period of time e.g, it has not been sold to customers or used in production. This is usually because it has reached the end of its product life cycle. Obsolete stock is often a financial burden to businesses, as it usually has to be sold at a loss or simply written off at the end of a financial year.

Q.7. What is meant by scrap? What are the types of scrap.

Ans. Scrap is defined as the incidental residue from certain types of manufacture usually of small amount and low value recoverable without further processing. Example of scrap are available in operations like turning, boring, punching, shaving, moulding, etc.

There are three types of scraps, namely :

1. Legitimate scrap, i.e. scrap which is predetermined and arises due to the nature of operations like turning, boring, punching, etc.
2. Administrative scrap, i.e. scrap which arises due to administrative action such as change in the method of production.
3. Defective scrap, i.e. scrap which arises because of the use of inferior quality of material or bad workmanship or defective machine.

Q.8. Discuss the accounting of scrap.

Ans. The usual methods for accounting of scrap are as follows :

1. The sale value of scrap is credited to profit and loss account as other income. The unit cost of production is, therefore, inclusive of cost of scrap. This method fails to secure effective control over scrap as detailed records are not kept and scraps are not identified to jobs or processes.
2. From the sale proceeds of scrap selling and distribution costs are deducted and the net value is deducted from material cost or factory overhead. The effect of this method is to reduce material cost or overhead recovery rate. This method fails to secure effective control of scraps arising in processes or jobs. It is suitable in cases where several production orders are taken in hand and it is not possible to segregate the value of scrap for each order.
3. The value realised from sale of scrap is credited to particular job, process or operation. This method has an advantage of identifying scrap with each operation, process or job.

Q.9. What do you mean by accounting of spoilage?

Ans. **Accounting of Spoilage**

Accounting of spoilage are as follows :

1. If spoilage is caused by an order's exacting specifications, the spoilage cost as reduced by the recovery or sales value of the spoiled units should be charged directly to that order.

2. If some spoilage is normal in the manufacturing process, the cost of such spoilage will be borne by good units.
3. In case of abnormal spoilage, cost of spoilage is transferred to costing profit and loss account.

Q.10. What are defective goods?

Ans. A good in which there is manufacturing fault or defect is called defective good, this fault could be removed by applying additional cost called rectification cost.

SECTION-B (SHORT ANSWER TYPE) QUESTIONS

Q.1. Discuss the various forms of material losses.

Ans. **Forms of Material Losses**

Material losses could arise in the form of waste, scrap, spoilage and defectives.

1. **Waste** : It comprise of all visible, invisible losses that can not be collected and also unsalable portion of the collected loss. Examples of waste are dust, smoke, gases etc.
2. **Scrap** : It represents the unusable loss which can be sold. It is measurable and has a minor value. Scrap may arise in the form of turning's, filing etc, from metal; off-cuts and cut pieces in leather & cloth industry.
3. **Spoilage** : Spoilage is those materials or components which are so damaged in the manufacturing and operation process that they can not be repaired or reconditioned. Spoiled units do not attain the quality required and it is not economic to correct them.
4. **Defectives** : A good in which there is a manufacturing fault or defect is called Defective goods, this fault could be removed by applying additional cost called rectification cost.

Q.2. What is meant by defective products? What are reasons due to which defectives may arise?

Ans. **Defective Products**

Defective products or units are those which do not meet with dimensional or quality standards and are reworked for rectification of defects by application of material, labour and/or processing and salvaged to the point of either standard product or substandard product to be sold as seconds. Therefore, defectives are that portion which can be rectified at some extra cost of re-operation.

Defectives may arise due to the following reasons :

1. Sub-standard materials.
2. Poor workmanship.
3. Poor maintenance of machines.
4. Wrong tool setting.
5. Faulty design of products.
6. Bad supervision.
7. Careless inspection.
8. Poor working conditions.

9. Lack of control, such as humidity, furnace temperature etc.

10. Excessive short runs.

Defectives are bad products which are not totally spoiled and can be rectified or restored to original or near-original condition at some extra cost of re-operation. The additional cost of rectifying the defectives is added to the total cost and the quantity of defectives rectified is added to the quantity of good output because defective units rectified can be sold as "seconds". Rectification of defective units is advisable only when the cost of rectification is low and more profitable than to sell as spoil 3d units.

Q.3. Elaborate various ways which are adopted for the treatment of cost of rectification of defectives.

Ans. Treatment of Cost of Rectification of Defectives

Following methods may be adopted for the treatment of this cost :

1. If the defective production is identified with a specific job or department, the cost of rectification is charged to that specific job or department.
2. If the defective production is not identified with a particular job or department, the cost of rectification is added to general factory overhead.
3. If the defective production is due to abnormal reasons, the rectification cost is transferred to Costing Profit and Loss Account.

Every possible effort should be made to reduce the number of defectives because they increase the cost of production. Control of defectives is an operational correction, so steps should be taken to eliminate the reasons responsible for defectives. Right from the design stage to the output of the final product stage, each one should be looked into carefully for avoiding defectives.

Standardisation of products and operations, comparison of actual performance with standards laid down in regard to defectives, feedback and reporting and incentive scheme for minimising defectives will go a long way in reducing the quantity of defectives.

Q.4. The parts of a machinery are produced to rigorous standards of accuracy. Each batch of 1,000 units is tested to discover whether the units are defective at a cost off 12.50 per unit. The defective units are then rectified and put in good order at a cost of ₹ 50 per unit.

If the units are not tested, any defect would become apparent later when they are fitted in the machine. At that state it would cost ₹ 100 per unit to put the parts in good working order.

Find out by calculation the minimum percentage of defective units in a batch such that it would be cheaper to test all the units in the batch instead of none of them.

Ans. Suppose the number of defective units in a batch is x .

If testing is done, cost comes to $50x + 1,000 \times ₹12.50 = 50x + ₹12,500$

If testing is not done, cost comes to $100x$

Thus, $100x = 50x + ₹12,500$

or $50x = ₹12,500$

or

$$x = 250 \text{ units}$$

If the number of defective units is only 250 (*i.e.*, 25%) in a batch of 1,000 units; the total cost will be the same whether testing is done or not. Hence, it would be cheaper to test all units in the batch, if the minimum percentage of defective units in a batch is more than 25%.

Q.5. What steps should be taken for the control of wastage, scrap, defectives and spoilage?

Ans. Control of Wastage, Scrap, Defectives and Spoilage

Every effort should be made to reduce the cost of production by exercising control on wastage, scrap, defectives and spoilage.

Following steps may be taken in this direction :

1. Reports relating to the wastage, scrap, defectives and spoilage should be prepared in time to locate the reason responsible for the wastage etc. An immediate corrective action should be taken on the basis of the reasons responsible for the loss.
2. Wastage, scrap, defectives and spoilage should be standardised by following standard costing system. It should be seen that actual wastage, scrap, etc. should be within normal limits allowed.
3. Good quality of materials should be used. Better the quality of materials less is the wastage, scrap and spoilage.
4. Control of wastage, scrap, defectives and spoilage should start with the designing of the products. The type of materials that will result in the minimum wastage, scrap, defectives and spoilage are decided at the designing stage. Better quality of equipment should be used to get better return, so type and shape of equipments to be used for manufacturing process should be decided at the designing stage.
5. Properly trained personnel should be employed to reduce the quantum of wastage, scrap, defectives and spoilage.

Q.6. Why is inventory obsolescence a problem for business?

Ans. Inventory Obsolescence a Problem for Businesses

While obsolete inventory remains in a business, there are a number of financial repercussions it has to burden :

1. It ties-up working capital, which looks bad on the balance sheet and means it cannot be invested in other aspects of the business, such as marketing, recruitment, technology or other inventory items.
2. It uses up valuable space in the warehouse and increases all carrying costs.
3. It affects inventory turnover ratio
4. It usually leads to stock being sold at a discounted price e.g a lower net resaleable value, or being written off altogether. It therefore hits a business bottom line at the end of the year, when the cost is usually absorbed in the Cost of Goods Sold on the profit and loss sheet.

Q.7. Discuss the various ways to manage obsolete inventory in your business.

Ans. Obsolete Inventory Management

If you have obsolete inventory in your business, there are a number of ways to manage it and get rid of it. These include :

1. **Sales Promotions** : you may be able to generate demand for the items if you sell them at a discounted price. Or, perhaps you can add them to product bundles, to make a different customer offer more attractive.
2. **Find New Markets** : perhaps you can offer the products to a different marketplace e.g., a different industry or country.
3. **Sell to a Stock Surplus Specialist** : it's possible to sell off obsolete inventory to a business specialising in selling excess, obsolete and liquidation stock. Be warned you'll do so at a heavily discounted price, though this could be a better option than writing it off altogether.
4. **Writing it Off** : sometimes you have no choice but to dispose of the goods e.g they are out-of-date or have degraded in quality.

Q.8. Discuss obsolescence management. What are the causes of obsolescence?

Ans. Meaning of Obsolescence Management

Obsolescence management is a core part of our business here at Like Technologies. The process involves continually assessing the life span of an element of a system's lifecycle, whilst planning replacement of obsolete parts and systems as they age. This must be achieved without posing a threat to productivity or safety, whilst remaining cost-effective. It is an important strategy which requires proactive, strategic and tactical measures to mitigate risk. Below, we will look at obsolescence management in more detail.

In the industry sectors in which we work, 'obsolescence' doesn't just mean the process of becoming outdated. It is the critical transition where parts or resources from the original manufacturer become unavailable, even though they are still needed. Obsolescence must be carefully managed so it doesn't have a negative impact on productivity - particularly in the power generation sector when the country depends on our clients for light and warmth!

Causes of Obsolescence

Planned obsolescence can occur when :

1. There is technological evolution or revolution (a new generation of technology supersedes the original).
2. Demand for the component or technology falls causing the manufacturer to believe that continuing production is uneconomical.
3. The original manufacturer chooses to deliberately end a product's life for commercial reasons and releases a newer product.
4. Governments or legal bodies impose environmental restrictions and policies which force changes to products or services.

Unplanned obsolescence can occur as a result of the following :

1. Allocation problems resulting in reduced or lack of availability. This can be due to factors such as fails in manufacturing, natural disasters or accidents.

2. Business reasons, for example, when the manufacturer can no longer effectively support production and may collapse or be acquired by another company.
3. When required assets or materials are no longer available to support production.
4. Cost efficiency.

Effective obsolescence management takes into account the life span of all the parts of complex systems, with a plan to replace obsolete parts as they age. Proactive control of obsolescence requires the development of a plan which maximises the benefits of equipment modernisation and results in a cost effective solution.

Q.9. Discuss the accounting treatment and control of defectives.

Ans. Goods that do not meet production standards and must be processed further in order to be saleable as good units are known as defectives. Defective work can be corrected to meet specified standards with additional materials, labour and overhead. Defectives may arise due to substandard materials, poor workmanship, bad supervision and careless inspection. The additional cost of rectifying the defectives is added to the total cost and the quantity of defectives rectified is added to the quantity of good output because defective units rectified can be sold as 'first' or 'seconds'. The main difference between spoilage and defectives is that spoilages are sold without further processing, whereas defectives are rectified by additional expenditure and sold as 'first' or 'seconds'.

Accounting Treatment

Accounting treatment are as follows :

1. If the defective units are clearly identified with a numbered job order and the defects are peculiar to the job, the cost to complete the defective units can be charged to the job.
2. If defective units occur irregularly, the cost of rectification is properly charged to factory overhead.
3. If the defective production is due to abnormal reasons, the rectification cost is transferred to costing profit and loss account.

Control of Defectives

On the receipt of defective work report, a decision is taken whether to rectify or not to rectify the work. All costs of rectification are collected against the rectification work order. Adequate steps should be taken to see that defective work remains within standard limits.

Q.10. Discuss the types of material losses in cost accounting.

Ans. Types of Material Losses

Losses of material during handling, storage or manufacturing are called as material losses in cost accounting. We could classified material losses into two parts i.e. normal losses and abnormal losses.

1. **Normal Losses** : Losses which are unavoidable are called Normal losses. Normal losses of material can not be completely avoided but may be controlled to a limited extent .These losses are transferred to factory overheads .Examples of material losses are as follows :

- (i) Losses by evaporation,
 - (ii) Loss due to loading and unloading,
 - (iii) Losses due to breaking the bulk etc.
2. **Abnormal Losses** : Losses that arises due to inefficiency in operations, carelessness etc, is called as abnormal losses. These losses are charged to costing profit and loss account, Examples of abnormal losses are as follows :
- (i) Breakage,
 - (ii) Fire, accident, flood etc,
 - (iii) Improper storage,
 - (iv) Theft.

SECTION-C LONG ANSWER TYPE QUESTIONS

Q.1. Discuss the useful methods for the treatment of scrap.

Ans. Treatment of Scrap

The useful methods for the treatment of scrap are as follows :

1. If realisable value of normal scrap is insignificant (i.e., legitimate scrap and administrative scrap) it may be credited to Profit and Loss Account like other income. This method of treatment of scrap is suitable when the scrap is of very little value and when the market for it is uncertain. This method is known as treatment by neglect.

This method is not suitable for effective control over scrap because detailed records of scrap are not kept and scrap cost is not shown as an element of cost in the cost sheet. Scrap which is not sold and is in stock is valued at nil for balance sheet purposes and thus vitiates the valuation of closing stock.

Accounting of scrap by this method is also inaccurate as there is a time lag between the sales and the production. There is also a possibility that scrap may arise in one period but may be accounted (i.e., sold) in another period and thus distorts the profits of two periods.

2. The sale value of scrap may be deducted from the cost of materials consumed or factory overhead. This method is suitable when several production orders are commenced at a time and it is not possible to find scrap for each other. This method is, however, not effective in controlling scrap arising in different processes, jobs or orders.

When overheads are absorbed on the basis of pre-determined rates, it is more appropriate to credit an estimated allowance for the scrap instead of the amount of actual scrap.

The journal entries for recording the scrap are :

- (i) Dr. Scrap Account (with an estimated allowance) Cr. Factory Overhead Control Account.
- (ii) Dr. Cash/Debtors (Amount realised on sale) Cr. Scrap Account.

Profit or loss on sale of scrap may be transferred to the Profit and Loss Account at the end of the year. When scrap is sold on a day-to-day basis and no stock is maintained, the journal entry is: Dr. Cash/Debtors Account (with realisable value) Cr. Factory Overhead Control Account.

3. The scrap may be assigned a cost if it can be related to the job which yielded the scrap. It will help in giving reasonable credit to the jobs which yielded scraps. This method of treatment is suitable when scraps from the various jobs widely differ in nature.
4. It is possible that scrap arising in one job may be used in another job. In such a case material transfer note for transfer of scrap from one job to another job should be prepared and credit should be given to the job where scrap arises and debit should be given to the job for the amount of scrap transferred to it.

Sometimes, scrap may be returned to stores when some further processing has to be done before that can be utilised for other jobs. Job returning the scrap is credited with the value of the scrap returned to stores.

5. When the actual scrap is in excess of the pre-determined quantity (i.e., normal quantity), the cost of the excess scrap is transferred to Costing Profit and Loss Account after deducting there from the sale proceeds of such excess scrap. The valuation of excess scrap is done in the same way as the valuation of abnormal waste is done.
6. The cost of defective scraps after deduction there-from the sale proceeds of such scrap is transferred to Costing Profit and Loss Account because it is an abnormal loss.

Q.2. What do you mean by spoilage? What are the various types of spoilage?

Ans.

Spoilage

Spoilage refers to production that does not meet with dimensional or quality standards in such a way that it cannot be rectified economically and is junked and sold for a disposal value. So it occurs when goods are so damaged in course of manufacturing process as to become not rectifiable with some additional cost.

Material used in spoiled units can be used again as material by the same or another process or product. Spoilage cost is the difference between the cost incurred upto the point of rejection less salvage value or cost of material used.

Spoilage arises due to sub-standard materials, poor workmanship, faulty tool setting, poor maintenance of machines, bad supervision and careless inspection.

Spoilage should not be confused with scrap. Scrap arises at the initial stages of production operations whereas spoilage takes place more towards the finishing production stages with larger loss of added value to the cost of material used.

Types of spoilage

Spoilage can be of two types :

1. Normal spoilage and
2. Abnormal spoilage.

According to **Charles T. Horngren**, "Normal spoilage is what arises under efficient operating conditions; it is an inherent result of the particular process and is thus uncontrollable in the short run. Abnormal spoilage is spoilage that is not expected to arise under efficient operating

conditions; it is not an inherent part of the selected production process". Abnormal spoilage can be controlled because it arises as a result of inefficient operating conditions.

Normal spoilage is planned spoilage that management is willing to accept and is controllable by higher level of management which determines the nature of products and processes. On the other hand, abnormal spoilage can be controlled by first-line supervision which can exert influence over inefficiency.

Q.3. What are the causes of obsolete inventory?

Ans. Causes of Obsolete Inventory

Obsolete inventory refers to stock that has seen no demand for a prolonged period of time e.g it has not been sold to customers or used in production. This is usually because it has reached the end of its product life cycle. Obsolete stock is often a financial burden to businesses, as it usually has to be sold at a loss or simply written off at the end of a financial year.

As an item reaches the end of its product life cycle its demand will begin to drop off. In retail or wholesaling this means sales will start to fall, in manufacturing, consumption will dry up, and in afterparts servicing, the part will no longer be ordered.

The world of accounting classifies these items as 'slow-moving'. In reality, the pattern of demand could be negative (seeing a continuous decline in demand) or lumpy (with periods of low demand and periods of no demand), before hitting the stage of obsolescence.

The rate at which inventory items can turn obsolete will differ, depending on what the product is and its industry or marketplace. For example, in the high fashion and technology markets, tastes change quickly, with new products continuously replacing older models. Goods with a short shelf-life are also at higher risk of degradation and swiftly reaching obsolescence. Whilst in sectors with long-lasting machinery, for example boilers or cars, service parts may not become obsolete for many years.

Q.4. Discuss the major ways of obsolete and scrap items.

Ans. Major ways of Obsolete and Scrap Items

Following are the major ways of obsolete and scrap items :

- 1. Circulation within the Enterprise :** Among all the disposal programmes, if the surplus can be put to some alternative productive use in the same enterprise is best. There are some additional features of this channel. The common phenomenon of 'Bargain loss' or 'Deal Reduction' is eliminated if the surplus items are utilized in the unit itself. In addition to this, administrative cost is also saved to a great extent by making use of surplus within the unit.
- 2. Return to Supplier :** The next best method is to return the surplus to suppliers if these are not found useful in the enterprise. In majority of cases, suppliers, allow return of surplus materials as a courtesy.

This may be specifically applicable for items/goods/products which do not perish with passage of time and are not declared obsolete very swiftly. Also depending upon the size of order, material's intrinsic value, its degree of contamination etc, even the scrap material is allowed to be returned to the supplier.

This technique is particularly useful for precise materials whose residue quality (which is surplus for the enterprise) is capable of some definite use somewhere else. This method provides reasonable compensation for scrap/surplus items.

3. **Direct Sale to Other Enterprises** : Another alternative with the firm is that it may resort to open market and identify some units/concerns using the same material which is lying as surplus with the concern.

Generally the clients for surplus products/items/materials are mostly competitors, although some users in other spheres of activities cannot be ignored. In such cases sale is termed to be ideal when the production surplus/ scrap is the raw material for the units purchasing it.

This method is a bit costlier in view of the fact that the sincere efforts to identify the alternative potential users of surplus items, to be in touch with them and to persuade them to purchase involves a cost outlay in terms of administrative cost and human efforts.

4. **Sale to Brokers** : The dealers and brokers act as an intermediate agency in order to relieve the enterprise of its surplus accumulation and to acquire the needs for the users.

When the enterprise is not in a position to lay its access to the potential users of the surplus materials directly, the sale of such materials/item to brokers is the best channel for this purpose. Such brokers constitute an excellent outlet for surplus items/material.

Such disposal may be employed by :

- (i) Public Auctions.
- (ii) Annual Contract.
- (iii) Inviting quotations/offers from time to time.
 - (i) **Public Auctions** : Dealers bids for sale of surplus are invited in case of public auctions and the highest bidder is sold the surplus. There is danger of mutual understanding among the bidders in comparison with inviting tenders.
 - (ii) **Annual Contract** : This is the best and cheapest of all the methods. In this method, the enterprise enters into a contract with the carefully selected dealers to take off the entire surplus which may be produced from time to time during the full year according to the terms and conditions negotiated at the time of contract.

Because the surplus will be automatically removed from time to time so this method has a definite and conspicuous benefit that the enterprise is relieved of duty to dispose of surplus material.

There would not be large accumulation of surplus or overcrowding of scrap with all possible pilferage, deterioration or fire hazards. At the same time valuable space of the industry would be saved. In addition to all this the cost and efforts of the unit/concern to search the most suitable dealer/middleman every time are commendably saved.

- (iii) **Inviting Offers/Quotation** : When the enterprise adopts this method of inviting offer at a regular interval say quarterly, monthly or biannually) or as and when it thinks essential; it releases the advertisement in context of sale of surplus or writes to local dealers, on "Where is as is" basis.

On receipt of tenders/offers, a comparative statement is prepared and after study, the most suitable offer is accepted. In this way the surplus is disposed off.

5. **Help of Consultants for Sale of Scrap** : In the management of surplus and scrap the salient aspect is that the buyer is more well versed and informed regarding various items/goods than the seller.

But, at the same time, though revenue generated of scrap and surpluses sales a sizable sum, it is quite negligible if compared with industry's regular product line. In addition to all this the varieties of scrap/surplus are so diversified in grades and types that it is practically very difficult for any enterprise to deal with them.

In such situations scrap consultants can provide help. The services of preliminary survey for various scrap/surplus items and their handling procedures are rendered by them.

The consultants give recommendations in their reports for segregating, handling, grading, weighing and accounting for the industry's accumulated scrap/surplus stock. In this way negotiations with suitable parties provide a ready disposal of the enterprise's surplus. In return, the consultant may be paid fee or commission on sales of surplus.

This procedure, though not viewed in its right perspective, can be a better outlet for surplus disposal.

6. **Sale to Employees of the Enterprise** : Some scrap/surplus items are sometimes sold to employees of the enterprise. If the surplus is the result of technical obsolescence or overstocking due to various reasons but the materials are in new or good condition, these can be disposed of to employees in a satisfactory manner.

On the other hand if the surpluses are not in good or fully satisfactory condition, such sales irrespective of their attractive price could be a source of resentment among employees towards the employer.

Because of such inherent potential limitations, most of the enterprises do not consider this method favourable. Most of the sophisticated industries/plants do not sell used surplus to their employees.

Besides these considerations, especially scrap tools and equipment should not be sold to the employees because such a concession might encourage the workers to make serviceable tools and equipment scrap.

In addition to all this, the dissatisfaction has been commonly observed among employees. It may be added that the process involves high cost of paper work and creates an administrative burden while ensuring complete impartiality in the sale.

7. **Donation to Educational Institutions :** With the growth of technical education in our country, presently Technical Institutions/Universities are actually in need of machine tools and other industrial materials for instructional purposes.

The disposal of surplus in this direction is a rare phenomenon in the industrial field. Though this method does not provide anything for the surplus or scrap items, only a favourable public image in the community can be earned.

This method shows industry's/plant's enlightened concern with its social responsibility. In other words the company has to forgo in respect of such surplus item gifted to educational institution the amount it could earn but avail higher community confidence.

- Q.5. What is meant by surplus material? Explain the reason for disposing surplus material with right management tactics.**

Ans.

Meaning of Surplus

Surplus is the state of an item when the stock is likely to last longer than a 'reasonable' period or when it is no longer required for the job for which it was purchased. Under so many circumstances surplus stock arises like when purchases are made in larger quantities than the actual consumption or when operations are suddenly reduced or produce buffer stock or when there is a change in specification or size or sometimes when wrong items have been purchased when a project is completed. This is when there is a need to dispose of them because they are not used by the companies.

Once they are not required by the companies or organizations, it becomes a total waste for them. They are then subjected to the process of disposal which is the safest way to dump waste. There are so many kinds of materials that come under the surplus categories such as spoiled raw materials, rejected parts or components of the machines, expiry date goods, etc.

It also contains obsolete materials which means the items that get out of date or are mostly superseded by a later design. Surplus materials and scraps are somehow the same because scrap is also a waste that either has no economic value or only the value of its material content recoverable through recycling. For obvious reasons, manufacturers do not intentionally make scrap, it is somehow produced. Nobody wants their goods to turn into scrap or surplus materials because it costs them and there is no greater loss than having possessions or goods which hold no value.

There are so many reasons that generate the scraps or surplus materials such as a change in the product or method, mistakes in the procurement process, planning improperly, absence of efficiency, etc. This is why we need to have a proper management method for the disposal of surplus material. But depending upon the material, the scraps can be recycled back into the production process or sold as a revenue-generating product or simply non-recyclable, and then the company has to -pay the outside contractor to dispose of the waste products. This is how these goods are managed by the organizations or companies when no longer needed or lose their economic value.

Reason for Disposing Surplus Material with Right Management Tactics

It is well known that waste is broadly divided into categories that are hazardous and non-hazardous. Hazardous waste is unsafe to use for commercial, industrial, agricultural, or household purposes whereas non-hazardous waste is indeed safe for use commercially, industrially, or for household purposes. But this fact cannot be denied that most of the surplus materials come under the category of hazardous materials. But those materials which are non-hazardous should be subjected to the process of recycling and we should more often encourage people to recycle these products rather than dumping them.

It will be harmful to recycle the material and then use it for specific purposes. It is very important to either recycle or dispose of the surplus materials carefully and rightly because it will lead to a clean and friendly environment. Disposing of surplus material will not only make the environment clean and safe but also will keep society healthy. It will eliminate the risk of diseases people get and it will also lessen the subjection to botanical danger.

Society is vulnerable to the harmful effects surplus materials can cause, henceforth, it is important to dispose of them for the welfare of the world. The waste or chemicals coming from the industries are subjected to the water which is so harmful not only for human beings but it also affects aquatic life. There need to be proper waste management techniques so that it does not in any way affect nature, human beings, or animal lives. Hence, there is an urgent and greater need of disposing of the surplus material with the right management tactics. ●

UNIT-IV

Inventory Control

SECTION-A (VERY SHORT ANSWER TYPE QUESTIONS)

Q.1. What is meant by inventory control?

Ans. The process of keeping a company's stock levels stable in order to enhance customer satisfaction while minimizing costs is termed as inventory control. This includes inventory tracking and product maintenance. It also entails making decisions to maximize the financial gain from your stock and planning purchases. Inventory control typically entails the following :

1. Using barcode scanners in conjunction with inventory tracking software.
2. Establishing reorder points and forecasting demand.
3. Keeping track of all SKUs and the product data that goes with them.
4. Product bundling and kitting for maximum profit.

Q.2. Discuss the function of supply chain management.

Ans. Supply chain management, manages the supply of raw materials, goods, and services to the juncture in which the company or consumers consume the products. It is an essential component of stock control. Warehouse management is also directly related to stock control. This procedure includes integrating product coding, reorder locations and reports, all product details, inventory lists and counts, and selling or putting away methods. Warehouse management then matches sales and expenses to obtainable inventory.

Q.3. State any four major merits of inventory control.

Ans. The following points emphasize the impact of inventory control :

1. It helps in protecting a company from variability in sales volume.
2. It allows a business to provide an improved experience to its clients.
3. It assists in reducing managerial workload, manpower requirements, or even labor costs.
4. It safeguards output fluctuations.

Q.4. What do you mean by economic order quantity?

Ans. The concept of 'Economic Order Quantity' was first developed by F.N. Harris in the year 1915. E.O.Q. is that size of purchase order which minimises total inventory cost under the assumed conditions of certainty.

Mathematically, E.O.Q. is the size of purchase order at which total ordering cost and total carrying cost are equal to each other and total of both is the minimum. In other words, the E.O.Q. approach is designed to achieve a balance between total ordering cost and total carrying cost.

Q.5. Which type of information or data is necessary for calculating EOQ?

Ans. The following information or data is necessary to calculate the Economic Order Quantity :

1. Annual Usage in units, i.e., Total units to be purchased yearly.
2. Cost of Placing per Order, i.e., Non-carrying cost per order, e.g., clerical costs, stationery, postage, telephone, transport, etc.
3. Annual Carrying cost per unit, i.e., Carrying cost percentage \times Price of one unit (to be applied on the average inventory).

Q.6. Discuss the tabular method of determining EOQ.

Ans. Under this method, EOQ is determined by tabulating different quantities, the carrying cost, ordering cost and the total storage cost associated with these quantities. The EOQ is considered to be that quantity at which the annual total cost is the least or minimum.

Q.7. Explain briefly the graphical method of determining EOQ.

Ans. Under the graphical method, carrying cost and ordering cost are represented by curves with successive values on the graph. As each curve moves in the opposite direction, the intersecting point indicates the EOQ.

Q.8. What is the formula of determining EOQ under algebraic method?

Ans. With the help of algebraic method, the Economic Order Quantity can be determined with the help of the following formula also :

$$EOQ (q_0) = \sqrt{\frac{2 \times R \times C_0}{C_C \text{ or } C_H}}$$

where, R = Annual Usage in units

C_0 = Cost of Placing Order per order

C_C or C_H = Annual Carrying cost per unit, Annual Holding Cost per unit; or carrying cost percentage \times cost of purchase of one unit, i.e., the price per unit.

$$EOQ = \sqrt{\frac{2 \times 1,000 \times 35}{10\% \text{ of } 70}} = \sqrt{\frac{70,000}{7}}$$

$$= \sqrt{10,000} = 100 \text{ units or } 10 \text{ orders.}$$

Q.9. What do you mean by quantity discount?

Ans. Quantity discount may be described as a discount or concession in price which is offered by the supplier in case of purchasing a fixed quantity or more than that. While determining order size, it is a very important question whether the offer of quantity discount should be availed of or not? If there are certain alternate options then which option will be profitable? In this context, first of all E.O.Q. is determined without considering quantity discount and on this basis total inventory cost is also computed. Thereafter, T.I.C. are calculated on the basis of various options of quantity discount. If T.I.C. on the basis of quantity discount is less than that of T.I.C., at E.O.Q. level, the offer of quantity discount may be accepted.

Q.10. Discuss the process of determining reorder point.

Ans. Because different items have different sell-through rates, you must know when to order each item in your inventory separately. You'll need to follow the basic parameters to calculate the ROP for every item :

1. **Lead Time** : The amount of time it takes your vendor (in days) to complete your order.
2. **Safety Supply** : Any extra stock that you keep in your inventory to avoid potential stockouts.
3. **Daily Average Usage** : The number of sales of that particular item on a typical day.

Q.11. Discuss briefly the importance of reorder point.

Ans. Knowing when to order more stock is critical if you own a company. If you order while you still have a lot of stock on the side, the extra stock will pile up, increasing your holding costs. If you order when you have no stock on hand, you will be unable to make a sale for the duration of the order. The longer it takes your seller to supply the items, the more sales you will lose. Setting a reorder point allows you to optimise your inventory, replenish items by measuring stocks at the right time, and meet market demand without stockouts.

SECTION-B (SHORT ANSWER TYPE) QUESTIONS

Q.1. Discuss the concept of inventory control.

Ans. **Concept of Inventory Control**

The pejorative inventory control is being used to cover functions that are separate and are only related in that they both demand the preservation of adequate inventory records as well as receipt and issue correlating to these two functions. It is interpreted as both financial and operational control.

Accounting control of inventory items is associated with the continuous monitoring of material receipt and utilization, and the flow of goods through to the plant to obtain valuable and, ultimately, to customers.

It is also important for the protection of the company's property, which involves raw materials, work-in-progress, and semi-finished products. The goal of inventory operating control is to keep stocks at the optimal level while keeping the company's necessities and financial resources in mind.

Q.2. What are the objectives of inventory control?

Ans. **Objectives of Inventory Control**

Objectives of inventory control are as follows :

1. Keeping inventory storage and carrying cost's low because stocks are kept in thousands of numbers. The cost of restocking and storage is a significant business cost.
2. To supply products, packing materials, intermediate inputs, and so on for the production of finished goods within the time frame specified for completing the order or target.

3. Capitalizing on situations in which there is a decrease in market rates of inventory and better manage inventories in cases of inflation where the prices of measured by the amount, the handling of a store can be done much better and more proficiently.
4. It aims to aims to reduce and efficiently control scraps and non-moving stock items.
5. It also aims to effectively maintain the safety stock and to auto-continue the minimum order amount of the stocks, among many other things.

Q.3. Classify the inventory according to a manufacturing company.

Ans. Inventory in Manufacturing

A manufacturing company's inventory consists primarily of five types :

1. **Production Inventory** : It includes the items that will be used in the final product, such as raw materials, components, and subassemblies purchased from sources other than production inventory.
2. **Inventory of work-in-Process** : This category includes items in semi-finished form or products at various stages of production.
3. **Inventory of Finished Goods** : This includes products that are ready for shipment to users or distributors.
4. **Inventory of MMR** : Maintenance, repairs, and operating supplies, such as spare parts and consumable stores, do not go into the final product but are consumed during the manufacturing process.
5. **Miscellaneous Inventory** : Items other than those discussed above, such as scrap, obsolete, and unsaleable product lines from the main production, office printed materials and other items required by the desk, factory and marketing director and so on.

Q.4. Explain the various advantages of inventory control.

Ans. Importance of Inventory Control

The following points highlight the importance of inventory control :

1. It helps in maintaining a constant flow of raw materials and aided in the continuation of the manufacturing operation.
2. It allows a business to provide an improved experience to its clients.
3. It assists in protecting a company from variability in sales volume.
4. It ensures that the right stock is kept on hand and reduces the risk of loss.
5. It helps in eliminating stock ordering redundancy.
6. It safeguards output fluctuations.
7. It makes good use of working capital by not overstocking.
8. It aids in preventing material loss due to carelessness or pilferage (stealing).
9. It makes standard costing activities easier.
10. It helps to reduce managerial workload, manpower requirements, or even labor costs.

Q.5. Elaborate the factors affecting the size of economic order.

Ans. Factors Affecting the Size of Economic Order

Though the size of economic order is determined with the help of formulae, the following factors are considered in practice to make the order size ideal and optimal :

1. **Economy in Transportation Cost** : In determination of E.O.Q. efforts are made to minimise the transportation cost per unit of material and in this context necessary adjustments are also made. For example, if the rate of freight is ₹ 100 per 50 kg or its fraction and on the basis of formula E.O.Q. comes 142 kg. It may be determined as 150 kg, because there will be no extra freight on additional quantity of 8 kg. Similarly, there may be economy in freight if full truck load is utilised.
2. **Benefits of Facilities offered by Supplier** : Sometimes, the supplier may offer trade discount on order size of particular quantum or above, rebate in transportation cost (F.O.R., etc.) and concession in packing expenses. These factors are also analysed in determining E.O.Q.
3. **Financial Position of the Business** : The financial position of the business also affects the size of E.O.Q. The limitations of financial resources may reduce the order size, whereas the facility of financial resources may motivate to increase the size of order. If financial resources are to be arranged from external sources than the cost of borrowing is compared with the savings of large-sized order.
4. **Future Availability of Materials** : At the time of determination of order size it is also considered that what is expected about future availability of materials. If there are expectations of short-supply or increased prices in future, there will be incentive to increase the size of order. On the contrary, if there are chances of increased supply or decreased prices, the size may be curtailed.

Q.6. XYZ Company purchases 1,000 steel parts @ ₹ 70 per part, during the year. The costs per Purchase Order, i.e., cost of placing an order works out to be ₹ 35. This includes the non-carrying costs, e.g., clerical costs, postage, stationery, Rly. freight, etc.

The Carrying Cost per unit during the year is ₹ 7, calculated as follows :

	₹
Return on investment @ 8% on 70	5.60
Rent, taxes, insurance, handling charges, etc.	<u>1.40</u>
	<u>7.00</u>

The carrying cost works out to be 10% on inventory price per unit.

Calculate the most economical order size, i.e., E.O.Q. from the above information.

Sol. The most economical order size would be that where the carrying cost is equal to the non-carrying cost, as depicted below :

Annual Usage : 1,000 Units

No. of orders per year	Units per order, i.e., order size	Cost of placing order, i.e., ₹ 35 each	Average inventory units ($B \div 2$)	Carrying cost ₹ 7 per unit of D	Total Cost (C + E)
A	B	C	D	E	F
		₹		₹	
1	1,000	35	500	3,500	3,535
2	500	70	250	1,750	1,820
4	250	140	125	875	1,015
8	125	280	62.5	437.50	717.50
10	100	350	50	350	700
12	83	420	41.5	290.50	710.50
20	50	700	25	175	875
50	20	1,750	10	70	1,820

From the above table, it becomes clear that the most economic order size is 100 units, i.e., 10 orders should be placed of 100 units in each lot. At this stage the total cost of ₹ 700 is the minimum, as the Carrying costs and the Non-carrying costs are equal, i.e., ₹ 350 each. If more or less units than 100 are ordered in each lot, the total cost in each such case would be high.

Q.7. From the following information, find out the Economic Order Quantity and the number of orders placed in the year :

Annual Consumption	4,000 units
Buying Cost per order	₹ 60
Price per unit	₹ 10
Storage and Carrying Cost as a percentage of Average Inventory	₹ 3 per unit

Sol.
$$\text{E.O.Q. } (q_0) = \sqrt{\frac{2 \times R \times C_0}{C_c}} = \sqrt{\frac{2 \times 4,000 \times 60}{3}}$$

$$= \sqrt{1,60,000} = 400 \text{ units}$$

$$\text{No. of order in a year} = \frac{R}{q_0} = \frac{4,000}{400} = 10 \text{ order}$$

Q.8. In a manufacturing company. The annual demand for an item is 3,200 units. The unit cost is ₹ 6 and the inventory carrying cost is 25% per annum. If the cost of an order is ₹ 150, determine : (i) E.O.Q., (ii) Number of order per year, (iii) Time between two consecutive orders.

Sol. Given : $R = 3,200$ units, $P = ₹ 6$, $C_c = \frac{6 \times 25}{100} = ₹ 1.50$, $C_0 = ₹ 150$

$$(i) \text{ E.O.Q. } (q_0) = \sqrt{\frac{2 \times R \times C_0}{C_c}} = \sqrt{\frac{2 \times 3,200 \times 150}{1.50}} = 800 \text{ units.}$$

$$(ii) \text{ Number of order per year} = \frac{R}{q_0} = \frac{3,200}{800} = 4.$$

$$(iii) \text{ Time between two consecutive order} = \frac{\text{No. of months in a year}}{\text{No. of order per year}} = \frac{12}{4} = 3 \text{ months.}$$

Q.9. The Sangam Pump Company uses about 75,000 valves per year and the usage is fairly constant at 6,250 per month. The valves cost ₹ 1.50 per unit when bought in quantities and the carrying cost is estimated to be 20% of average inventory investment on the annual basis. The cost to place an order and process the delivery is ₹ 18. It takes 45 days to receive delivery from the date of an order and a safety stock of 3,250 valves is desired.

You are required to determine :

(i) the most economical order quantity and frequency of orders, (ii) the order point, (iii) the most economical order quantity if the valves cost ₹ 4.50 each instead of ₹ 1.50 each.

$$\text{Sol. (i) E.O.Q. } (q_0) = \sqrt{\frac{2 \times R \times C_0}{C_c}}$$

$$\begin{aligned} \text{So, E.O.Q.} &= \sqrt{\frac{2 \times 75,000 \times 18}{1.50 \times 20\%}} \\ &= \sqrt{\frac{27,00,000}{0.30}} = \sqrt{90,00,000} \\ &= 3,000 \text{ units, or 25 order per year} \end{aligned}$$

$$\begin{aligned} (ii) \text{ Order Point} &= \text{Safety Stock} + (\text{Average Rate of Consumption} \times \text{Lead Time}) \\ &= 3,250 + (6,250 \text{ units p.m.} \times 1.5 \text{ months}) \\ &= 3,250 + 9,375 = 12,625 \text{ units} \end{aligned}$$

(iii) E.O.Q. when cost per valve is ₹ 4.50

$$\begin{aligned} \text{E.O.Q.} &= \sqrt{\frac{2 \times 75,000 \times 18}{4.50 \times 20\%}} \\ &= \sqrt{\frac{27,00,000}{0.90}} = \sqrt{30,00,000} \end{aligned}$$

$$= 1,733 \text{ units approx., or 43 orders approx. per year}$$

Q.10. How can you calculate total inventory cost?

Ans. Calculation of Total Inventory Cost

Total Inventory Cost (T.I.C.) consists of sum of the following three costs :

- 1. Purchase Price of Material or Material Cost :** It is computed by multiplying the annual requirement of material (R) with rate of material per unit (P), i.e.,

$$\text{Material Cost} = R \times P$$

2. **Total Ordering Cost** : This cost is also known as acquisition cost. It is equal to the product of number of order $\left(\frac{R}{q_0}\right)$ and cost per order C_0 , i.e.,

$$\text{Total Ordering Cost} = \frac{R}{q_0} \times C_H$$

3. **Total Holding Cost** : This is also known as carrying cost or possession cost. It is obtained by multiplication of average inventory $\left(\frac{q_0}{2}\right)$ with annual holding cost per unit (C_H) , i.e.,

$$\text{Total Holding Cost} = \frac{q_0}{2} \times C_H$$

In brief, T.I.C. is calculated as follows :

$$\begin{aligned} \text{T.I.C.} &= \text{Material Cost} + \text{Total Ordering Cost} + \text{Total Holding Cost} \\ &= (R \times P) + \left(\frac{R}{q_0} \times C_0\right) + \left(\frac{q_0}{2} \times C_H\right) \end{aligned}$$

Q.11. What do you mean by quantity discount? Discuss.

Ans.

Quantity Discount or Price Break

Quantity discount may be discussed as a discount or concession in price which is offered by the supplier in case of purchasing a fixed quantity or more than that. While determining order size, it is a very important question whether the offer of quantity discount should be availed of or not? If there are certain alternate options then which option will be profitable? In this context, first of all E.O.Q. is determined without considering quantity discount and on this basis total inventory cost is also computed. Thereafter, T.I.C. are calculated on the basis of various options of quantity discount. If T.I.C. on the basis of quantity discount is less than that of T.I.C. at E.O.Q. level, the offer of quantity discount may be accepted.

While calculating T.I.C. under various options no change takes place in annual requirement of material and ordering cost per order (C_0). However, price per unit (P) and size of order (q_0) go on changing. If holding cost is in terms of rupees per unit, there will be no change in it (C_H). However, if it is based on percentage, it also changes.

- Q.12. Arnav manufacturing company buys and uses a component for production at ₹ 10 per unit. Annual requirement is 2,000 units. Carrying cost is 10% p.a. of inventory and ordering cost is ₹ 40 per order. The purchase manager proposes that as the ordering cost is very high it is profitable to place a single order for the entire annual requirement. He also says that if we order 2,000 units at one time we can get 2% discount from the supplier. Evaluate the proposal and make your recommendation.**

Sol.
$$\begin{aligned} \text{E.O.Q.} &= \sqrt{\frac{2 \times R \times C_0}{C_c}} \\ &= \sqrt{\frac{2 \times 2,000 \times 40}{10 \times 10\%}} \\ &= \sqrt{\frac{1,60,000}{1}} = 400 \text{ units per order or 5 orders in a year.} \end{aligned}$$

(A) Total Inventory Cost on the basis of E.O.Q. :

(i) Material Cost = $R \times P = 2,000 \times 10 =$	₹ 20,000
(ii) Total Order Cost = $\frac{R}{q_0} \times C_0 = \frac{2,000}{400} \times 40 =$	200
(iii) Total Carrying Cost = $\frac{q_0}{2} \times C_H = \frac{400}{2} \times 1 =$	200
	20,400

(B) Total Inventory Cost, if the order is placed for 2,000 units in one lot and 2% discount is availed :

(i) Material Cost = $R \times P = 2,000 \times 9.80 =$	19,600
(ii) Total Order Cost = One order only =	40
(iii) Total Carrying Cost = $\frac{q_0}{2} \times C_H = \frac{2,000}{2} \times 0.98 =$	980
	20,620

Q.13. Material A is supplied by M/s. Arnav Ltd. on regular basis at the rate of ₹ 40 per unit. The annual demand of the factory is 6,400 units. The cost of order entry, billing and inward inspections comes out to be ₹ 200 each order, while cost of carrying one unit of inventory in store is ₹ 4 per year. The factory is presently following the policy of E.O.Q. buying. M/s. Arnav Ltd. offers 1% discount in case the factory purchases the entire annual demand in one lot. Should the factory accept the offer or not?

Sol. Given : $R = 6,400$ units, $P = ₹ 40$, $C_0 = ₹ 200$, $C_H = ₹ 4$

$$\begin{aligned} \text{E.O.Q. } (q_0) &= \sqrt{\frac{2 \times R \times C_0}{C_H}} = \sqrt{\frac{2 \times 6,400 \times 200}{4}} \\ &= \sqrt{6,40,000} = 800 \text{ units} \end{aligned}$$

T.I.C., if policy of E.O.Q. is adopted :

(a) Material Cost = $R \times P = 6,400 \times 40 =$	₹ 2,56,000
(b) Total Ordering Cost = $\frac{R}{q_0} \times C_0 = \frac{6,400}{800} \times 200 =$	1,600

$$(c) \text{ Total Carrying Cost} = \frac{q_0}{2} \times C_H = \frac{800}{2} \times 4 = 1,600$$

 2,59,200

T.I.C., if the factory purchases the entire demand in one lot :

$$(a) \text{ Material Cost} = R \times P = 6,400 \times 39.60 = 2,53,440$$

$$(b) \text{ Total Ordering Cost (only one order)} = 200$$

$$(c) \text{ Total Carrying Cost} = \frac{q_0}{2} \times C_H = \frac{6,400}{2} \times 4 = 12,800$$

 2,66,440

Q.14. What do you mean by reorder point? Discuss the importance of reorder point.

Ans.

Meaning of Reorder Point

A reorder point (ROP) is the point at which your inventory must be replenished. In other words, it tells you when to purchase so you don't run out of supplies.

The Importance of Reorder Point

Knowing when to order more stock is critical if you own a company. If you order while you still have a lot of stock on the side, the extra stock will pile up, increasing your holding costs. If you order when you have no stock on hand, you will be unable to make a sale for the duration of the order. The longer it takes your seller to supply the items, the more sales you will lose. Setting a reorder point allows you to optimise your inventory, replenish items by measuring stocks at the right time, and meet market demand without stockouts.

Because different items have different sell-through rates, you must know when to order each item in your inventory separately. You'll need to follow the basic parameters to calculate the ROP for every item :

1. **Lead Time :** The amount of time it takes your vendor (in days) to complete your order.
2. **Safety Supply :** Any extra stock that you keep in your inventory to avoid potential stockouts.
3. **Daily Average Usage :** The number of sales of that particular item on a typical day.

Q.15. Discuss the need and process of fixing stock levels.

Ans.

Need and Process of Fixing of Stock Levels

Fixing stock levels is necessary to avoid increased costs owing to increasing inventory levels and to avoid loss of sales or power generation stoppage due to low inventory levels. As a result, efforts should be made to keep the inventory level within the upper and lower limits specified. The maximum and minimum share price levels are determined after taking into account the following factors :

1. The availability of sufficient storage space. The lead time involved, i.e. the time required to receive the goods ordered.
2. Working capital is available to meet routine expenses.

3. Capacity utilization rate on average.
4. Inventory storage and general liability costs.
5. Inventory wastage and deterioration are risks.
6. Prince economy, such as purchasing in bulk during a period of low prices.
7. Reorder the level.

Formula :

1. Maximum Level = (ROL + ROQ) - (Minimum Usage × Minimum Reorder Period)
or Maximum Level = Safety Stock + EOQ
2. Minimum Level = Re-order level - (Normal Usage Rate × Normal Re-order Period).
= Re-order Level - (Normal Usage × Average Re-order Period)
3. Average stock level = $\frac{(\text{Maximum level} + \text{Minimum level})}{2}$
or Average stock level = (Minimum level + $\frac{1}{2}$ Re-order Quantity)

Where, ROL = Re-Order Level.

ROQ = Re-Order Quantity

ROQ is also known as EOQ (Economic Order Quantity).

Q.16. Elaborate the ABC analysis technique of inventory control.**Ans.****A.B.C. Analysis Technique**

The full name of A.B.C. technique is 'Always Best Control'. In this technique, the items are divided into three categories as follows :

Category A : High consumption value items,

Category B : Moderate consumption value items,

Category C : Low consumption value items.

The policy of control is followed in accordance with above levels of consumption value. It means very strict control on items of category 'A', moderate control on items of category 'B' and general control on items of category 'C'. This technique is based on the general principle of management that "Take care of the Pound, the Penny will take care of itself."

Though the classification of inventory into three categories is determined on the basis of policy adopted by the firm, the general suggested pattern for this purpose is as follows :

Category	% of Units or Quantity of Material	% of Total Usage Value of Material
A	5% to 10%	70% to 75%
B	20% to 25%	15% to 20%
C	70% to 75%	5% to 10%

The following steps are taken in ABC analysis technique :

1. First of all, list of all items of inventory is obtained along with information on their unit cost and the periodic, usually annual requirement.

2. The annual usage value of each item is determined by multiplying unit cost with number of units required and on the basis of respective usage values, the items are ranked in descending order.
3. Each item is categorised as 'A', 'B' or 'C' on the basis of usage value and as per pre-determined policy for this purpose.
4. Finally, the percentages of units and usage value in each category are calculated.

Q.17. What do you know about VED analysis technique of inventory control?
Ans. V.E.D. Analysis Technique

This technique is generally used in control of spare parts and components. Its full name is 'Vital, Essential and Desirable' Analysis. In this analysis spare parts are divided into following three categories :

1. **Vital** : Those parts are placed in this category which are vital, i.e, without which the production process would come to a standstill. Arrangement is made to maintain continuous necessary stock of such parts so that production process may go on smoothly.
2. **Essential** : This category covers those parts which are essential for the efficiency of production system. It may be noted that although the system would not altogether stop for want of these parts, yet their non-availability might cause temporary losses in or dislocation of production.
3. **Desirable** : It stands for such category of parts which are not vital and essential for production system and non-availability of these parts do not immediately causes a loss of production.

Q.18. State the following techniques of inventory control :

1. **HML analysis technique.**
2. **FSN analysis technique.**
3. **SDE analysis technique.**
4. **SOS analysis technique.**

Ans. The detailed techniques of inventory control are as follows :

1. **H.M.L. Analysis Technique** : This technique is similar to the ABC analysis with the difference that in ABC technique inventory is classified on the basis of total usage value, whereas in HML analysis, the items are classified on the basis of unit cost. 'H' stands for High, 'M' for Medium and 'L' for Low unit cost.
2. **F.S.N. Analysis Technique** : This analysis is based on the consumption pattern of inventory. The items are classified into three categories : F-Fast-moving, S-Slow-moving and N-Non-moving. This speed classification helps in the arrangement of stocks in the stores and in determining the distribution and handling patterns.
3. **S.D.E. Analysis Technique** : This technique is used on the basis of availability of various items of inventory. In this analysis, 'S' stands for scarce items which are in short supply, 'D' stands for difficult items which are available but cannot be procured easily while 'E' represents easily available items from local market.

4. **S-O-S Analysis Technique** : This technique is used when proper strategy of material's purchased is to be determined. In this analysis, items are classified into two categories :
(a) Seasonal items and (b) Off-Seasonal items.

Q.19. From the following information, calculate the Inventory Turnover Ratio for each year :

	2020-21 ₹	2021-22 ₹
Opening Stock	20,000	32,500
Purchases during the year	1,27,500	1,70,000
Sales during the year	1,50,000	2,00,000
Closing Stock	32,500	25,000

Sol. Inventory Turnover Ratio = $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

Year 2020-21 : Cost of Goods Sold = $20,000 + 1,27,500 - 32,500$
= ₹1,15,000

Average Stock = $\frac{20,000 + 32,500}{2}$ = ₹26,250

Inventory Turnover Ratio = $\frac{1,15,000}{26,250}$ = 4.38 times

Year 2021-22 : Cost of Goods Sold = $32,500 + 1,70,000 - 25,000$
= ₹1,77,500

Average Stock = $\frac{32,500 + 25,000}{2}$ = ₹28,750

Inventory Turnover Ratio = $\frac{1,77,500}{28,750}$ = 6.17 times

Q.20. Compute Inventory Turnover Ratio from the following data :

(a) Sales ₹2,00,000; Gross Loss Ratio 25%, Average Stock ₹50,000.

(b) Cash Sales ₹3,00,000; Credit Sales ₹1,10,000; Returns Inward ₹35,000;
Opening Stock ₹27,000; Closing Stock ₹33,000; Gross Profit Ratio 20%.

Ans. (a) Sales = ₹2,00,000

Gross Loss = 25% of Sales ₹2,00,000
= ₹50,000

Cost of Goods Sold = Sales + Loss, if loss is given
= 2,00,000 + 50,000 = ₹2,50,000

Inventory Turnover Ratio = $\frac{\text{Cost of Good Sold}}{\text{Average Stock}}$

= $\frac{2,50,000}{50,000}$ = 5 times

$$\begin{aligned}
 \text{(b) Net Sales} &= 3,00,000 + 1,10,000 - 35,000 \\
 &= ₹ 3,75,000 \\
 \text{Gross Profit} &= \frac{3,75,000 \times 20}{100} = ₹ 75,000 \\
 \text{Cost of Goods Sold} &= 3,75,000 - 75,000 = ₹ 3,00,000 \\
 \text{Average Stock} &= \frac{27,000 + 33,000}{2} = ₹ 30,000 \\
 \text{Inventory Turnover Ratio} &= \frac{3,00,000}{30,000} = 10 \text{ times}
 \end{aligned}$$

Q.21. The annual sales of a business are ₹ 3,00,000; Cost of Sales ₹ 2,00,000; Administration and Selling Expenses ₹ 50,000 and Average stock ₹ 80,000.

- What is present rate of Inventory Turnover?**
- If sales are increased to ₹ 4,00,000; Cost of Sales ₹ 2,70,000; Average stock remaining the same, what would be the new rate of Inventory Turnover?**
- If sales remain at ₹ 2,50,000; Cost of Sales ₹ 1,80,000 and average stock can be reduced to ₹ 45,000; what would be the new rate of Inventory Turnover?**

Sol.
$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$$

(a)
$$\text{Present Rate of Inventory Turnover} = \frac{2,00,000}{80,000} = 2.5 \text{ times}$$

(b)
$$\text{New Rate of Inventory Turnover} = \frac{2,70,000}{80,000} = 3.375 \text{ times}$$

(c)
$$\text{New Rate of Inventory Turnover} = \frac{1,80,000}{45,000} = 4 \text{ times}$$

Q.22. The average consumption of coal in a factory is 5 ton per day, the maximum consumption per day is 9 ton, Minimum level is 45 ton and Economic Order Quantity is 208 ton. It is estimated that the supply would take eight to ten days. The emergent supply time is two days. Find out different levels of inventory.

Sol.
$$\begin{aligned} \text{Order Point or Order Level} &= \text{Maximum Rate of Usage} \times \text{Maximum Lead Time} \\ &= 9 \text{ ton} \times 10 \text{ days} = 90 \text{ ton} \end{aligned}$$

or
$$\begin{aligned} &= \text{Minimum stock} + (\text{Average Usage Rate} \times \text{Average Lead Time}) \\ &= 45 \text{ ton} + (5 \text{ ton} \times 9 \text{ days}) = 90 \text{ ton} \end{aligned}$$

$$\begin{aligned} \text{Minimum Level or Safety Stock} &= \text{Order Point} - (\text{Average Usage Rate} \times \text{Average Lead Time}) \\ &= 90 \text{ ton} - (5 \text{ ton} \times 9 \text{ days}) = 45 \text{ ton} \end{aligned}$$

$$\begin{aligned} \text{Maximum Level} &= \text{Order Point} - (\text{Minimum Usage Rate} \times \text{Minimum Lead Time}) \\ &\quad + \text{E.O.Q. or Re-order Quantity} \\ &= 90 \text{ ton} - (1 \text{ ton} \times 8 \text{ days}) + 208 \text{ ton} = 290 \text{ ton} \end{aligned}$$

$$\begin{aligned}\text{Average Stock Level} &= \text{Minimum Level} + 1/2 \text{ of Re-order quantity} \\ &= 45 \text{ ton} + 1/2 \times 208 \text{ ton} = 149 \text{ ton.}\end{aligned}$$

$$\begin{aligned}\text{Danger Level} &= (\text{Average Usage Rate} \times \text{Emergent Lead Time}) \\ &= 5 \text{ ton} \times 2 \text{ days} = 10 \text{ ton.}\end{aligned}$$

Q.23. Fix the Maximum and Minimum limits, Ordering and Danger levels from the following information :

1. Average daily requirement-12 units.
2. Usual time to obtain supply-2 weeks, i.e., 12 working days.
3. Maximum requirement in the month of 4 weeks-400 units.
4. Minimum requirement in this period not to fall below 200 units.
5. Economic order size be assumed to be 20 doz.
6. Time sufficient for emergent supply-2 days.

Sol. 1. Ordering Level = Maximum rate of consumption during the time of get supplies

$$= \frac{400 \times 2}{4} = 200 \text{ units}$$

2. Minimum Limit = Ordering Level – (Average rate of consumption × Time to get supplies)

$$= 200 - (12 \times 12) = 56 \text{ units}$$

3. Maximum Limit = (Ordering Level – Consumption during the time required to get supplies at minimum rate) + Economic Order size

$$= \text{Usual time for supply is 2 weeks. Minimum requirements during 4 weeks is 200. Minimum requirement during the supply time will be 100.}$$

Now by applying the formula = $(200 - 100) + 20 \text{ doz} = 340 \text{ units}$.

4. Danger Level = 2 days normal consumption = $2 \times 12 = 24 \text{ units}$.

Q.24. The particulars of X and Y materials are as follows :

Normal Usage	10 units per week each
Minimum usage	5 units per week each
Maximum Usage	15 units per week each
Re-order Quantity	X = 60 units Y = 100 units
Re-order Period	X = 3 to 5 weeks Y = 2 to 4 weeks.

Calculate for each material :

- (a) Re-order Level; (b) Minimum Level; (c) Maximum Level and (d) Average Stock Level.**

Ans. (a) Reorder Level = Maximum Rate of Usage \times Maximum Lead Time

$$\text{Material X} = 15 \times 5 = 75 \text{ units}$$

$$\text{Material Y} = 15 \times 4 = 60 \text{ units}$$

(b) Minimum Level = Reorder Level – (Normal Usage \times Average Lead Time)

$$\text{Material X} = 75 - (10 \times 4) = 35 \text{ units}$$

$$\text{Material Y} = 60 - (10 \times 3) = 30 \text{ units}$$

$$\text{Average Lead Time X} = \frac{3+5}{2} = 4; \text{Y} = \frac{2+4}{2} = 3$$

(c) Maximum Level = Re-order Level – (Minimum Usage Rate \times Minimum Lead Time) + E.O.Q. or Reorder Quantity

$$\text{Material X} = 75 - (5 \times 3) + 60 = 120 \text{ units}$$

$$\text{Material Y} = 60 - (5 \times 2) + 100 = 150 \text{ units}$$

(d) Average Stock = Minimum Level + $1/2$ of Re-order Quantity Level

$$\text{Material X} = 35 + 1/2 \times 60 = 65 \text{ units}$$

$$\text{Material Y} = 30 + 1/2 \times 100 = 80 \text{ units}$$

Q.25. A company manufactures 5,000 units of a product per month. The cost of placing an order is ₹ 100. The purchase price of the raw material is ₹ 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) Re-order Quantity, (ii) Re-order Level, (iii) Maximum Level, (iv) Minimum Level (v) Average Stock Level.

Ans. Annual Requirement = 275 kg \times 52 weeks = 14,300 kg.

$$\text{Annual Carrying Cost} = 10 \times \frac{20}{100} = ₹ 2$$

$$\begin{aligned} \text{(i) Re-order Quantity} &= \sqrt{\frac{2 \times R \times C_0}{C_H}} \\ &= \sqrt{\frac{2 \times 14,300 \times 100}{100}} = 1196 \text{ kg.} \end{aligned}$$

(ii) Re-order Level = Maximum Usage \times Maximum Re-order Period
= 450 \times 8 = 3,600 kg.

(iii) Maximum Level = Re-order Level + Re-order Quantity – (Minimum Usage \times Minimum Re-order Period)
= 3,600 + 1,196 – (100 \times 4) = 4,396 kg.

(iv) Minimum Level = Re-order Level – (Normal usage \times Normal Re-order Period)
= 3,600 – (275 \times 6) = 1,950 kg.

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

$$= \frac{4,396 + 1,950}{2} = 3,173 \text{ kg}$$

or

$$= \text{Minimum Level} + \frac{1}{2} \text{Re-order Quantity}$$

$$= 1,950 + \frac{1}{2} \times 1,196 = 2,548 \text{ kg.}$$

SECTION-C (LONG ANSWER TYPE) QUESTIONS

Q.1. State the major importances of inventory control.

Ans. Importance of Inventory Control

Following are the major importances of inventory control :

1. **Keeps a Check against Fluctuations in Demand** : Many times, a product's forecast is inaccurate. There is always a subtle distinction between forecasted and actual demand. However, there is sometimes a great disparity between the demand forecast and the market interest.
As a result, there is still the possibility of fluctuations in an object's demand. If there are enough items in inventory, these fluctuations can be adjusted. As a result, proper stock control safeguards the corporation against fluctuations in demand.
2. **Helps in Improving Customer Service** : If the business holds a suitable inventory of raw materials, it will be determined to finalize its production on time. As a result, it can deliver fully completed goods to the customers on time.
In the same manner, in case the company retains a sufficient finished goods inventory goods, it will be able to meet any supplementary customers' needs. As a result, inventory control assists the company in delivering goods at the appropriate time as requested by the customers.
3. **Continuity of Production Operations** : Proper inventory control aids in the continuity of production operations. This is due to the fact that it ensures a constant flow of raw materials. As a result, there are no shortages of raw materials needed for the manufacturing process.
4. **Helps in Reducing the Possibility of Loss** : Proper inventory control helps to reduce the risk of loss due to obsolescence (outdated) or deterioration of items. This is due to the fact that it regularly checks all of the items.
Furthermore, it sells all slow-moving items on time and at market prices. It only keeps the correct stock on hand at all times. As a result, the chances of any item becoming obsolete are reduced.
5. **Helps in Reducing Administrative Workload** : Proper inventory control aids in reducing the administrative homework load involved in buying, verification,

warehousing, and so on. This reduces the need for manpower while also lowering employment costs.

6. **Acts as a Guard against Output Fluctuations :** Inventory control efforts to close the gap between planned and actual production. In some cases, the release plan cannot be followed due to :
 - (i) Machine breakdowns, troubles with material supply, labor strikes, losses due to power outages, and so on.
 - (ii) In such cases, inventories held in stock can bridge the gap between planned and actual production.
7. **Making the Best use of Working Capital :** Proper inventory management aids in the efficient use of working capital. Inventory control aids in the repairs of satisfactory stocks of materials, elements, and so on. It is not necessary to overstock. As a result, working capital will not be confounded by excess stock.
8. **Prevents Material Loss :** Inventory control aids in the prevention of material loss caused by carelessness or pilferage (stealing).

If there is no inventory level control, there is a greater risk of employee gross negligence and pilferage, particularly in the retail location department.
9. **Aids in Cost Accounting Activities :** Inventory control makes cost accounting things easy. This is due to the fact that inventory control allows for the distribution of material costs for products, divisions, or other able to operate accounts.
10. **Helps in Preventing Ordering Duplicates :** Inventory control prevents stock ordering from being duplicated. This is accomplished by keeping separate purchasers. This department will handle all acquiring for the entire organization. Purchasing is not permitted in any other dept. As a result, there will be no stock ordering duplication.

Q.2. What are the essentials of a good inventory control system?

Ans. Essentials of a Good Inventory Control System

The essentials of a good inventory control system are as follows :

1. **Examining Delivering the Highest Quality :** An untrustworthy vendor can wreak havoc on your inventory. If you have a supplier who is frequently late with deliveries or under delivers on orders, it's time to take action. Discuss the issues with your provider and determine the source of the problem. Start preparing to switch partners or deal with erratic stock levels and the possibility of having to run out of products.
2. **Keep Track of all Product Information :** Maintain a record of the product information you have for the products in your inventory. SKUs, barcode data, suppliers, homelands, and serial numbers should all be included. You should also be finding possible the cost of each item over time so that you are aware of issues that may influence the cost, such as lack of supply and seasonality.
3. **Examining your Inventory :** Some businesses conduct a full count once a year. Others conduct monthly, weekly, or even daily spot checks on their most popular items. Many

people do all of the above. Regardless of how you do it, develop a habit of physically counting your inventory at regular intervals to maintain it corresponds to what you believe you have.

4. **Sort your Inventory by Priority** : Categorizing your inventory into categories can make you realize which items you need to order more of and more often, and which are important for the business but maybe more expensive and move more slowly. Experts recommend categorizing your stockpile into A, B, and C groups. Items in the A category are higher-priced items that you require fewer of. Items in the C category are low-cost items with a high turnover of inventory. What's left is the B group, which contains aspects that are moderately priced and move out the gate more gradually than C items but faster than A items.
5. **Using the 80/20 Inventory Rule** : As a general rule, 20% of your stock accounts for 80% of your profits. Prioritize inventory control for these items. Recognize and closely monitor the sales entire life cycle of these items, including how several more you sell a week or a month. These are the goods that bring in the most money; don't skimp on trying to manage them.
6. **You Must Order Restocks Yourself** : Some vendors will take care of inventory and reorders for you. On the surface, this appears to be a positive development. Allowing someone else to manage the process for at least a few of your items saves you staff and time. However, keep in mind that your vendors do not share your priorities. They want to move their inventory, whereas you want to stock the most profitable items for your company. Take the time to go through your inventory and order restocks on all of your items.
7. **To Keep Track of Sales** : Again, this appears to be a no-brainer, but it extends beyond simply totaling sales at the end of the day. You should know what items are sold and how many are sold on a daily basis, and you should keep inventory totals up to date. However, you will also need to analyze this data. Do you know when certain items sell out or drop in price? Is it a seasonal thing? Is there a particular day of the week when you sell specific items? Is it true that certain items almost always sell together? Understanding not only your sales totals but also the big picture of how things look is critical for keeping inventory under control.
8. **Maintaining Consistency in how you Receive Stock** : It may seem obvious to ensure that incoming inventory is processed, but do you have a standard procedure that everyone follows? Or does each employee who receives and processes incoming stock do it in a different way? Small differences in how new inventory is received may leave you scratching your head at the end of the month or year, wondering why your numbers don't match your POs. Ensure that all staff who receive stock do so in the same manner, that all boxes are verified received and unpacked together, that they are accurately counted, and that they are checked for accuracy.

Q.3. Discuss the concept of economic order quantity (EOQ) as a modern technique of inventory control. Also state the factors determining EOQ.

Ans. Meaning of Economic Order Quantity (EOQ)

An important objective of inventory control is to minimise the cost of inventory and for this purpose various aspects and levels of inventory are considered. One of these aspects is to determine the size of order so that total inventory cost may be minimum and if there is any offer of discount, etc., by the supplier, that should be exploited properly. In this context an important concept is 'Economic Order Quantity' (E.O.Q.), which is also known as 'Economic Lot Size'.

The concept of 'Economic Order Quantity' was first developed by F.N. Harris in the year 1915. E.O.Q. is that size of purchase order which minimises total inventory cost under the assumed conditions of certainty.

Mathematically, E.O.Q. is the size of purchase order at which total ordering cost and total carrying cost are equal to each other and total of both is the minimum. In other words, the E.O.Q. approach is designed to achieve a balance between total ordering cost and total carrying cost.

In fact, E.O.Q. can also be called as an "ideal" or 'optimal' size of orders in which it is kept in consideration that ordering and carrying cost of inventory should be minimum. In this context, whereas on the one hand the size of order is increased in order to avail the benefits of trade discount and economy of transportation, at the same time the size is not allowed to increase unnecessarily so as to avoid undue increase in the cost of insurance, interest, storage, etc.

Determination of Economic Order Quantity (E.O.Q.)

It has been said that the placing of order of that quantity would be economic where the Carrying cost is equal to or almost equal to the Non carrying cost.

The following information or data is necessary to calculate the Economic Order Quantity :

1. Annual Usage in units, *i.e.*, total units to be purchased yearly.
2. Cost of Placing per Order, *i.e.*, non-carrying cost per order, e.g., clerical costs, stationery, postage, telephone, transport, etc.
3. Annual Carrying cost per unit, *i.e.*, carrying cost percentage x Price of one unit (to be applied on the average inventory).

Q.4. Aman & Sons Company buys 8,000 units of an item for its annual requirements. Each unit costs ₹ 10. The ordering cost per order is ₹ 30 and the carrying cost is 7.5% of the average inventory per year.

(i) Determine the economic order quantity and the total inventory cost.

(ii) Should the company accept an offer of 2% discount in price on 4 bigger orders of quarterly requirements of the material?

Sol. Given : $R = 8,000$ units, $C_0 = ₹ 30$, $C_H = 7.5\%$ of P .

$$P = ₹ 10 \text{ (when order size is less than 2,000 units)}$$

and $= ₹ 10 - 2\% = ₹ 9.80$ (when order size is 2,000 units).

(i) Economic Order Quantity :

$$\begin{aligned} \text{E.O.Q. } (q_0) &= \sqrt{\frac{2 \times R \times C_0}{C_H}} \\ &= \sqrt{\frac{2 \times 8,000 \times 30}{10 \times 7.5\%}} \\ &= \sqrt{\frac{4,80,000}{0.75}} = \sqrt{6,40,000} = 800 \text{ units} \end{aligned}$$

T.I.C. on the basis of E.O.Q. :

	₹
(i) Material Cost = $R \times P = 8,000 \times 10 =$	80,000
(ii) Total Ordering Cost = $\frac{R}{q_0} \times C_0 = \frac{8,000}{800} \times 30 =$	300
(iii) Total Carrying Cost = $\frac{q_0}{2} \times C_H = \frac{800}{2} \times 0.75 =$	300
	80,600

(ii) T.I.C. on the basis of 4 quarterly orders at 2% discount :

$$\text{Quarterly order size } (q_0) = \frac{8,000}{4} = 2,000 \text{ units}$$

	₹
(i) Material Cost = $R \times P = 8,000 \times 9.80 =$	78,400
(ii) Total Ordering Cost = $\frac{R}{q_0} \times C_0 = \frac{8,000}{2,000} \times 30 =$	120
(iii) Total Carrying Cost = $\frac{q_0}{2} \times C_H = \frac{2,000}{2} \times 0.735 =$	735
	79,255

Q.5. A manufacturer's requirement for a raw material is 8,000 units per year. The ordering cost is ₹ 10 per order, while the carrying cost is 10% per year per unit of average inventory. For orders for less than 4,000 units, there is no discount on the purchase price of ₹ 1 per unit but a discount of 5% is available, if order for 4,000 units are placed and a discount of 10% for one single order of 8,000 units. Which of the three ways of purchase should the manufacturer adopt?

Sol. Given : $R = 8,000$ units, $C_0 = ₹ 10$, $C_H = 10\%$ of P

$P = ₹ 1$ (if order size < 4,000),

₹ 0.95 (if order size = 4,000), ₹ 0.90 (if order size = 8,000)

Calculation of E.O.Q. :

$$\begin{aligned} \text{E.O.Q. } (q_0) &= \sqrt{\frac{2 \times R \times C_0}{C_H}} = \sqrt{\frac{2 \times 8,000 \times 10}{0.10}} = 1,264.9 \\ &= 1,265 \text{ units} \end{aligned}$$

T.I.C. on the basis of E.O.Q. :

	₹
(a) Material Cost = $R \times P = 8,000 \times 1 =$	8,00,000
(b) Total Ordering Cost = $\frac{R}{q_0} \times C_0 = \frac{8,000 \times 10}{1,265} =$	63.24
(c) Total Carrying Cost = $\frac{q_0}{2} \times C_H = \frac{1,265}{2} \times 0.10 =$	63.25
	8,126.49

T.I.C. if order size is 4,000 units :

(a) Material Cost = $8,000 \times 0.95 =$	7,600
(b) Total Ordering Cost = $\frac{8,000}{4,000} \times 10 =$	20
(c) Total Carrying Cost = $\frac{4,000}{2} \times 0.095 =$	190
	7,810

T.I.C. if order size is 8,000 units :

(a) Material Cost = $8,000 \times 0.90 =$	7,200
(b) Total Ordering Cost (One order) =	10
(c) Total Carrying Cost = $\frac{8,000}{2} \times 0.09 =$	360
	7,570

Q.6. A company consumes annually 6,000 kg of chemical costing ₹5 per kg. Placing each order cost ₹25 and the carrying cost is 6% per year of average inventory. Find out the economic order quantity and the total inventory cost (including the cost of chemical). The factory works for 300 days in a year. If the procurement time is 15 days and safety stock 200 kg, find out the re-order point and the maximum and average inventories. If the supplier offers a discount of 5% on the cost price for a single order of annual requirement. Should the company accept it?

Sol. Given : $R = 6,000$ kg, $P = ₹5$, $C_P = 25$, $C_H = 5 \times 6\% = 0.30$

Working days = 300, $t_p = 15$ days, minimum inventory = 200 kg

$$\begin{aligned} \text{E.O.Q.} &= \sqrt{\frac{2 \times R \times C_P}{C_H}} = \sqrt{\frac{2 \times 6,000 \times 25}{0.30}} \\ &= \sqrt{10,00,000} \\ &= 1,000 \text{ kg.} \end{aligned}$$

T.I.C. :

	₹
(i) Cost of material = $R \times P = 6,000 \times 5 =$	30,000
(ii) Total ordering cost = $\frac{R}{q_0} \times C_P = \frac{6,000}{1,000} \times 25 =$	150
(iii) Total carrying cost = $\frac{q_0}{2} \times C_H = \frac{1,000}{2} \times 0.30 =$	150
T.I.C.	30,300

Re-order point = Minimum inventory or Safety stock + $r \cdot t_p$.

$$r = \frac{R}{\text{Working days}} = \frac{6,000}{300} = 20 \text{ kg.}$$

$$\begin{aligned} \text{ROP} &= 200 \text{ kg} + (20 \times 15) \\ &= 200 + 300 = 500 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Maximum inventory} &= \text{Safety stock} + q_0 \\ &= 200 + 1,000 = 1,200 \text{ kg.} \end{aligned}$$

$$\begin{aligned} \text{Average inventory} &= \text{Safety stock} + \frac{q_0}{2} \\ &= 200 + \frac{1,000}{2} = 700 \text{ kg.} \end{aligned}$$

Where single order is given for 6,000 kg :

$$R = 6,000, q_0 = 6,000, P = 5 - 5 \times 5\% = 5 - 0.25 = ₹ 4.75$$

$$C_P = 25, C_H = 4.75 \times 6\% = 0.285.$$

	₹
(i) Cost of Material = $R \times P = 6,000 \times 4.75 =$	28,500
(ii) Ordering cost = $\frac{R}{q_0} \times C_P = \frac{6,000}{6,000} \times 25 =$	25
(iii) Carrying cost = $\frac{q_0}{2} \times C_H = \frac{6,000}{2} \times 0.285 =$	855
T.I.C.	29,380

Q.7. XYZ company is considering a selective control for its inventories. Using the following data prepare XYZ plan :

Category X : ₹4,500 and above (Total value)

Category Y : ₹2,001 to ₹4,499 (Total value)

Category Z : Upto ₹2,000.

Item No.	Units	Unit Rate (₹)
1	700	5.00
2	1,100	5.00
3	400	12.50
4	1,000	0.30
5	500	6.00
6	800	3.00
7	1,000	3.10
8	500	2.60
9	3,500	9.00
10	500	0.40

Sol. Statement of XYZ Analysis

Item No.	Units	Unit Rate	Total unit value	X (₹4,500 & above)		Y (₹2,001 to 4,499)		Z (upto ₹2,000)	
				Units	Value	Units	Value	Units	Value
		₹	₹		₹		₹		₹
1.	700	5	3,500			700	3,500		
2.	1,100	5	5,500	1,100	5,500				
3.	400	12.5	5,000	400	5,000				
4.	1,000	0.3	300					1,000	300
5.	500	6	3,000			500	3,000		
6.	800	3	2,400			800	2,400		
7.	1,000	3.1	3,100			1,000	3,100		
8.	500	2.6	1,300					500	1,300
9.	3,500	0.4	1,400					3,500	1,400
10.	500	9	4,500	500	4,500				
	10,000		30,000	2,000	15,000	3,000	12,000	5,000	3,000

% of Total Units	$\frac{2,000 \times 100}{10,000}$	$\frac{3,000 \times 100}{10,000}$	$\frac{5,000 \times 100}{10,000}$
	= 20%	= 30%	= 50%
% of Total Value	$\frac{15,000 \times 100}{30,000}$	$\frac{12,000 \times 100}{30,000}$	$\frac{3,000 \times 100}{30,000}$
	= 50%	= 40%	= 10%

Q.8. What is Just-in-Time (JIT) manufacturing? What are the benefits and drawbacks of JIT?

Ans. JIT Management Strategy

JIT inventory is a management strategy that coincides straight raw-material orders from suppliers with production schedules. Companies use this inventory strategy to improve

efficiency, and reduce waste by receiving goods only as needed for the manufacturing process, which lowers inventory costs. This technique necessitates that producers accurately forecast demand.

Just-in-time (JIT) inventory reduces inventory while increasing efficiency. JIT production systems can reduce inventory efficiency by making manufacturers receive materials and parts as needed in the production process rather than paying storage fees. If an order is cancelled or not fulfilled, manufacturers are not left with unsold inventory.

A car manufacturer that operates with low inventory levels but depends heavily on its supply chain to deliver the parts required to build cars on an as-needed basis is an example of a JIT inventory system. As a result, the manufacturer orders the parts needed to assemble the vehicles only after receiving the order.

JIT Inventory System Benefits and Drawbacks

JIT inventory management systems have several advantages over the traditional models. Because production runs are short, manufacturers can quickly transition from one product to another. This method also saves money by reducing the need for warehouse space. Companies also spend less money on raw materials because they only buy what they need to make the ordered products.

The disadvantages of JIT tracking inventory include potential supply chain disruptions. If a raw-materials supplier experiences a breakdown and is unable to deliver the goods on time, the entire manufacturing line may be halted. An unexpected sequence of goods may cause the delivery of finished products to end clients to be delayed.

Toyota Motor Corporation, known for its just-in time inventory system, orders parts only when new car orders arrive. Even though the company implemented this technique in the 1970s, it took 20 years to improve it.

Unfortunately, Toyota's JIT inventory system nearly brought the company to a halt in February 1997, when a fire at Japanese-owned automotive parts supplier Aisin decimated its ability to manufacture P-valves for Toyota's vehicles. Because Aisin is the sole supplier of this part, Toyota had to stop production for several days due to its weeks long shutdown. As a result, other Toyota parts suppliers were compelled to temporarily close their doors so because the automaker did not need their parts during that timeframe. As a result, Toyota lost 160 billion yen in revenue as a result of the fire.

Q.9. Discuss the steps involved in the process of Just-in-Time inventory management.

Ans. Process of Just-in-Time Inventory Management

JIT inventory management ensures that stock arrives only when it is required for production or to meet consumer demand, and no earlier. The goal is to reduce waste and improve operational efficiency.

Because the primary goal is frequently quality rather than the lowest price, JIT necessitates long-term contracts with dependable providers.

JIT is a type of lean management process. All components of any manufacturing or service system, particularly people, are linked in JIT. They share information and are mutually

dependent on successful outcomes. Kaizen, a Japanese term that means "better change," inspired this practice. The business philosophy, which originated in Japan, seeks to continuously improve operations and involve all employees, from autoworkers to the CEO. The goal, as with JIT, is to reduce waste whilst also improving quality.

following are the steps involved in JIT process :

1. **Design** : JIT begins with a review of the essential manufacturing construction blocks: product design, process design, employees, and manufacturing planning. Then plans are created to eliminate disruption, reduce waste, and build a flexible structure.
2. **Control Manage** : A Total Quality Control review ensures that the process is continually improved. A management review defines and measures statistical quality control, stabilises schedules, and checks load as well as capacity schedules and thresholds.
3. **Pull** : Using signalling methods such as Kanban, educate the team on production and withdrawal methods. Reduce lot sizes by evaluating small lot policies.
4. **Establish** : Vendor relationships are critical to JIT's success. Examine vendor lists. Choose preferred suppliers, sign deals, and talk about lead times, delivery expectations, and usage metrics and metrics. Learn how to maximise their use in the supply chain.
5. **Fine-tune** : Determine inventory requirements, policies, and controls, and minimise inventory movements.
6. **Build** : Inform your team about the skills and abilities required to complete its work, and educate them through team schooling and empowerment sessions.
7. **Refine** : By refining, standardising, and reviewing the entire process, you can reduce the number of parts and stages in production.
8. **Review** : Define and implement better measures and metrics, as well as behaviour a root cause analysis on any problems that arise. Improve every aspect of JIT by emphasising improvements and tracking trends.

Q.10. From the following particulars, find out Inventory Turnover Ratio :

- (a) Sales ₹ 3,20,000; Gross Profit Ratio 25% on sales; Opening Stock ₹ 31,000; Closing Stock ₹ 29,000.
- (b) Opening Stock ₹ 20,000; Closing Stock ₹ 10,000; Purchases ₹ 50,000; Carriage Inward ₹ 5,000; Total Sales ₹ 1,00,000; Cash Sales ₹ 10,000.
- (c) Sales ₹ 4,00,000; Gross Profit 25% on Cost; Opening Stock was 1/3 of the value of the closing stock. Closing Stock was 30% of Sales.

Ans. (a) Cost of Goods Sold = Sales – Gross Profit
 $= 3,20,000 - (25\% \text{ of } ₹ 3,20,000)$
 $= 3,20,000 - 80,000 = ₹ 2,40,000$
 Average Stock = $\frac{31,000 + 29,000}{2} = ₹ 30,000$

$$\begin{aligned}\text{Inventory Turnover Ratio} &= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} \\ &= \frac{2,40,000}{30,000} = 8 \text{ times}\end{aligned}$$

$$\begin{aligned}\text{(b) Inventory of Goods Sold} &= 20,000 + 50,000 + 5,000 - 10,000 \\ &= ₹ 65,000\end{aligned}$$

$$\begin{aligned}\text{Average Stock} &= \frac{\text{Opening Stock} + \text{Closing Stock}}{2} \\ &= \frac{20,000 + 10,000}{2} = ₹ 15,000\end{aligned}$$

$$\begin{aligned}\text{Inventory Turnover Ratio} &= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} \\ &= \frac{65,000}{15,000} = 4.33 \text{ times}\end{aligned}$$

(c) Gross Profit is 25% on Cost. It means that if Cost is ₹100, Gross profit will be ₹25 and goods sold will be ₹125.

$$\text{Thus, Gross Profit} = \frac{4,00,000 \times 25}{125} = ₹ 80,000$$

$$\text{Cost of Goods Sold} = 4,00,000 - 80,000 = ₹ 3,20,000$$

$$\begin{aligned}\text{Closing Stock} &= \text{Sales} \times \frac{30}{100} \\ &= 4,00,000 \times \frac{30}{100} = ₹ 1,20,000\end{aligned}$$

$$\begin{aligned}\text{Opening Stock} &= \text{Closing Stock} \times \frac{1}{3} \\ &= 1,20,000 \times \frac{1}{3} = ₹ 40,000\end{aligned}$$

$$\text{Average Stock} = \frac{40,000 + 1,20,000}{2} = ₹ 80,000$$

$$\begin{aligned}\text{Inventory Turnover Ratio} &= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} \\ &= \frac{3,20,000}{80,000} = 4 \text{ times}\end{aligned}$$

Q.11. Elaborate the process of determining inventory levels.

Ans. Determining Inventory Levels

The order for purchase should be placed when the stock is reduced by usage to the Order Point. The Order Point is one where the order should be placed for the economic order

quantity. For deciding Order Point, two things, viz., (1) Lead Time, and (2) Usage during Lead Time, are the determining factors. Lead Time is the supply time, or to be more specific, Lead Time is "the time interval between placing an order and having materials on the factory floor ready for production.....", Whereas Usage means the use of materials by consumption for production.

Sometimes purchases are made in large bulk in a season if the goods are seasonal, i.e., available in one season only, or at a time when it is feared that the goods may not be found available in the near future due to some reason. Special items for which no limit or order points are fixed may be purchased as and when needed.

Determination of Levels

To avoid over-stocking and under-stocking each item of the inventory has the Maximum Level, Minimum Level and an Order Point.

Maximum Level

It is a summit or upper level of keeping the material in stock and is also known as 'Maximum Limit' or 'Maximum Stock'. It indicates the maximum quantity of the inventory item which can be stored at any given time. The fixation of this level is dependent on various factors like production requirement during a given period, availability of funds, space in storeroom available, cost of carrying, nature of material whether inflammable or evaporative etc., availability of the supply in the market during a particular season or throughout the year, quantity discounts available, present prices and future prices, import facilities, economic order quantity determined for purchases, etc. Generally, Maximum Level is equal to Minimum Stock + Economic Order Quantity. Maximum stock level can be expressed in the formula given as below :

$$\text{Maximum Level} = \text{Order Point} - (\text{Minimum Usage Rate} \times \text{Minimum Lead Time}) \\ + \text{EOQ or Re-order Quantity}$$

Minimum Level or Safety Stock

It is also known as 'Buffer Stock', 'Safety Stock', 'Minimum Limit', or 'Minimum Stock'. It indicates the minimum level of stock that should always be maintained in stock so that there is no risk of stoppage of production. It implies that the supply of the material ordered for purchase should arrive by the time the Minimum Level is reached by usage. The fixation of this level depends on Lead Time i.e., if the lead time is fixed longer, less minimum stock is necessary, and vice versa. The usage of inventory during lead time is the other factor, i.e., if the usage of inventory is more during lead time than forecasted, the minimum level would be reached sooner than anticipated. Thirdly, cost of carrying is quite important, as the minimum stock is required to be maintained in stock, all the time. The formula for calculating Minimum Level is :

$$\text{Minimum Level} = \text{Order Point} - (\text{Average Usage Rate} \times \text{Average Lead Time})$$

Balancing Inventory and Stock-outs and Computation of Safety Stocks

The minimum stock is the safety which works as a cushion against stoppage of production. If the safety stock is too large, the carrying costs would be too high, and if the safety is too small, there are chances of stock-out and in that case the non-carrying costs would be too high. The

optimum minimum level or the safety stock is that quantity where both the carrying costs and the non-carrying costs are the minimum balanced. The carrying costs and the non-carrying costs are the same as explained under Economic Order Quantity concept. Stock-out means 'running out of stock'. So stock-out costs are related to decrease in production, loss of sales, loss of customer-goodwill, purchases in emergency at high costs, loss of quantity discounts, payment of overtime wages, etc. These are all non-carrying costs.

Order Point

It is also known as 'Ordering Level' or 'Reorder Point' or 'Reordering Level' or 'Ordering Limit'. It has been stated earlier that Order Point is a point at which order for supply of materials or goods is placed. This level is fixed between the minimum and maximum stock level. To decide the Order Point, three factors are considered, viz., (1) Lead Time, (2) Usage during Lead Time and (3) Minimum Limit or the Safety Stock. If the Lead Time, and the Usage during lead time, are certain and uniform, no necessity arises for a safety stock, But this assumption is rare and large probabilities are that one or both the factors deviate. Hence, the need for safety stock arises. Much has been discussed about the safety stock under the 'Minimum Limit' above. The moment safety limit is fixed, the determination of Order Point becomes easy.

Proper care is to be exercised in fixing the lead time because if the materials or goods arrive before the expiry of the lead time, it would mean more stocks during the unexpired lead time, and so more carrying costs. The reverse situation increases the non-carrying costs and it amounts to depletion of safety stocks.

The formula for determining Order point or Re-order level is :

$$\text{Re-order Level or Ordering Point} = \text{Maximum Rate of Usage} \times \text{Maximum Lead Time}$$

Q.12. What is meant by danger level? How can it be determined?

Ans.

Meaning of Danger Level

In addition to the minimum, maximum and reordering levels there is another level called *Danger level*. This level is below the minimum level and when the actual stock reaches this level necessary steps are taken to replenish stock. When the normal lead time is not available, the purchase quantity cannot be accurately fixed. So, it is fixed in such a way that the actual stock does not fall below danger level by the actual lead time. This means, that the minimum level contains a cushion to cover contingencies.

Some concerns fix danger level below the re-ordering level but above the minimum level. If action for purchase is taken as soon as the stock reaches the re-ordering level, the danger level bears no significance except that, when the stock reaches the danger level (but not yet the minimum level) a reference may be made to the purchase department to ensure that delivery is received before the actual stock reaches the minimum level.

When the danger level is fixed below the minimum, it being reached by the actual stock, the defect in the system is detected and corrective measure becomes necessary. When the danger level is fixed above the minimum, it being reached by the actual stock, preventive measure is to be taken so that the stock may not go below the minimum level.

The danger level can be determined by using the following formula :

$$\text{Danger Level} = (\text{Average Usage Rate} \times \text{Emergent Lead Time})$$

Average Stock Level

This level is determined by adding half the quantity of E.O.Q. in minimum level. To express in way of formula it can be as follows :

$$\text{Average Stock Level} = \text{Minimum level} + \frac{1}{2} (\text{E.O.Q. or Re-order Quantity})$$

Q.13. Discuss the impact of inventory inaccuracy.

Ans. **Impact of Inventory Inaccuracy**

Inventory management has received a lot of attention in many organizations. Inventories are regarded as valuable resources and are crucial for any company. According to Waller, Nachtmann and Hunter, a company's fate is determined by its ability to manage inventory. When discussing inventory management problems, one that frequently comes up and has a big effect on the organization is the significant disparity between recorded inventory and physical inventory. This study focuses on raw material inventory imprecision, with a particular emphasis on the foodservice industry.

In a free economy, it is vital for businesses to customers while also going to generate a profit. While groups, particularly those in the manufacturing industry, strive to improve their productivity and efficiency, inventory factual errors appear to be a barrier to meeting their aims and outcomes. Inaccurate inventory has an impact on various departments and business units within organizations. Businesses must calculate the implications of inventory inaccuracy, which also include handling, having to carry, and other risks to customer-related costs. Besides that, inventory lack accuracy costs that are associated with lost productivity, expedited shipping costs, potential losses due to struggling to fulfill customer demand, and unhappiness, according to Rajeev. Inventory inaccuracy has a direct impact on the firm's financial strength and competitive edge.

We discovered that inventory inaccuracy has a significant impact on the organization's performance during our data gathering. We will divide the consequences of inventory inaccuracy into three categories :

1. **Time** : Inventory inaccuracy extends the time spent on managing inventory.
Additional time will be spent in various departments investigating discrepancies, correcting system information, communicating concerns, managing material, and determining the influence the productivity.
2. **Cost** : Inventory inaccuracy affects the profitability of the organization in terms of the cost of sales. Cost increases are the result of faster shipping, more labor, and lost production. Furthermore, because of the possibility of inaccuracy, manufacturing companies tend to carry excess inventory to reduce uncertainty, which raises inventory costs.
3. **Risk** : Inventory inaccuracy has a wide-ranging impact on an organization, and industries should consider trying to mitigate the risk of such inaccuracies. When the physical inventory count is inaccurate, it unquestionably has an impact on an organization's judgment process due to untrustworthy information (e.g., the inaccurate cost of goods sold as well as the economic reorder point). Inventory

inaccuracy also increases the risk of having to cut orders or rescheduling the production line, which has a direct effect on customer service. Furthermore, the issue has a significant effect on job satisfaction for inventory management associates; the associates words a high level of stress related to the risk of run-outs as well as a high sense of anger due to the lack of strict controls.

Q.14. Discuss the various methods of disposal of surplus, scrap and obsolete materials.

Ans. Methods of Disposal of Surplus, Scrap and Obsolete Materials

Following are the main methods of disposal of surplus, scrap and obsolete materials :

1. **Feedback**: Circulation within the company to its various units in various locations and divisions to obtain the necessary feedback on the necessity of surplus or outdated stock from one unit to the other.
2. **Return to Supplier** : If there is no requirement from inside company modules, components should be returned to the original supplier at the original cost after one small restocking payment is deducted. Good suppliers will return such recycled products to build a stronger business arrangement. Nowadays, industrial buyers insist on including a buy back stipulation in the purchase contract.
3. **Direct Sale to Another Company** : Surplus and obsolete materials from one company may be useful in another business with the same line of products and production system. In such cases, surplus and obsolete materials must be sold to those companies. Scraps from one company may become raw materials for another.
Steel scrap, machine shop sharp turns, plate scrap, punching scrap, metal bearings scrap, brass scrap, old abolish zinc, tin scrap, scrap lead, nickel chrome, stainless, old wrappings, used paper, etc are all illustrations of scrap.
4. **Sale to Dealer or Broker** : Auction may be used to sell to a vendor or broker, with confirmation on an 'as is, where is basis. It could be an open auction or a tender. A yearly rate contract scheme can also be used, with dealers collecting scrap from the specific area of the manufacturing shop. The contract procedure and legal documentation used in purchasing apply to surplus, obsolete materials, and scrap, and end up wasting sales.
5. **Sale to Employees** : Some businesses sell surplus, obsolete, and non-moving items to their staff members for a very low price. Sometimes it satisfies the employees who profit from reselling the components or using them in their homes.
6. **Donation to Informational Institutions** : Schools, colleges, polytechnics, engineering and technology institutes, universities, research centers, medical institutions, and scientific laboratories all require various tools and equipment for research. This is why many proposed an approach to the practice of donating unwanted substances to academic institutions as a kind gesture and to benefit from tax breaks.

Q.15. Discuss the various measures to control scrap.**Ans. Measures of Controlling Scrap**

Scrap is referred to materials left over from product manufacturing. It can range from metal shavings to entire parts. Scrap differs from “waste” in that it is recyclable and thus has some monetary value. When a previously inspected part is discovered to be non-conforming, defective, or failed, it must be disassembled, repaired, replaced, or rebuilt.

- 1. Human Error should be Reduced :** Parts can be damaged during transit or manual handling, so it's best to use mechanization to limit physical contact with parts as much as potential - especially delicate parts that will be affected if dropped. According to Mike Lynch, the founder of CNC Concepts, “excessive scrap-causing errors should be an indication that your folks need more training.” Better training reduces the likelihood of human error; well-trained groups are more likely to use the software correctly and avoid as many trial-and-error stages.
- 2. Communication and Change Management should be Improved :** Scrap is frequently the result of ineffective or incomplete information exchange about production changes. For example, if the engineering team wishes to change a part to enhance the system commodity, this must be communicated quickly and not only internally but also across the supply chain. If this is not done, the business may be left with a stockpile of the old part, which may be non-cancellable and quasi and will have to be scrapped.
- 3. Everything should be Documented :** Standard operating procedures (SOPs), CAD drawings, and bills of components (BOMs) should all be digitally documented and properly filed to avoid rework caused by someone referring to an outdated memorandum. Documentation is an important part of organizational change, particularly when it comes to sharing of information and version control.
Arena Solutions, a provider of PLM software, recommends that manufacturers create and maintain a BOM for each product because CAD drawings alone do not capture important information such as redesigns after production has begun. Third-party agreement manufacturers should be given a complete set of documents, such as BOM records, CAD sheets, change details, datasheets, and work instructions.
- 4. Manufacturing Processes should be Improved :** The design phase is perhaps the most essential part of the equation in terms of its potential to generate scrap. Good teamwork and cooperation among engineers, production team members, and material suppliers, as well as the use of simulation software to reduce the number of prototypes needed, are critical.

Continuous monitoring of the manufacturing line is necessary to determine where errors occur. Tools that are ill-fitting, damaged, or poorly made can be a source of scrap, not to mention a safety hazard. Make sure you're using the right tools, methods, and materials.

5. **A Proper Scrap Plan should be Made :** It's critical to have a program in place for when scrapping is probably inevitable. Before looking into scrap recycling programs outside your organization, consider regardless of whether scrap can be reused or recirculated internally.

Q.16.State the benefits and challenges of economic order quantity (EOQ).

Ans. Benefits of Economic Order Quantity (EOQ)

The main benefit of using EOQ is improved profitability. Here's a list of benefits that all add up to savings and improvements for your business :

1. **Improved Order Fulfillment :** When you need a certain item or something for a customer order, optimal EOQ ensures the product is on hand, allowing you to get the order out on time and keep the customer happy. This should improve the customer experience and may lead to increased sales.
2. **Less Overordering :** An accurate forecast of what you need and when will help you avoid overordering and tying up too much cash in inventory.
3. **Less Waste :** More optimized order schedules should cut down on obsolete inventory, particularly for businesses that hold perishable inventories that can result in dead stock.
4. **Lower Storage Costs :** When your ordering matches your demand, you should have less products to store. This can lower real estate, utility, security, insurance and other related costs.
5. **Quantity Discounts :** Planning and timing your orders well allows you to take advantage of the best bulk order or quantity discounts offered by your vendors.

Challenges of Economic Order Quantity (EOQ)

While many businesses want to use EOQ to determine order sizes, it isn't always easy to achieve. When determining EOQ, you may run into these challenges :

1. **Poor Data :** One of the biggest challenges of determining EOQ is access to accurate and reliable data. Manual or spreadsheet-driven systems may provide low-quality or outdated information, which can lead to inaccurate calculations.
2. **Outdated Systems :** Old and outdated systems may have incomplete data and lead to missing out on potential savings. An inventory management system or cloud based ERP can solve this problem.
3. **Business Growth :** The EOQ formula is ideal for businesses with consistent inventory needs. With a fast-growing business, relying on EOQ can lead to inventory shortages.
4. **Inventory Shortages :** If you're just starting to use this method, it often generates smaller orders. If you are too conservative with your calculations, you could wind up under-ordering.
5. **Seasonal Needs :** Seasonality can make EOQ more challenging, but not impossible. This is because there could be major changes in customer demand throughout the year.

Q.17. How can economic order quantity (EOQ) help in inventory management?**Ans. Role of EOQ in Inventory Management**

Using the economic order quantity model in inventory management provides lots of benefits, including :

- 1. Lowers Inventory Costs :** Inventory is one of the most significant assets for most companies. Holding a massive amount of inventory means you have to spend a lot of money to purchase this inventory. This is money you can spend elsewhere.
Using the EOQ model allows you to determine the optimal order quantity you need to adequately meet demand, thus lowering your inventory acquisition costs and freeing up capital.
Smaller order size also reduces the number of products that could get damaged or fail to sell, particularly if your business deals in perishable goods.
- 2. Lowers Storage Costs :** A large amount of inventory is expensive to buy and more expensive to store. Large quantities of inventory lead to bigger warehouse space needs, more personnel to handle the inventory, higher insurance costs, you name it.
Reducing the amount of inventory you need to hold using the EOQ model can significantly reduce your inventory storage costs and improve your bottom line.
- 3. Lowers Risk Of Stock-Outs :** Economic order quantity is an efficient tool for calculating the amount of stock you need and how frequently you need to reorder. This, in turn, helps you minimize the risk of stock-outs without holding excess inventory. It also leads to better order fulfillment since your customers will always get what they order.
- 4. Improves Overall Efficiency :** Calculating EOQ leads to improved overall efficiency in inventory control and management. Instead of relying on your gut feeling, you can make smarter, data-backed decisions about the amount of inventory you need to order and store, the frequency of orders, and the reorder point.
- 5. Quantity Discounts :** EOQ calculations make it easier to determine your reorder point and how frequently you need to order. This helps you plan and time your orders better and take advantage of vendor and supplier quantity discounts. ●

MODEL PAPER

Inventory Management

B.Com.-II (SEM-III)

[M.M. : 75]

Note : Attempt all the sections as per instructions.

Section-A : Very Short Answer Type Questions

Instruction : Attempt all **FIVE** questions. Each question carries **3 Marks**. Very Short Answer is required, not exceeding 75 words. [3 × 5 = 15]

1. What do you mean by inventory management?
2. What are order costs?
3. What are finished products?
4. Discuss the accounting treatment of waste.
5. What is meant by inventory control?

Section-B : Short Answer Type Questions

Instruction : Attempt all **TWO** questions out of the following 3 questions. Each question carries **7.5 Marks**. Short Answer is required not exceeding 200 words. [7.5 × 2 = 15]

6. What are the major types of manufacturing enterprise's inventories?
7. Discuss the various forms of material losses.
8. Explain the various advantages of inventory control.

Section-C : Long Answer Type Questions

Instruction : Attempt all **THREE** questions out of the following 5 questions. Each question carries **15 Marks**. Answer is required in detail, between 500-800 words. [15 × 3 = 45]

9. "For any organisation, its inventory is considered to be the most valuable asset." Comment on the statement.
10. Give the meaning and definition of inventory.
11. Discuss the useful methods for the treatment of scrap.
12. State the major importances of inventory control.
13. Discuss the steps involved in the process of Just-in-Time inventory management.

□

- यद्यपि इस पुस्तक को यथासम्भव शुद्ध एवं त्रुटिरहित प्रस्तुत करने का भरसक प्रयास किया गया है, तथापि इसमें कोई कमी अथवा त्रुटि अनिच्छाकृत ढंग से रह गई हो तो उससे कारित क्षति अथवा सन्ताप के लिए लेखक, प्रकाशक तथा मुद्रक का कोई दायित्व नहीं होगा। सभी विवादित मामलों का न्यायक्षेत्र मेरठ न्यायालय के अधीन होगा।
- इस पुस्तक में समाहित सम्पूर्ण पाठ्य-सामग्री (रेखा व छायाचित्रों सहित) के सर्वाधिकार प्रकाशक के अधीन हैं। अतः कोई भी व्यक्ति इस पुस्तक का नाम, टाइटिल-डिजाइन तथा पाठ्य-सामग्री आदि को आंशिक या पूर्ण रूप से तोड़-मरोड़कर प्रकाशित करने का प्रयास न करें, अन्यथा कानूनी तौर पर हर्जे-खर्चे व हानि के जिम्मेदार होंगे।
- इस पुस्तक में रह गई तथ्यात्मक त्रुटियों तथा अन्य किसी भी कमी के लिए विद्वत् पाठकगण से भूल-सुधार/सुझाव एवं टिप्पणियाँ सादर आमन्त्रित हैं। प्राप्त सुझावों अथवा त्रुटियों का समायोजन आगामी संस्करण में कर दिया जाएगा। किसी भी प्रकार के भूल-सुधार/सुझाव आप info@vidyauniversitypress.com पर भी ई-मेल कर सकते हैं।