



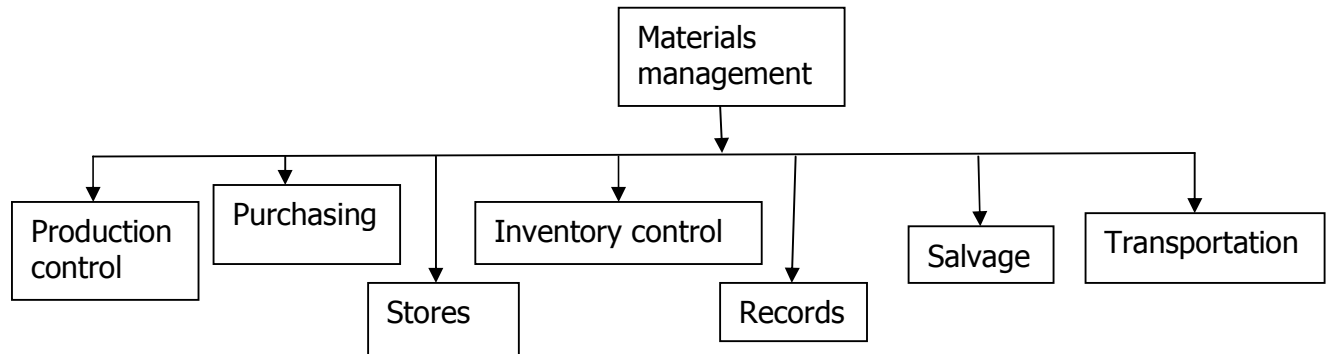
Topic and Contents	Hours	Marks
6.1 Inventory management <ul style="list-style-type: none">• Materials management• Concept of inventory• Classification of inventories• Functions of inventories• Objectives of inventory management 6.2. ABC Analysis <ul style="list-style-type: none">• concept and necessity• Steps to do ABC analysis• Limitations of ABC analysis 6.3 Economic order quantity <ul style="list-style-type: none">• Concept• Graphical representation• Determination of EOQ• Buffer stock• Advantages and limitations of EOQ 6.4 Standard steps in purchasing <ul style="list-style-type: none">• Introduction• Objectives• Functions of purchase department• Steps in purchasing 6.5 Modern techniques of material management <ul style="list-style-type: none">• MRP• ERP	08	08

Q. What is inventory management?

Material management:

It is concerned with flow of materials in an organisation by using functions like purchasing, storing, moving distributing, Production, dispatching etc.

It involves an organizational structure unifying into a single responsibility of the systematic flow and control of material from identification of the need to customer delivery.

**Functions/aims material management:**

1. Planning and control of material.
2. Purchasing of material
3. Stock keeping of material
4. Distribution of material
5. Allocation of material
6. Disposal of material

Concept of inventory:

Inventory management is a part of materials management. Raw materials are converted into finished goods in any industry. Machinery and tools are used for the same. Every item which is useful in undergoing industry operations must be available whenever it is required. All such materials e.g. raw materials, unfinished products, finished goods, spare of machinery, supplementary and supporting items are kept in custody off the process. It is the stock available. The stored material is called as 'inventory'. Our home also carries inventory of many items e.g. vegetables, cooking ingredients, clothes, water etc. Industries are more concerned with management of various inventories. Inventory types are many. An item must be made available



whenever it is required. At the same time unnecessary stock is also not desirable. Inventory management is taking such care. Let's study the concept systematically.

Inventory: 'Inventory is the collective stock of items which is required for routine functioning of industry. Inventory is a way of keeping material which will not stop manufacturing and allied processes'.

Raw material, semi-finished goods, finished goods, tools, supportive items when kept in custody form an inventory. Inventory is similar to store department. But inventory is more scientific, more advanced and efficient way of storing and keeping material.

Inventory management: Effective functioning and execution of inventory is called as 'inventory management'. The aim of inventory must be satisfied through inventory management. Inventory management takes care of

- Quantity of stock to be stored.
- When to order material?
- How much to order?
- What to order?

Inventory management thus helps to decide the type of material, quantity of purchase, quantity of storage of the items with all concerned departments. All these decisions are based on rate of consumption of material, inventory size, urgency of material, source of material, cost of carrying material in inventory etc. New concepts like SAP are effective in Inventory Management so as to keep this activity smooth and continuous. Importance of inventory management is understood either when no material is available in stock and operation is stopped or when huge stock is available and only small portion of the stock is required. Both the cases of 'Insufficiency' and 'Abundance' can be avoided through inventory management.

Classification of inventories

(1) Raw Material Inventory: Material on which operations will be performed to convert it into the desired product.

e.g. steel, wood, rubber, tubes, plates etc.



(2) Semi-finished Material Inventory: Also called as 'Work-in-process material inventory'. The material which is processed partially and waiting for the next process.

(3) Finished Material Inventory: These are the final desired products. They are ready for dispatch to the market.

(4) Tools Inventory: Tools which are required for operations in manufacturing. E.g. drills, cutters, turning tools, saws, solder, construction tools etc.

(5) Machinery Spares Inventory: The spare parts of machinery are required to be kept in inventory. At the time of repair, breakdown, replacement of parts these spares should be available immediately.

(6) Supplies Inventory: Those items which support the activities but don't go into the product are called 'Supplies'.

(7) Standard Parts Inventory: The parts which are bought out from market are called standard parts. These are directly used in product manufacturing for assembly or other work. E.g. nut, bolt, washers etc.

Q. What are the functions of inventories?

1. Ensures availability of material, items, equipments, tools etc.
2. Proper purchasing guidelines.
3. Supply of material whenever required.
4. Smooth functioning of production system is ensured.
5. Cost minimization.
6. Gain visibility into inventory process.
7. Reduced time to market.
8. Purchasing costs are reduced.
9. Improve customer satisfaction
10. prevents stock outs to

Q. What are the objectives of inventory management?

1. To purchase material at a minimum cost.
2. To purchase material at right time.
3. To purchase material in right quantity of
4. To ensure effective availability of material.



5. To reduce the inventory costs.
6. To keep documentation and record-keeping in orderly manner.
7. To control material stocks.
8. To provide sufficient storage space
9. To classify material on various parameters.

Q. Explain ABC analysis.

Concept and the necessity:

In inventory management, ABC analysis plays vital role. It is an analysis of the range of items divided into three categories.

A- Outstandingly important items

B- Average important items

C- Relatively unimportant items

So, items in our inventory can be classified into above three categories. 'A' types of items are given more attention than B category. 'C' types of category items are given least attention as they are relatively unimportant.

ABC analysis is also called as Always Better Control. The reason is all items are not of equal status in the inventory. If same attention is given to all, then the outstandingly important items may suffer (i.e. production flow may be seriously disturbed) or least important items may get unnecessary care (which is not required).

ABC analysis, in general, uses Rule of "80/20". It means 20% of items in inventory have consumption wise rupee value share of 80%.

Category of Items	Quantity of Items	Importance due to consumption
A	10-20%	70-80%
B	15-25%	10-20%
C	65-75%	5-10%

So 'A' class of items is monitored closely and attention given to them is maximum.

ABC analysis provides sound basis on which allocation of funds and time becomes easy decision.

Procurement of A items should be done frequently, B can be given intermediate procurement schedule and C type of items can be procured infrequently.

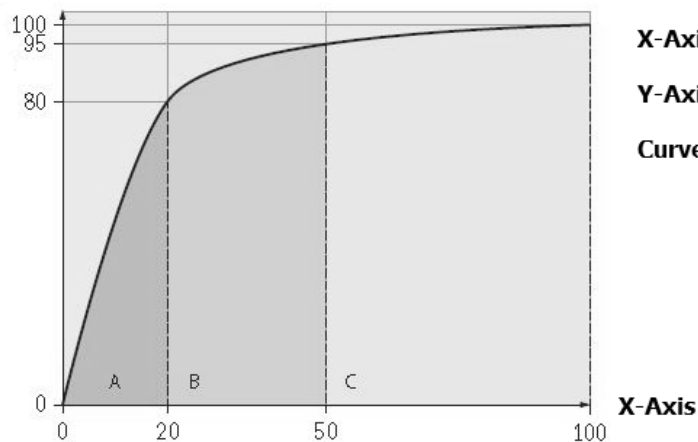
Normally, A type of items are purchased in small quantities is whenever required. The C type of items may be purchased in sufficient quantities. Intermediate rule can be applicable to B types of items.

STEPS TO DO ABC ANALYSIS

1. Prepare list of all items and estimate their annual consumption.
2. Determine unit price of each item.
3. Obtain annual consumption in rupees by multiplication.
4. Arrange the items in descending order.
5. Calculate cumulative annual usage and number of items in %.
6. Draw the graph.
7. Classify in A, B, C categories.
8. Decide the policies of inventory control.

Graphical representation:

Y-Axis



X-Axis indicates % of items

Y-Axis indicates range of annual consumption

Curve is called as ABC curve

Important Considerations in ABC Analysis:

1. ABC curve is similar in shape for different industries.
2. All items that the company consumes should be considered together.
ABC curve is common for all types of materials in the company.
3. Consumption of items may be annually, monthly or applicable for any period.



4. Some categorization like A1, A2, B1, B2, C1, and C2 may be possible, if required.

ABC policy:

Sr. No.	A type	B type	C type
1.	Safety stock is less.	Average safety stock is desirable.	Sufficient safety stock.
2.	Priority treatment is given.	No such treatment is necessary.	No priorities assigned.
3.	Requires careful and accurate determination of order quantity.	A reasonable good analysis is sufficient.	No such computation is required.
4.	Access to A items should be more.	Access is slightly less to B items.	Put in less accessible areas.
5.	Maximum control on consumption.	Normal control.	Little control.

LIMITATIONS OF ABC ANALYSIS

1. In order to make ABC analysis fully effective, it should be carried out with standardization and codification.
2. Here only consideration is given to consumption value of items. It may happen that some items are very important, but in ABC analysis they are not considered so due to their less consumption.
3. The results of ABC analysis have to be reviewed periodically and updated.
4. It is a common experience that 'C' items, like diesel oil in a firm, will become the most high-value item during power crisis.

ECONOMIC ORDER QUANTITY**CONCEPT**

Keeping optimum stocks in inventory is economical. Stock availability depends on consumption rate by concerned department, previous stock and new

purchased stock. So to keep the stock in control purchasing becomes vital function. It is so because if there is more stock than requirement, then the cost of carrying it i.e. inventory cost will be more. If the stock is purchased in small quantities then purchase action should be carried out many times. So cost of procurement increases. Thus, both the costs mentioned above i.e. inventory cost and procurement cost must be considered carefully while placing the purchasing order. Size of order is the main issue in placing purchase order.

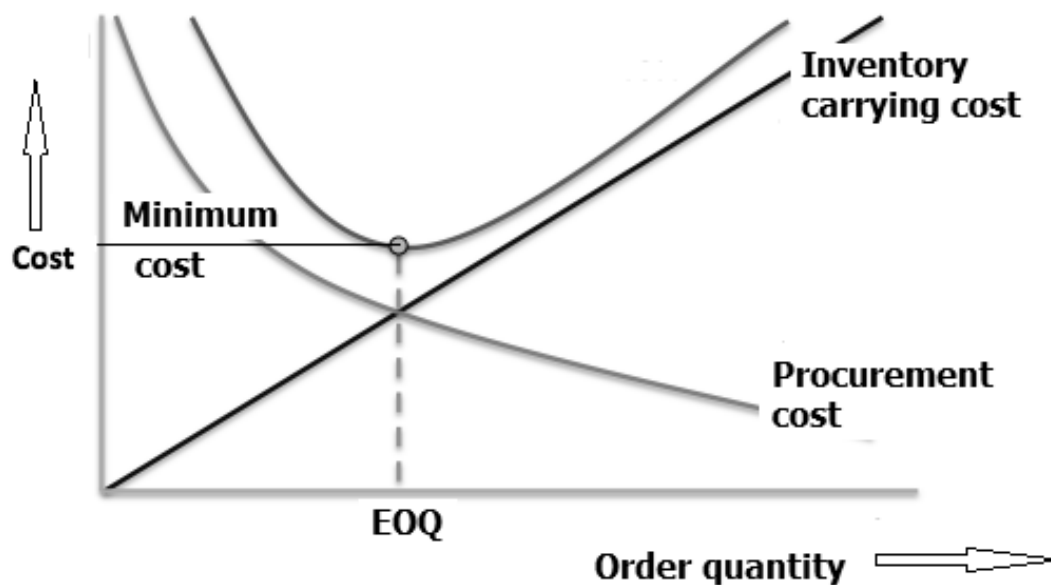
Optimum quantity must be ordered, so to keep the stocks proper. This will be economical decision.

EOQ (Economic Order Quantity)

The proper quantity to order is one which creates optimal balance between annual inventory carrying cost and annual procurement cost. When these two costs are balanced in optimum way, the total cost is minimal and the resultant quantity is called as the 'Economic Order Quantity'. It is also expressed as EOQ.

GRAPHICAL REPRESENTATION

(Analysis / Mathematical Treatment of EOQ)



Before learning about EOQ derivation i.e. EOQ model, let's see the assumptions necessary for the model.

Assumptions in EOQ Model:

1. Uniform demand of the item during the given period.
2. The rate of demand is known to us.
3. Immediate replenishment of the stock.
4. Lead time is zero. (Lead time is the difference between the time of placing replenishment order and actually receiving the items in stock.)
5. The cost of placing an order is fixed, irrespective of lot size.
6. The inventory carrying costs are directly proportional to size of inventory.
7. No restriction of quantity in procuring items.
8. Quite longer shelf life of items in stock.
9. Quantity discounts are not available.
10. No stock outs allowed.

Costs involved in EOQ

- **Procurement Cost per Order:**

- It is represented by C_p .
- It includes following:
 1. Cost of calling quotations.
 2. Cost of processing of quotations.
 3. Cost of placing the purchase orders.
 4. Cost for receiving material.
 5. Cost of inspection.
 6. Stationery.
 7. Office overheads.
 8. Other routine and necessary costs.

- **Inventory carrying costs:**

- It is represented by 'i'.
- It includes following:
 1. Storage cost.
 2. Handling cost.
 3. Taxes.
 4. Insurance

5. Interest charges.
 6. Depreciation.
 7. Administrative charges, etc.
- **Under stocking costs:** When any item is out of stock, then this cost occurs. Loss of production, extra costs due to sudden purchase are adding in that.
 - **Over stocking costs:** If the stock is more than required then additional species required by this. Necessary items get no place due to over stocking of few other items. Capital gets locked in extra material. Due to storage for more duration, inventory carrying cost also increases.

Determination of EOQ:

Annual Procurement cost

$$= \text{Number of orders per year} \times \text{Procurement cost per order}$$

$$\text{Annual Procurement cost} = \frac{\text{Annual consumption}}{\text{Order quantity}} \times \text{Procurement cost per order}$$

$$\text{Annual Procurement cost} = \frac{S}{q} \times C_p$$

Annual inventory carrying cost

$$= (\text{Average inventory investment}) \times (\text{Inventory carrying cost})$$

Annual inventory carrying cost

$$= \frac{1}{2} (\text{Order quantity} \times \text{Price per unit}) \times (\text{Inventory carrying cost})$$

$$\text{Annual inventory carrying cost} = \frac{1}{2} (q \times C_u) \times i$$

Calculations:

$$\text{Annual total cost (ATC)} = \frac{S}{q} \times C_p + \frac{q}{2} \times C_u \times i$$

Optimum value of annual total cost is obtained by differentiating ATC, we get,

$$EOQ = q_o = \sqrt{\frac{2 \times S \times C_p}{C_u \times i}}$$

***Economic order quantity***

$$= \sqrt{\frac{(2 \times \text{Annual consumption} \times \text{Procurement cost per order})}{(\text{Price per unit} \times \text{Inventory carrying cost})}}$$

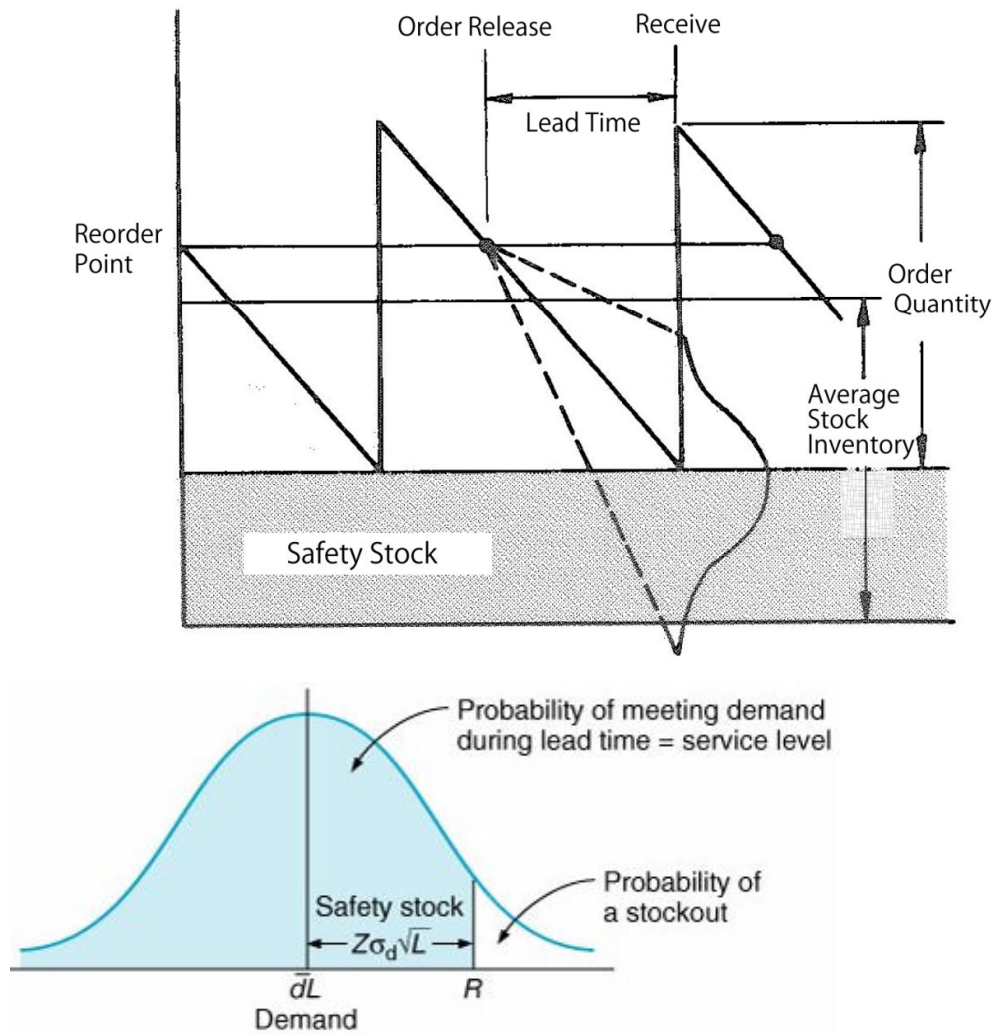
BUFFER STOCK

1. It is also called as safety stock.
2. It is a lower limit below the stock should not be allowed to fall under normal circumstances.
3. It is nothing but reserved stock in the inventory.
4. Ups and downs in consumption and delivery period are absorbed by the buffer stock.

Role of buffer stock:

If there is no buffer stock in the inventory then 'stock out' case will happen i.e. customer needs material but you don't have it. So, in a way buffer stock if not kept following incidences may happen:

1. Production stoppage.
2. Emergency in purchasing.
3. Heavy load of work in next time slots.
4. Loss of customer.
5. Delay in deliveries.
6. Unhappy customer.
7. Fast productions; so mistakes in work.
8. Loss of reputation.



Reorder Point (ROP) = Normal consumption during lead-time + Safety Stock

Reorder Point (ROP) = Average lead-time demand + Safety Stock

Reorder Point (ROP) = $\mu + Z \cdot \sigma$

Q. Give advantages of EOQ model.

1. No condition of 'No stock'.
2. Overcrowding of unnecessary material in inventory is avoided.
3. Effective utilization of inventory.
4. Material is available quickly.
5. Reduce extra handling of items.
6. Economy in purchasing is achieved.



Q. Give limitations of EOQ.

1. Even we calculate the EOQ mathematically; it is difficult to order odd number of items. Normally, we go for 'round figure' of EOQ. It is the comfortable way to order. So, EOQ calculation differs from the actual order. For example instead of 297 boxes, we go for 300 boxes.
2. Comfort in frequency of ordering must be done after EOQ is calculated. For example instead of buying an odd number of items every month, we may order annually the total requirement.
3. EOQ is not caring whether item is bulky or perishable or difficult to get, etc. as per market situation, item durability we have to adjust the order.
4. While ordering suitability in packing must be considered. EOQ value must be altered as per our convenience.

Thus, even EOQ is a good technique to find out correct number of ordering, if it is not practical, then some altering is required in EOQ number.

Q. Explain purchasing.

It is the business activity to procure the materials, supplies and equipments required in the functioning of an organisation.

Objectives of purchasing:

1. To maintain continuity of supply to support manufacturing schedules.
2. To procure materials at the lowest cost.
3. To avoid waste, duplication and obsolescence with respect to materials.
4. To invest minimum in inventory.
5. To maintain standards of quality of materials.
6. To maintain company's competitive position in the market.

Essentials of successful purchase:

Functions of purchase department:

1. Market survey.
2. Identifying sources of supply.
3. Publishing tender notice.
4. Calling quotations.



5. Comparative study of quotations.
6. Placing the order for materials.
7. Order follow-up.
8. Material receiving.
9. Checking material.
10. Documentation and commercial formalities.

Duties of purchase manager:

1. He should be aware of market conditions.
2. He must have skills of negotiations.
3. His decision-making should be proper and quick.
4. He must be aware of various suppliers and vendors with all their capacities.
5. He must have sound experience in the same activity.
6. His technical knowledge and commercial aspects of trade must be perfect.
7. He should be sincere and honest.
8. His aptitude in differentiating the material with respect to quality, should be good.
9. He must have knowledge of new policies of government, new trends in market.
10. His legal knowledge is also expected to be reasonably good.

Strategies for purchasing:

1. Use procurement planning to control major commodities.
2. Search for low-cost suppliers.
3. Seek buying leverage through buying items.
4. Get idea about total costing.
5. Gain assurance of economic supply for future needs.
6. Developed an effective purchasing manual.

Tender notice: tender notice is published in newspapers to invite tenders or bids from eligible suppliers of services, good or materials by any government or business organisation. Tender notice is a way gives equal opportunities for all and works on lowest best bid selection principal.

Quotation: while taking buying decision purchase executives need to obtain quotations from eligible suppliers of goods, materials and services. Quotation is a document furnished by supplier quoting the price/rates for the goods, materials or services desired by purchasing organisation including tours and transport arrangement. Quotation is always having validity in terms of days and after the expiry of the date fresh quotations are required.

Q. Give states in purchasing. Or what is purchasing procedure?

1. **Material requisition for purchasing:** The stores Department are the nucleus authority for material availability. If material is not available in either stores or with departments then the concerned department request for purchasing of such material. The requirement of material is given to the stores Department or to the purchase department through stores. All the details of required item, quantity, specifications are mentioned in the purchase requisition note. One copy is retained by the Department, other copy is given to the stores and original copy is kept with purchase department. So, all requirements are received by purchase department from all the concerned departments.
2. **Decision for purchasing:** after receiving such requisitions, purchase department decides how much to purchase, as per inventory records of price structures, market conditions and budgets of departments. Consent of higher authorities is necessary in final decision of purchasing. Optimum quantity is thus decided for purchasing.
3. **Market analysis of material suppliers:** many suppliers are available in the market. They have different rates and also offered services are different. Market also shows distinct behaviour like neutral, recession or boom. So the prices are the varying. Future predictions of rate are also necessary.



4. **Finalization of supplier:** study of suppliers and market helps us to finally decide the supplier. Many times tender notices are announced in the newspapers as per the requirements. Quotations are called for the same from various suppliers. Comparison of all the quotations guides us in selecting the suppliers. Terms and conditions are then finalized. Negotiations and discounting are also done during this. So both the parties, the buyer and the supplier are ready for its transaction.
5. **Purchase order (PO):** when the supplier or vendor is selected, a purchase order is prepared in the prescribed format. This is done by our purchase department. Purchase order is sent to the supplier. This PO is accepted by the supplier. The details of material requirements, specifications, quality instructions, quantity etc are mentioned in the PO. Delivery date expectations and terms and conditions are also written in the same. It is nothing but a formal contract between the purchaser and the supplier.
6. **Material receiving:** as per the purchase order, supplier sends our material at the delivery spot. We receive the material at our place. Here very important activity of checking, the actual delivered material as per the purchase order is performed. So quantity of items is confirmed and material inspection is done by the purchaser. If any defective item is there, then it is notified to the delivery authority immediately. Material receipt documentation is completed here and we formally accept the material. Payment of material is done either before, or after delivery or in stage as per the terms already decided.

Q. Explain types of purchasing.

1. Purchasing as per requirement: it is also known as hand to mouth purchasing. It is suitable when we have less working capital. It is sudden purchasing in urgent situations.

Advantages:

- Costing is based on the current market rates, so no effect of market fluctuations.
- Flexibility is more.



- Large inventories for storage are not necessary.
- Choice for purchasing is more.

Disadvantages:

- Unavailability of material may create production stoppage.
- Pressures are more in urgent requirements.
- Quality can be overlooked, unfortunately.
- Sudden demands cannot be met.

2. Purchasing for a specific period:

Only sufficient items are purchased to satisfy the need of a specified period. But this is prior purchasing and the decision is not sudden like in the first case.

Advantages:

- Working capital involved is less.
- Small storage space is also sufficient.
- Material is available right from start.
- Slight discounts are possible due to frequent purchasing.

Disadvantages:

- Time of purchasing should not be missed out.
- Sudden price hike may affect the purchase budget.

3. Market purchasing:

Systematic study of material requirement is done. Here market survey is necessary. Decision of purchasing is done based on many related issues also.

Advantages:

- Price discounts are offered.
- No compromise on quality.
- Let's pressures due to no urgent demands.

Disadvantages:

- Inventory of large capacity is required.
- More inventory carrying costs.
- Market fluctuations create problems.



4. Contract purchasing:

Suppliers are already finalized. They are given huge supply contracts. A definite period is fixed for such contracts.

Advantages:

- Homogeneous supply of material.
- Suppliers are responsible for delays, if any.
- Large inventory is not necessary.
- Supply is assured.
- No relation with the market fluctuations.

Disadvantages:

- If terms of supply are not fulfilled by the supplier, then the situation becomes worry some.
- Corruption is possible in contracting.
- Substandard material delivery is also possible.

5. Central purchasing:

Purchasing for many sections, departments or plants can be done centrally. So the activity becomes unified and discipline of purchasing is implemented. Discounts are very large. Local corruption is restricted. Unique supply is possible. Uniformity of material is also added an advantage. Difficulties occur to in material transportation to all plants or places. Large inventories are required.

6. Purchasing through a DGSD (Director General of Supplies & Disposals):

It is regular in government departments. DGSD is the Central purchasing organisation for purchasing activity. Material is provided at cheap rates. Rates of supply are defined initially and care is taken to provide material in time. It is the systematic and disciplined way of supply of materials to various governments sections.

Searching and selection of sources: when we are running a purchase function, we have to locate, develop and maintain the source of supply. Searching of sources of supply is the preliminary activity. Out of all sources with us, our next aim is to select the correct source i.e. supplier.



Searching: We can have a systematic search of suppliers by the following work practices.

1. Visits to concerned industries.
2. By going through the buyers' guide.
3. Survey of industry's directory published by MCCIA or any other relevant agency.
4. Visits to industrial exhibitions like EXPO, IMTEX etc. and contacts are developed with various industrial representatives.
5. Close study of industrial and commercial journals.
6. Visiting cards received in operations from all parties (Vendors).
7. Read technical magazines regularly.
8. Study of newspaper advertisements.
9. Periodic survey of new products, new projects and upcoming vendors.
10. Catalogues of various products.

All these are the ways to search the potential supplier for our firm. It is the continuous function which requires positive attitude. Even a single visit, single telephoning call, any e-mail, any visiting card may help you a lot in the same. So always keep eyes open, antenna up to search options of suppliers for your need.

How to select the source for purchasing?

Following are the parameters based on which we can finally select the appropriate supplier/source:

1. Quality of material.
2. Pricing and discounts.
3. Seriousness in supply.
4. Systems of supply function.
5. Status of the supply in market.
6. Feedback from other buyers.
7. Technology that they are using.
8. Financial background of the company.
9. Flexibility in the various supply issues.

10. Conditions of factory.
11. Ready to negotiate on terms.
12. Past records of the company.
13. Warranty of services offered by them.
14. Readiness to accept new technology.
15. Testing methods used by them.
16. Willingness to provide support in case of difficulties.
17. Professionalism of the system.
18. Way of communication.
19. Transparency in business.
20. Secrecy of some sensitive terms.
21. Answerability and responsiveness.
22. Honesty in fulfilling contract terms.

Difference between procurement and purchasing

Sr.No.	Procurement	Purchasing
1	It is a strategic function.	It is an administrative function.
2	Procurement includes transaction of goods and services so bargaining, logistics, sourcing, etc.	It includes the actual transaction of goods and services.
3	It is a systematic process	It is a routine process
4	It is scientific method to get material, at right time, at minimum cost from right source with good quality	It is a traditional method of getting goods from market.

Q. Explain modern techniques of materials management.

Industry is getting modern face day by day. The management function is adopting new techniques to improve overall productivity. Materials management is also accepting and implementing such modern techniques. Examples: MRP and ERP.



Material resource (requirement) planning (MRP):

- MRP is the scientific way of determining the requirements of raw materials, spares, components and all other items required for production within the economic investment policies of the productive system.
- MRP converts the Master schedule for final product into detailed schedule for raw materials and all other item required for production.
- MRP helps to understand about order time, delivery time of all the materials necessary for smooth production function.
- The logic of MRP is based on the principle of dependent demand. i.e. the direct relationship between demand of one item and demand of its main assembly (e.g. wheel and bicycle).
- MRP projects not only the demand but also the timing of the inventory demand.
- MRP determines quantity and timing for material planning.

Inputs to MRP:

1. Supplier lead time: supplier lead time need to be an essential part of how you plan production.
2. On hand inventory: If resource material is available in inventory, then there is no necessity to purchase new. This saves money. This helps to optimize on the materials already in the inventory. Keeping promises of customers is also easy.
3. Current forecasting: if there is knowledge about what you have already forecasted, then this can alert the organisation to make changes that need to be made. This helps to line up demand and inventory.
4. Work and machine centre capacity:
 - Knowledge person capacity is a must to do MRP.
 - Whenever customer wants material, we should make it available to customer.



- If capacity at work is known, then planning of material available for dispatch can be calculated.
 - As per such calculation, we can give promises to the customers.
5. Bill of material: Bill of materials indicate materials required for a given component. It also indicates brought out items and shop made items.
 6. Order history and season:
 - There should be idea about seasonal trends.
 - This knowledge helps to optimize production rate as per the demands. Also, addition to above, the following are few more inputs for effective MRP.
 7. Price trends of the materials.
 8. Import policy of the government.

Benefits of material resource planning:

1. Minimum levels of inventories are possible.
2. As inventories are minimum, the costs related to them are also less.
3. Material tracking becomes easy.
4. It is ensured that economic order quantity is achieved for all lot orders.
5. Material planning smoothens capacity utilization.
6. MRP allocates correct time to products as per demand forecast.
7. Quicker response to the change in demand.
8. Better machine utilization.
9. No issues of shortages.
10. Better inventory turnover.

Functions of MRP:

1. To ensure that material and components are available for production.
2. To ensure that final products are ready for dispatch.
3. To maintain minimum inventory.



4. To ensure right quantity of material is available at right time to produce right quantity of products.
5. To ensure planning of all manufacturing processes.
6. To reduce investment in work in process inventories.

Enterprise resource planning (ERP):

1. ERP is a business management system which integrates all functional units of the business for example planning, manufacturing, sales, marketing, finance etc. through a common corporate database.
2. ERP integrates all data and processes of an organisation into a unified system.
3. ERP uses all the resources of the enterprise in a systematic way.
4. ERP system covers all the basic functions of an organisation in all business sectors.
5. Major ERP vendors are:
 - a. SAP
 - b. ORACLE applications
 - c. PEOPLESOFT
 - d. JD EDWARDS

Basic list of ERP modules:

1. ERP Finance module:
 - In this financial data is gathered from various functional departments.
 - Using this data, valuable financial reports are generated. For example, balance sheet journal and ledger.
2. ERP human resource module:
 - HR module regularly maintains a complete employee data base.
 - This database contains contact information, salary details, attendance, performance evaluation and career of all employees.
 - To utilize expertise of all employees, the advanced HR modules are used.



3. ERP purchase module:

- This module makes a systematic flow chart for procurement of required raw materials.
- It automates the processes of identifying potential of suppliers, negotiating price, making aware of purchase order, billing etc.

4. ERP production module:

Here optimum utilization of manufacturing capacity, parts, components, material resources is done using historical production data and sales forecasting.

5. ERP sales and marketing module:

- Sales module implements functions of order placement, order scheduling, shipping and invoicing.
- ERP marketing module do direct mailing campaign, bulk SMS and other marketing related work.

6. ERP inventory module:

- This helps to maintain the appropriate level of stock in inventory.
- Following are automated and data is available dynamically for the same:
 - inventory status
 - item usage monitoring
 - provision of replenishment techniques
 - balance quantity in inventory
- ERP inventory is integrated with sales, purchase, finance and production modules of ERP.

Advantages of ERP:

1. Chronological history of every transaction through relevant data compilation in every area of operation.
2. Matching purchase orders, inventory receipts and costing is easier and correct.
3. Duplication of work and repetition of work is avoided.



4. Transparency in operation. No corruption.
5. Systems are given back up of present status of all the facts.
6. Sensitive data is protected by consolidating multiple security system into a single structure.
7. Revenue tracking is possible from invoices through cash receipt.
8. Decision-making becomes easier.
9. Searching, calling, waiting etc are avoided due to nature of ERP system.
10. Customer satisfaction is possible through quick service using ERP.

Disadvantages of ERP:

1. The cost is high.
2. It is time consuming.
3. Too little customization is not economical.
4. Too much customization makes the project slow.
5. ERP systems are difficult to learn fast.
6. Exhaustive training of users is achieved.
7. If user interface is critical, then it creates too many difficulties.
8. Hardware and infrastructure needs more investment.
9. Migrating of existing data to the new ERP system is difficult.
10. Integrating ERP system with any other stand alone software system is also difficult.
11. It is difficult to implement the ERP system in decentralized organizations.
12. Once finalized one vendor, it is difficult to switch over to other or to get services from other vendor.
13. In case of failure of ERP system due to the vendor, there is big loss to the organisation.



HELPFUL LINES FOR ONLINE EXAM

1. Which is the function involved in materials management?
 - a. Purchasing
 - b. Storing
 - c. Distributing
 - d. **All**
2. ----- is a part of materials management.
 - a. **Inventory management**
 - b. Finance management
 - c. Marketing management
 - d. None
3. **Inventory** is the collective stock of items which is required for routine functioning of industry.
4. The stock of material, maintained in order to avoid 'no stock' situation is called as
 - a. Additional stock
 - b. Extra stock
 - c. **Buffer stock**
 - d. None
5. Match the pairs

(a) Raw material inventory	1. Drills
(b) Machinery spares inventory	2. Bolt
(c) Standard parts inventory	3. Pulley
(d) Tools inventory	4. Steel

 - a. a-2, b-4, c-1, d-3
 - b. a-3, b-1, c-4, d-2
 - c. **a-4, b-3, c-2, d-1**



- d. a-3, b-2, c-4, d-1
6. Which is the function of inventory?
- a. Ensures availability of material
 - b. Proper purchasing guidelines
 - c. Printing stock out
 - d. **All the above**
7. Statement 1 – Due to inventory management, costs of inventory increases.
Statement 2 – Inventory management avoids stock out.
- a. Both 1 and 2 correct
 - b. Both 1 and 2 wrong
 - c. 1 correct, 2 wrong
 - d. **1 wrong, 2 correct**
8. ABC Analysis is the ----- concept.
- a. Finance
 - b. **Inventory management**
 - c. HR
 - d. Administration
9. Match the pairs
- | | |
|------------|-----------------------------|
| 1. A items | (a) Average important |
| 2. B items | (b) Relatively unimportant |
| 3. C items | (c) Outstandingly important |
- a. 1-a, 2-b, 3-c
 - b. 1-b, 2-c, 3-a
 - c. **1-c, 2-a, 3-b**
 - d. None
10. What is the pattern of care for 'A' type of items?
- a. **More attention**
 - b. Average attention
 - c. Less attention



- d. No defined way of attention
11. 'A' type of items has ----- importance due to consumption.
- a. 10 to 20%
 - b. 15 to 25%
 - c. 40 to 50%
 - d. **70 to 80%**
12. Procurement of 'C' type of items should be done
- a. frequently
 - b. In immediate schedule
 - c. **Infrequently**
 - d. None
13. 'A' type of items are purchased in
- a. sufficient quantities
 - b. **small quantities**
 - c. medium size
 - d. none
14. Which is a first step in doing ABC analysis?
- a. Determining unit price
 - b. Arranging items in descending order
 - c. Deciding the policies
 - d. **Preparing a list of all items**
15. What is the relationship between graph and classification of A, B, C categories?
- a. **Classification is done after drawing graph**
 - b. Graph is drawn after classification
 - c. Graph is not drawn in ABC analysis
 - d. None
16. Which is not the consideration in ABC analysis?
- a. **Sub categorization like A₁, A₂, B₁, B₂, C₁, C₂ is not possible**
 - b. ABC curve is similar in shape for different industries
 - c. All items should be considered together



- d. None
- 17. In EOQ ----- is ordered.
 - a. Minimum quantity
 - b. Maximum quantity
 - c. **Optimum quantity**
 - d. Average quantity
- 18. Which is not the cost concerned with EOQ?
 - a. Procurement cost
 - b. Inventory carrying cost
 - c. Total cost
 - d. **Primary cost**
- 19. In graphical method of EOQ, the cost which is represented as straight inclined line is
 - a. Procurement cost
 - b. **Inventory carrying cost**
 - c. Total cost
 - d. None
- 20. Which is as the assumption in EOQ?
 - a. Lead time zero.
 - b. Immediate replenishment of the stock
 - c. **Both (a) and (b)**
 - d. None
- 21. Which is the assumption in EOQ?
 - a. Uniform demand of the item
 - b. Rate of demand is known to us
 - c. **Both (a) and (b)**
 - d. None
- 22. Which is the assumption in EOQ?
 - a. Cost of placing order variable
 - b. One stock out is allowed
 - c. Both (a) and (b)



d. **None**

23. Procurement cost is represented by

a. **C_p**

b. PC

c. P_c

d. None

24. Inventory carrying cost is represented by

a. I_{cc}

b. C_i

c. C_u

d. **i**

25. Procurement cost per order includes

a. Cost of calling quotations

b. Cost of receiving material

c. Cost of inspection

d. **All**

26. Inventory carrying costs includes

a. Storage cost

b. Insurance

c. **Both**

d. None

27. Inventory carrying cost includes

a. Depreciation

b. Interest charges

c. **Both**

d. None

28. When any item is out of stock then ----- costs involves.

a. Over stocking

b. **Under stocking**

c. Out of stocking

d. None



29. When stock is more than the required then ----- cost involves.

- a. Under stocking
- b. **Over stocking**
- c. More stock
- d. None

30. Annual consumption of the items is represented by -----in EOQ.

- a. A
- b. AC
- c. **S**
- d. None

31. Economic Order Quantity is represented by

- a. **q_o**
- b. E_o
- c. E_q
- d. None

32. $EOQ = \sqrt{(2S\Delta)/(Cu \times i)}$

Which is the term Δ ?

- a. **C_p**
- b. PC
- c. P_c
- d. None

33. $EOQ = ?$

- a. $\sqrt{(2SCu)/(Cp \times i)}$
- b. $\sqrt{(SP)/(2Cu \times i)}$
- c. **$\sqrt{(2SCp)/(Cu \times i)}$**
- d. $\sqrt{(2Cu \times i)/(S \times Cp)}$

34. Buffer stock is nothing but -----



- a. New stock
 - b. **Safety stock**
 - c. Confused inventory
 - d. Unnecessary stock
35. Ups and Downs in consumption and delivery period are absorbed by ----
- a. **Buffer stock**
 - b. EOQ
 - c. Procurement strategy
 - d. None
36. What will happen when there is no buffer stock?
- a. Production stoppage
 - b. Delay in deliveries
 - c. Loss of reputation
 - d. **All the above**
37. What is the advantage of EOQ model?
- a. Material is available quickly
 - b. Effective utilization of inventory
 - c. **Both (a) and (b)**
 - d. Non
38. Statement 1 – It is difficult to order odd number of items after calculation of EOQ mathematically.
- Statement 2- EOQ is not caring whether item is bulky or perishable.
- a. **Both 1 and 2 correct**
 - b. Both 1 and 2 wrong
 - c. 1 correct, 2 wrong
 - d. 1 wrong, 2 correct
39. Why purchasing is required?
- a. To procure materials at lowest cost
 - b. To maintain standards of quality
 - c. **Both (a) and (b)**
 - d. None



40. Calling quotations, order follow up, material receiving, placing PO are the functions of

- a. Quality department
- b. **Purchase department**
- c. Inventory department
- d. Marketing department

41. Which is the first step in purchasing?

- a. Decision for purchasing
- b. **Material requisition**
- c. Finalization of supplier
- d. Market analysis

42. PO in materials management means?

- a. Placement officer
- b. Post Office
- c. **Purchase order**
- d. None

43. In purchasing, DGSD belongs to

- a. **Director general of supplies and disposals**
- b. Defined goods for supply and dispatch
- c. Division general of sales and distribution
- d. None

44. Statement 1- procurement is a systematic process

Statement 2-purchasing is a routine process

- a. **Both 1 and 2 are correct**
- b. Both 1 and 2 are wrong
- c. 1 correct and 2 wrong
- d. 1 wrong and 2 correct

45. Following is not concerned with materials management modern technique.

- a. MRP
- b. SAP



- c. ERP
 - d. **5S**
46. The logic of----is based on the principle of dependent demand
- a. **MRP**
 - b. MRP II
 - c. ERP
 - d. SAP
47. ----determines quantity and a timing for material planning.
- a. MRP II
 - b. ERP
 - c. SAP
 - d. **MRP**
48. Which is the input to MRP?
- a. On hand inventory
 - b. Bill of material
 - c. **Both**
 - d. None
49. Which is the input to MRP?
- a. Current forecasting
 - b. Order history and season
 - c. **Both**
 - d. None
50. ERP means
- a. **Enterprise resource planning**
 - b. Entry restricted products
 - c. Energy resource products
 - d. None
51. Statement1-MRP maintains maximum inventory. Statement2-MRP provides better inventory turnover
- a. Both statements are correct
 - b. Both statements are wrong



- c. Only first is correct
 - d. **Only second is correct**
52. Statement1-ERP integrates all Data. Statement2-ERP covers only materials Management.
- a. Both statements are correct
 - b. Both statements are wrong
 - c. **Only first is correct**
 - d. Only second is correct
53. ---uses all the resources of the enterprise in a systematic way.
- a. MRP
 - b. MRP II
 - c. **ERP**
 - d. None
54. ERP vendor is
- a. SAP
 - b. ORACLE
 - c. PEOPLESOFT
 - d. **All**
55. Which is the ERP module from following?
- a. ERP HR
 - b. ERP inventory
 - c. **Both**
 - d. None
56. Which is not the advantage of ERP?
- a. **Easy to implement it without any training**
 - b. Easier decision making
 - c. All functions are inter-connected
 - d. This team carries all data
57. Which is not the disadvantage of ERP?
- a. Cost is high
 - b. Time-consuming



c. **Slow decision-making**

d. Difficult to learn easily

58. Statement 1-ERP gives transparency. Statement 2-Repetition of work is avoided due to ERP

a. **Both statements are correct**

b. Both statements are wrong

c. Only first is correct

d. Only second is correct

59. Statement 1-ERP needs exhaustive training to employees. Statement 2-cost of ERP installation is less

a. Both statements are correct

b. Both statements are wrong

c. **Only first is correct**

d. Only second is correct