

# **PRODUCTION MANAGEMENT**

## **UNIT- I**

### **PRODUCTION :-**

Production is a process used to transform raw materials into finished goods.

### **PRODUCTION MANAGEMENT:**

#### **MEANING:**

Production management means planning, organizing, directing and controlling production related activities.

#### **DEFINITION:**

According to H.A. Harding, "Production management is concerned with those processes, which convert inputs in to outputs.

### **SCOPE OF PRODUCTION MANAGEMENT / FUNCTION**

1. Product Design
2. Process design
3. Production planning and control
4. Maintenance management
5. Material handling
6. Development and installation
7. Quality control

### **SIGNIFICANCE OF PM:**

- Helps to introduce new products.
- Expansion of the firm.
- Maximize the outputs and minimize the inputs.
- Reputation, goodwill and image
- Helps to face competition,
- Optimum utilization of resources,
- Support different useful areas.

**PRODUCTION SYSTEM:**

Production system means a set of resources and procedures used to converting raw materials into products and delivering to the customer.

(or)

Step by step sequence of activities used to convert input process output & delivers to the market.

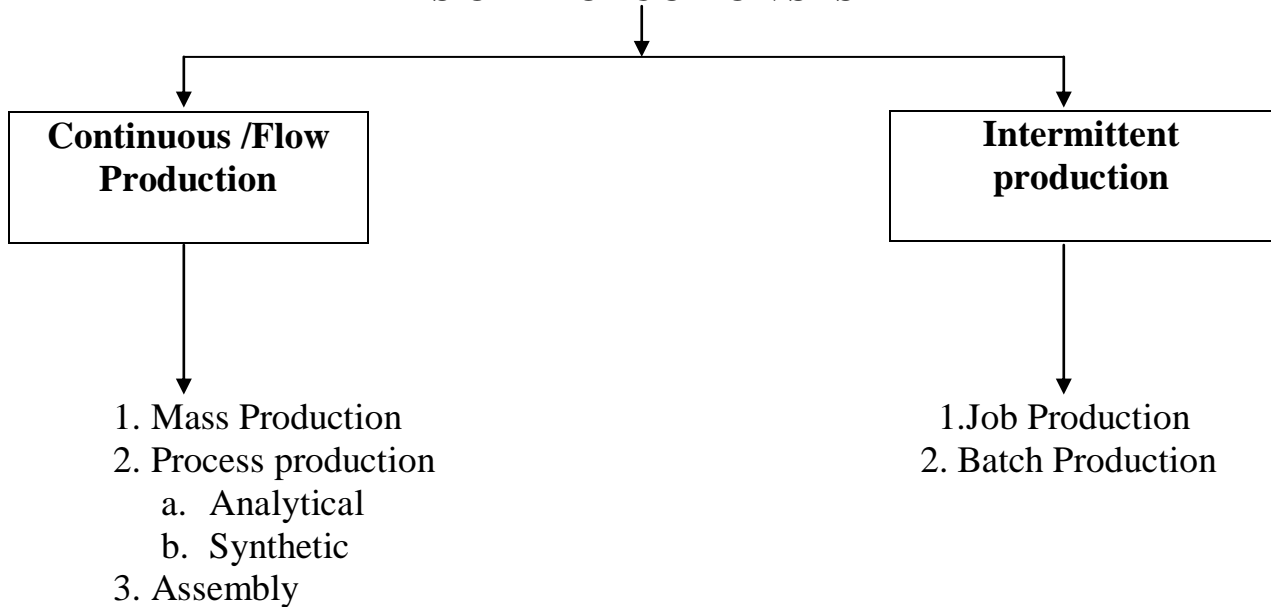
**DEFINITION:**

Production system is defined as procedures and arrangements of all functions that required accumulating input process output and delivering to the market.

**FUNCTIONS OF PRODUCTION MANAGEMENT:**



## TYPES OF PRODUCTION SYSTEM



### Continuous production

A Series of interconnected operations where the material move from one stage to another without interruption.

#### **1. Mass production:**

Only one type of product or maximum two or three products manufactures in large quantities.

Here goods are produced in large quantities using standardization, product wise layout and balanced production.

#### **2. Process production:-**

Process production means a single raw material can be transformed into different kinds of product at different stage of the product process.

##### **(i) Analytical :**

Analytical means a raw material is broken into different products.

*Example :-*

Processing of crude oil in refinery.

##### **(ii) Synthetic:-**

Synthetic means mixing of two (or) more materials to manufacture a production.

#### **3. Assembly Production:**

Assembly production means two (or) more components are combined to manufacture a finished product.

Manufactured parts are joined into sub- assemblies (or) final assemblies.

**Example:-**

Auto mobile, television.

### **Intermittent Production System**

Intermittent Production means the goods are manufactured specially to fulfill orders placed by customers rather than the stock.

#### **(i) Job production:-**

Job production means production of single complete unit by one operator (or) a group of operators.

**Example:-**

Dam construction, ship building, and printing shop.

#### **(ii) Batch production:-**

Batch production means items are processed in lots (or) batches.

**Example:-**

Chemical industrials, printing press.

**Significant of production Management:-**

**Importance:-**

- Helps to introduce new product
- Expansion of the firm
- Maximize the price of production
- Reputation, face competition
- Optimum utilization of resources
- Support different functional areas

## **PLANT LAYOUT**

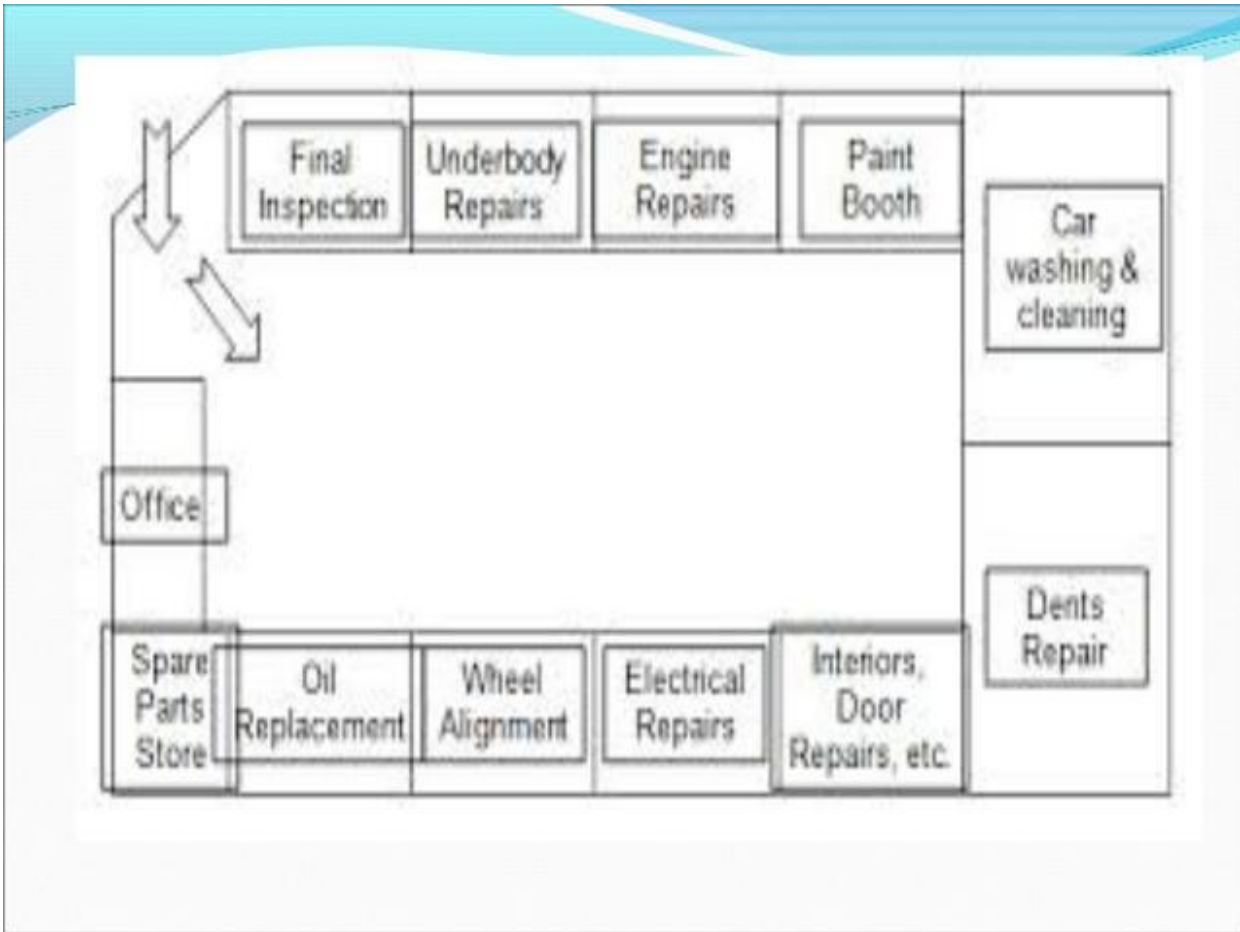
**Meaning :**

Plant layout means arrangements of machinery, equipment and other industrial facilities.

**Definition:**

Plant layout is defined as arrangements of physical facilities and manpower required to manufacture a product at least cost

Example: Layout of a Automobile Plant



**Importance of plant layout:**

1. It provide overall satisfaction to all
2. Reduce material handling
3. Provide proper ventilation & lighting
4. Better Supervising
5. Increase Productivity with better quality and low cost.
6. Quick disposal of work.

**Types of plant layout:**

Arrangement of facilities in a manpower frequency

1. Product or line layout
2. Process or functional layout
3. Fixed position layout
4. Complain Based layout

**Product layout:**

It means all the processing equipment and machine are arranged according to the sequence of operation of a product.

Only one type of product produced in large quantities.

Example:

## Product Layout Diagram

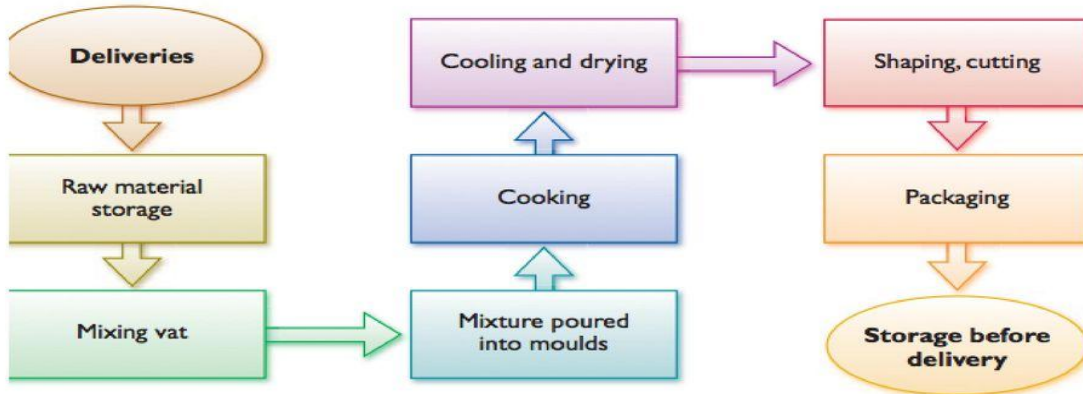
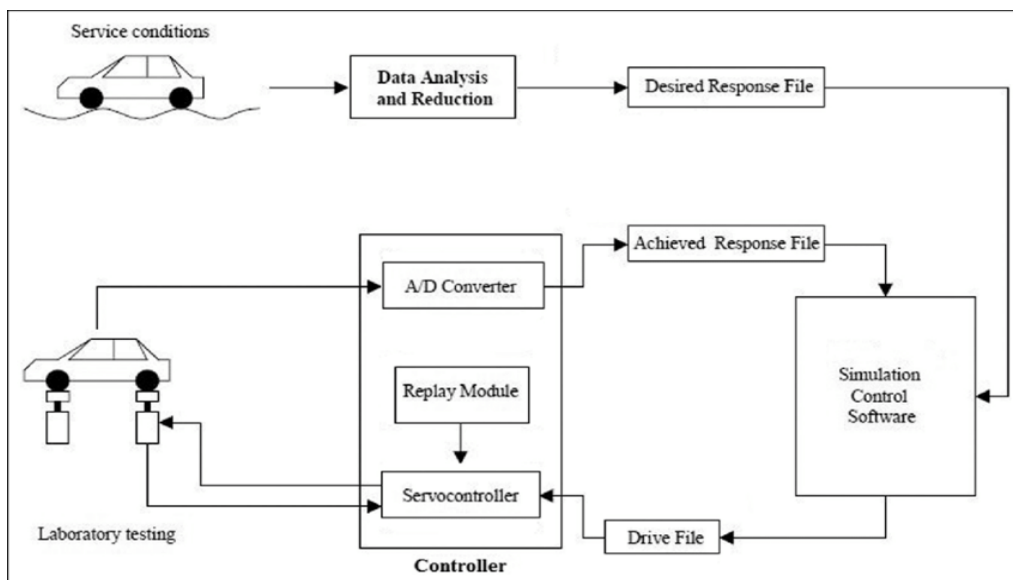


Figure 3.11 Product layout diagram for a food manufacturer.

**Process Layout:**

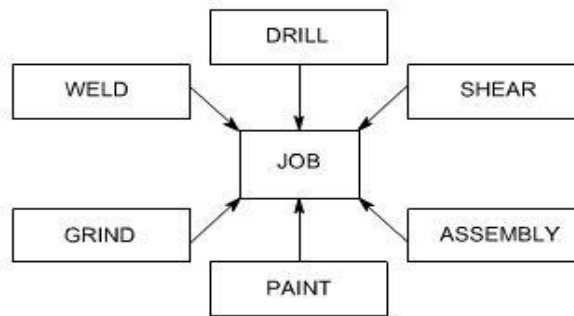
It means all the equipment's & machines are arranged based on the function are performed by a department, separate department established for each specialized operation.

**Ex:**



**Fixed position layout.**

It Means men, equipment and machines are moves to the place of material for the necessary operation.

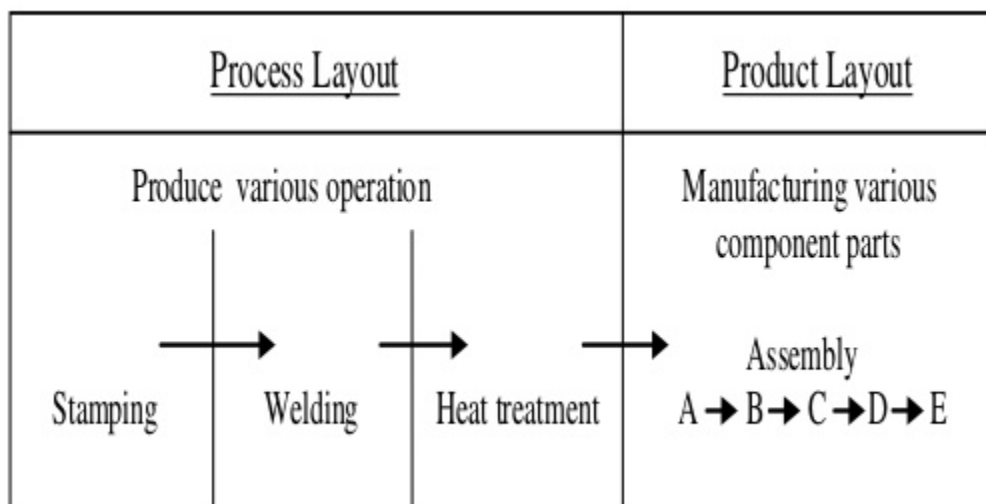


**Combined layout:**

Combined layout means mixing or combination of process & product layout.

When the complaining product contains a lot of components & parts.

When the production required to be produced in different type of product.



**Plant Location**

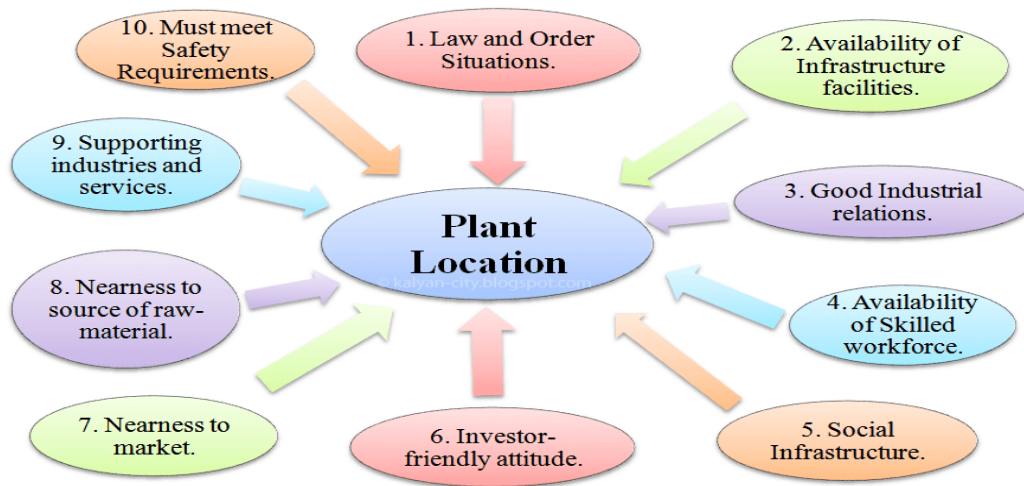
**Meaning:** (Where the firm set up their operation)

Plant location refers to the choice of region and the selection of a particular site for setting up a business. /Choosing or selection of area

**Definition:-**

Plant location is defined as the functions of determining where the plant shout be located for maximum operating economy and effectiveness.

**Factors influencing plant location:-**



### **Factors affecting plant location**

*Other factors which also affect plant location are availability and cost of land, suitability of land - soil and topography, climatic conditions, location of a similar unit, etc.*

#### **1. Law and order situation**

Plant location must be at that place where law and order situation is in control.

#### **2. Availability of infrastructure facilities**

Plant location which is selected must have proper infrastructure facilities. Without good infrastructure facilities, it will be difficult to do business efficiently.

#### **3. Good industrial relations**

Plant location must be at those places where good industrial-relations are maintained.

#### **4. Availability of skilled workforce**

Plant location must be convenient and easily accessible to skilled workforce.

#### **5. Social infrastructure**

Plant location must have good a social infrastructure.

There must be suitable social infrastructure facilities like;

- Education institutions,
- Hospitals and health centers,
- Community centers like worship place, garden, meditation center, etc.
- Recreation facilities like theaters, clubs, communication facilities, etc.

#### **6. Investor friendly attitude**



Plant location must be in those states whose governments have an investor-friendly attitude.

### 7. **Nearness to market**

Plant location must be near a market. Every business unit depends on a market for selling its goods and services.

### 8. **Nearness to raw-materials source**

Plant location must be usually near to the source of raw-material. Raw-materials' costs are about 50% of the total cost. So, it is important in the business to get the raw materials in time and at a reasonable price.

### 9. **Nearness to supporting industries**

Plant location must be near its supporting industries and services. If it purchases spare parts from an outside agency, then these agencies must be located very close to the business

### 10. **Must meet safety requirements**

Plant location must meet all essential safety requirements. Due to air, water and sound pollution, some factories have a bad effect on the health of the people.

### 11. **Miscellaneous factors**

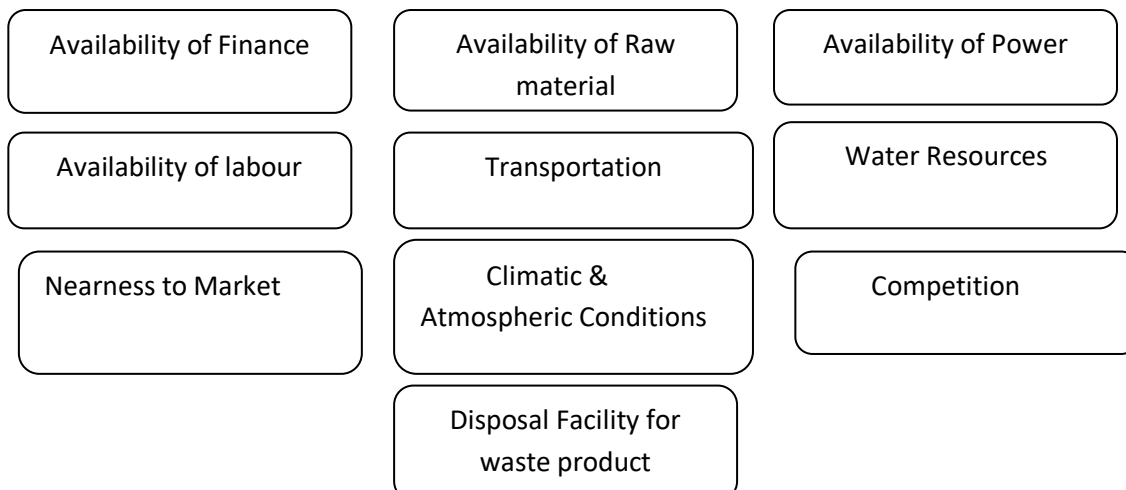
Following miscellaneous factors also affect a plant location:

Availability and cost of land,

Suitability of land - soil and topography,

Climatic conditions,

Location of a similar unit, etc.



## UNIT – II

Work study – Time Study – Motion Study Work Measurement –Principals and factors maintenance of Plant – types.

### Work Study

#### **Meaning :-**

Work Study is the examination of human work in all context i.e Method study and time study.

#### **Definition:**

Work study is defined as systematic process and analysis to determine best method and time required for performing in a operation.

#### **Objectives of work study:**

- To develop the best method of doing the work.
- To establish most economical way of doing the work.
- To determine that time require by an ideal operator the performing a task.
- To choose the fastest method to do a job
- Effective utilization of resources
- It sets standard of performance
- It brings higher productivity

#### **Advantages of Work study:**

1. Work study ensures higher productivity,
2. Better working conditions with less fatigue,
3. Higher wages to workers,
4. Uniform production flow,
5. Job satisfaction and job security to workers,
6. Reduction in unit cost of production,
7. Quality products to consumers,

8. Fast delivery schedule,
9. Harmonious employer-employee relation, and
10. Better service to customers.

**Types of work study:**

1. Method Study
2. Time & Motion study
3. Work Measurement

**(1) Method Study:**

**Meaning:**

Method study is a systematic procedure to analyze the work to eliminate unnecessary operations.

**Definition:**

According to International Labour Organization(ILO) method study is “The systematic recording, analysis and critical examination of existing and proposed ways of doing work and the development and application of easier and more effective method”

**Objectives:**

- i. It improves the proper utilization of manpower, machine and materials.
- ii. It also improves the factory layout, workplace, etc.,
- iii. It also improves the process and procedure.
- iv. It develops better physical working environment.
- v. It reduces undesirable fatigue.

**PROCEDURE OF METHOD STUDY**

<b>SELECT</b> Analysis of the job
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<b>RECORD</b> All relevant facts about the present methods
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<b>EXAMINE</b> Critical examination of all facts
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**DEVELOP**

Efficient and economical method

**DEFINE**

New method to be introduced

**INSTALL**

Implementing new methods as a standard practices

**MAINTAIN**

Maintain the standard practices

**(2) Time & Motion Study**

**Time Study:**

“Time study means the determination of standard that is taken by a worker of average ability under normal conditions for performing a job”.

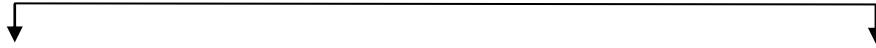
**Motion Study:**

“Motion study determines the correct method of doing a job to avoid unnecessary movements, for which the workers are unnecessarily tired”

**Steps involved in Time & Motion Study:**

- i. Time & motion study eliminate unnecessary movements.
- ii. They examine the proposed method critically and determine the most effective one.
- iii. They determine for each element having a stop-watch.
- iv. They record all the parts of a job which are done by the existing methods.
- v. They install the method as standard one.
- vi. They critically observe the workers who are engaged with the work.
- vii. They assess the proper speed of the operator who is working.

## TECHNIQUES OF METHOD STUDY



### Chart

Operation Chart

Flow process chart

Travel Chart

Multiple activities Chart

SIMO (Simultaneous Motion Chart)

### I.Charts:

#### Operation Chart:

It is also known as outline process chart.

Records only major activities (i,e) operation and inspection.

#### Flow Process Chart:

Records the sequence of flow of works.

(i,e) Operation, Inspection, Transform, Temporary Storage, Permanent Storage, Combined activities.

#### Travel Chart:

Travel Chart is a simple square table

(i,e) Useful where there are multiple movements between the places.

It indicate origin of movements, direction and designation of materials

#### Multiple chart :

Multiple activity chart records the more then one subject work (or) machine and equipment are recorded on a common time scale to show their inter relation.

#### SIMO Chart:

SIMO Chart means it record minute details of simultaneous moment of the different parts of the body of an operator during the performance of the operation.

### Diagram :

#### Flow :

Flow diagram is a drawing indicating the part of men materials and components on a scale plan of work area department (or) factory.

**String diagram:**

String diagram is a part of flow diagram.

String diagram is a simple tool. Thread scale used to trace and measure the distance path of workers and machines.

**Work Measurement****Meaning:**

Work measurement means to determine standard time required for doing the job .(Or)Work measurement in the estimation of standard time for an average worker to carry out a specific task at different levels at performance.

**Definition:**

According to British Standard Institution as, “The application of techniques designed to establish the time for a qualified worker to carry out a specified job at a defined level of performance”

**Procedures for work measurement:**

- Breaking job in to elements
- Record reserved time for each element
- Establish element time values
- Asses relaxation allowance for personal needs
- Add the relaxation allowance time
- Determine the frequency of occurrences of each element in the job.
- Add contingency allowance it any

**Techniques of Work Measurement**

- i. **Repititive**
- ii. **Non-Repititive**

<b>Non – Repetitive</b>	<b>Repetitive</b>
Pre determined motion time system(PMDS)	Group of operations Require continuously during the time spend at the job
Time study	
Synthetic data	
Analytical estimation	
Work sampling	

**Non – Repetitive work:**

**i)Time study:**

Time study is concerned with the determination of the amount of time required to perform a unit of work.

**ii)Synthesis:**

Synthetic techniques are used where standard time is computed by adding various elemental times which constitute the work. Standard data is made available for most of the known elemental operation such as for preparatory, setting manipulating, removing, clearing, tool positioning, holding and tightening.

**iii)Predetermine motion time system:**

Pre determine motion time system is defined as a work measurement techniques by which normal times are established for basic human motions and these time values are used to build up the time for a job at a defined level of performance.

**iv)Analytical estimating:**

Analytical techniques of work measurement used to determine the time values for jobs, having long non repetitive operations. The time values are determined by using synthetic data or on the basis of the past experience.

**v)Work sampling:**

Work sampling has a method of finding the ratio of delay and work element to the total process time by random observations.

## MAINTENANCE OF PLANT

### **Meaning:**

It is a process of keeping the machinery, equipments and plant services ever available in proper working conditions.

### **Definitions:**

Maintenance management is concerned with the direction and organization of resources in order to control the availability and performance of industrial plant to some specific level.

### **Objectives of maintenance:**

- To increase the life time of machines.
- To improve the quality of work and productivity.
- To minimize the accidents through regular inspection.
- To keep the plant in good working conditions.
- To maximize the efficiency of work.

### **Types of maintenance:**

- Breakdown (or) corrective maintenance
- Preventive maintenance
- Predictive maintenance
- Scheduled maintenance

#### **i) Breakdown maintenance :**

(Repair work taken after the failure of machine)

Breakdown maintenance means where there is work stoppage because of machine breakdown.

In this sense maintenance becomes repair work.

Repairs are made after the equipment is out of order

#### **Causes of breakdown maintenance**

Failure to identify and replace worn out parts

Too low (or) high voltage

Indifference towards vibration (or) sound in the system.



## **ii) Preventive maintenance:**

Preventive maintenance means routine action taken in planned manner to prevent break down and ensure operation and practically possible.

(or)

Preventive maintenance means periodic inspection is carried out to anticipate breakdown and to prevent them before they occur instead allowing the breakdown to happen and then to take action.

### **Objectives of preventive maintenance:**

- To make plant equipment and machines always available and ready for use.
- To maintain the value of the equipment machinery and other service facilities.
- To ensure safety of life of employer.

## **Predictive maintenance:**

Predictive maintenance is a part of preventive maintenance which involves the identification of future problems they occur.

### **Objective of predictive maintenance:**

Decrease in equipment (or) process down time.

Decrease in costs for parts and labour.

Improved worker and environmental safety.

Energy savings.

## **iv) Scheduled maintenance:**

Scheduled maintenance is a procedure aimed at avoiding break downs

Breakdown can be dangers to life & as far as possible should be minimized.

**Eg:**

Over hauling of machines, clearing of tanks & while washing of buildings are normally done in this manner.

## Unit – III

Production planning & control – definition objectives & importance elements of production planning routing – scheduling.

### **Meaning of production planning and control.**

Production planning and control comprises estimation, routing, scheduling, dispatching ,follow up, inspection of production functions.

### **Objectives of production planning and control:**

- Estimation of input and out put
- Proper co-ordination among the workforce machinery and equipment
- Better control
- Uninterrupted production
- Capacity utilization
- Timely delivery

### **Advantages and disadvantages of PPC:**

#### **Advantages:**

- Higher productivity
- Better quality
- Better industrial relation
- Customer satisfaction
- Saving cost

#### **Disadvantages:**

- Assumptions
- Rigidity in employee behavior
- Time consuming
- External environmental factors
- Costly process

## **Production planning:**

Production planning means estimating, routing, scheduling of production relative functions.

(or)

Production planning means what steps should be needed in the production process within what time limit the production is to be completed and how much work is to be done by each work station

## **Elements of production planning:**

- Estimation
- Routing
- Loading
- Scheduling

## **Estimation:**

It means deciding the quantity of production to be produced and cost involved in it on the basis of sales forecast.

## **Routing:**

It is the process of determining the path (or) sequence of operations to be performed in the production process.

What work to be done? Where? & How?

## **Scheduling:**

It means determining the starting time and finishing time for each operation.

Setting dates and finishing date for each part.

Sub assembly and final assembly

## **Loading:**

It means deciding which jobs to assign to which work centre (or) machine

## **ROUTING:**

### **Meaning:**

Routing means determination of path (or route, establishing the sequence of operation to be followed in manufacturing a particular product.

### **Objectives of routing:**

- Efficient use of available resource
- Reduction in manufacturing cost
- Improvement of quality and quantity of output.
- Provide a basis of scheduling and loading.

### **Routing decision:**

- Analyze the product
- Make or buy decision
- Material form, shape, quantity and quality
- Planning the operation
- Routing operation layout
- Planning of an assembly

## **SCHEDULING:**

### **Meaning:**

Scheduling means determine the starting and completion time\_for the various operation to be performed.

### **Type of scheduling:**

#### **SCHEDULE**

1. Master scheduling
2. Parts scheduling
3. Machine Loading

## Factors affecting scheduling

### Internal factor

Availability of machine  
Availability of manpower  
Availability of material  
Manufacturing facilities  
Time for each operation

### External factor

Customer's demand  
Customer's delivery date  
Stock (or) inventories

## PRODUCTION CONTROL:

### Meaning:

Production control means dispatching, follow-up, inspection of production functions.

(or)

Production control implementation of production plans, co-ordination the activities, check whether the actions successfully implemented (or) not (RQRQRT- right quality, right quantity, right time).

### Elements of production control:

- Dispatching
- Follow up
- Inspection

#### 1. Dispatch:

Dispatch means granting of permission to proceed according to plans already laid down. (Implementation).

#### 2. Follow up:

It means the work is carried out as per the plan.

#### 3. Inspection:

It means check (or) verification made whether the work is carried out as per plan (or) not.

## UNIT – IV

Quality control and inspection objectives and significant – SQC- AGMARK, ISI & ISO Certification marks.



### QUALITY CONTROL :

#### Meaning:

Quality control is a system for verifying and maintaining a desired level of quality in an existing product (or) services by careful planning, use of proper equipment, regular inspection and corrective actions required.

#### Definition:

According to Alford, “Quality control is defined as industrial management techniques by means of which products of uniform acceptable quality are manufactured.



#### Objectives of quality control:

- To assess the quality
- To see whether the product conform to the pre- determined standards.
- To locate reason for deviation.
- To take necessary actions.
- To suggest suitable improvement .

- To reduced the wastage.
- To assess the various techniques .



## IMPORTANCE (OR) BENEFITS OF QUALITY CONTROL

### 1. Encourages quality consciousness:

The most important advantage derived by introducing quality control is that it develops and encourages quality consciousness among the workers in the factory which is greatly helpful in achieving desired level of quality in the product.

### 2. Satisfaction of consumers:

Consumers are greatly benefited as they get better quality products on account of quality control. It gives them satisfaction.

### 3. Reduction in production cost:

Quality control further checks the production of inferior products and wastages thereby bringing down the cost of production considerably.

### 4. Most effective utilisation of resources:

Quality control ensures maximum utilisation of available resources thereby minimising wastage and inefficiency of every kind.

### 5. Reduction in inspection costs:

Quality control brings about economies in inspection and considerably reduces cost of inspection.

### 6. Increased goodwill:

By producing better quality products and satisfying customer's needs, quality control raises the goodwill of the concern in the minds of people.

### **7. Higher morale of employees:**

An effective system of quality control is greatly helpful in increasing the morale of employees, and they feel that they are working in the concern producing better and higher quality products.

### **8. Improved employer-employee relations:**

Quality control develops to better industrial atmosphere by increasing morale of employees which ensures cordial employer-employee relations leading to better understanding and closeness between them.

### **9. Improved techniques and methods of production:**

By supplying technical and engineering data for the product and manufacturing processes, improved methods and designs of production are ensured by quality control.

### **10. Effective advertisement:**

Organisations producing quality products have effective advertisement. They win the public confidence by supplying those better quality products.

### **11. Facilitates price fixation:**

By introducing quality control measures, uniform products of same quality are produced. This greatly facilitates the problem of price fixation. One price of standard products becomes prevalent in the market.

### **12. Increased sales:**

Quality control ensures production of quality products which is immensely helpful in attracting more customers for the product thereby increasing sales.

## **QUALITY INSPECTION:**

Quality inspection is the process of examining an objects for identification / checking it is for verify the quality (or) quantity.

### **Definition:**

“Inspection is the process of measuring the qualities of a product or services in terms of established standards” The standards can be in terms of strength hardness shape, etc.





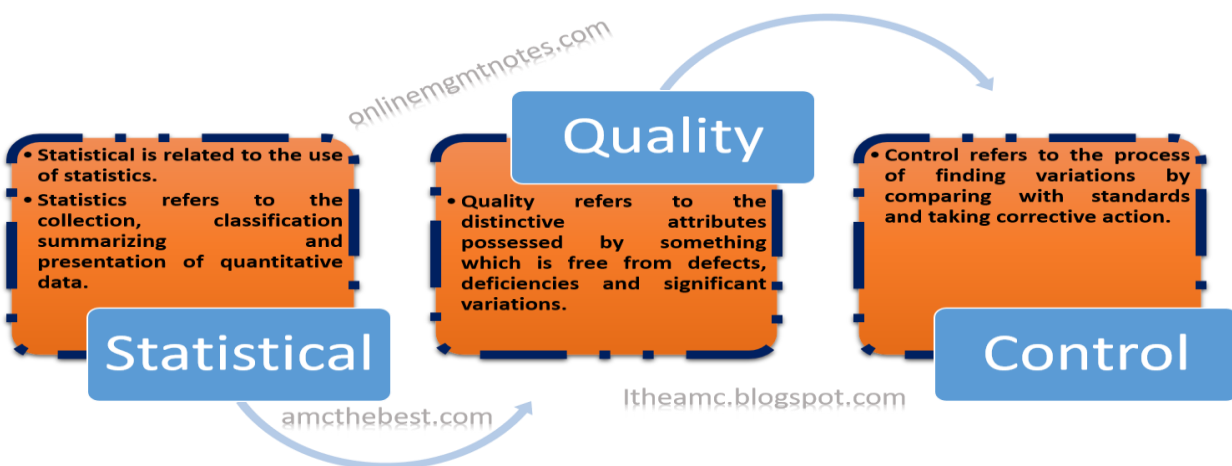
**Objectives of Quality Inspection:**

- To detect and remove the faulty raw material
- To improve the product quality
- Reduction in cost
- Maintenance of quality
- Build up reputation & reduce customer complaints.

**Statistical Quality Control: (SQC)**

**Meaning:**

Statistical quality control is the term used to describe the set of statistical tools used by quality professionals.



**Definition:**

Statistical quality control is the application of statistical methods to accept (or) reject products to be produced (or) to control the process therefore product quality while the part is being made.

**Categories of Statistical Quality Control**

- Descriptive statistics
- Statistical process control
- Acceptance sampling

**Benefits / Importance of statistical quality control:**

- It leads to more uniform quality production
- It improves the relationship with customer.
- It provide a means of detection of error at inspection
- Determine the capability of manufacturing.
- It reduces the number of rejects and save the cost of material.

**Categories/classification of statistical quality control:**

- Descriptive
- Statistical process control (SPC)
- Acceptance sampling

**Descriptive:**

Used to describe quality characteristics of relationship (Mean, Range, and Standard Deviation)

**Statistical process control (SPC):**

Monitor the quality of product an process  
(Amount of variation i,e) raw material machine, operation time)

**Acceptance sampling:**

Decision must be made to accept (or) reject.  
(setting hypothesis)

## STANDARDIZATION:

### Meaning:

Standardization means setting standards of quality (goods are pure and promote uniformity of products).

### STANDARDIZATION MARKS / SYMBOL:

Standardization is a marks or symbol given to a product which means the certain standard with respect to the quality. In terms of material used, methods of manufacturing, labeling. Packaging etc..)

### TYPES OF STANDARDIZATION MARK/SYMBOL:

- ISI
- Agmark
- FPO
- Ecomark
- ISO
- Wool mark
- Hall mark
- Hologram

<b>Kinds of marks/symbols</b>	<b>Certified by</b>	<b>Product category</b>	<b>Examples</b>
1. ISI (Indian standard institute)	BIS- Bureau of Indian standard	Industrial product	Electrical appliances, cement. LPG gas cylinder, instant baby foods
2. Agmark	Agricultural marketing department of government of Indian	Agricultural forestry horticultural, livestock	Oil, fats, cereals pulses, spices, honey etc.
3. FPO (Food process order)	Ministry of food processing industry	Fruits vegetable product	Fruit beverages pickles, jams
4. ECO Mark	BIS-Bureau of Indian Standards	All	Paper, textiles, detergents
5. ISO (International	BIS-(9000,14000)	All kinds of	Manufacturing ,Processing,printing

organization for standardization		organization	electronics steels, telecommunication ,insurance.
6.Hall Mark	BIS	Gold Jewellery	Jewels
7. Wool Mark	International Wool Secretariat	Woolen garments	

### **AGMARK:**

Agmark is a certification mark employed on agricultural product in india assuring the date conform to a set of standard approved by AIDGI

#### **Function of Agmark:**

A ensures that whatever is being packed should be properly weight and measure before packing.

Producer can easily sell the product with their certification marks

It confirms standard quality and hygienic conditions of the food.

Consumers are ensures value of money by a product without fear.

### **ISI (Indian Standard Institutes)**

ISI mark is a certification mark for a industrial product in India Assuring that they conform to a set of standards approved by BIS.

#### **Benefits of ISI:**

If you are not satisfied with quality of product means company will give you new product.

Action can be taken in case of bad quality.

ISI mark is issued after proper investigation.

#### **Functions of ISI:**

To prepare standard for commodities, Materials and processes

To help in the production of quality goods.

To certify industrial good

To circulate information relating to standardization.

To promote general standards both at the national and international levels.

To protect the consumers by assuring them good qualities and product performance.

**ISO** (International organization for standardization):

ISO is a certification mark in international level or global level standards of goods and services authorized by (BIS) (Bureau of Indian standards)

**Objectives of ISO:**

- To facilitate international grade of goods and services.
- Becoming part of a national or regional or international qualities standard.
- Encouraging and bilateral multinational agreements in trade technological
- Helping Industries improve their qualities standards
- Promoting total quality control system.

**Categories of ISO**

<b>Standard</b>	<b>Content</b>	<b>Application</b>
ISO	Provide definition and concepts explains how to select over standards for a given business	All industries including software development
ISO	Quality assurance in design development production installation and servicing	Engineering and construction firms manufacture that design, develop, install and service product
ISO (9002)	Quality assurance In production installation	Companies in the chemical process industries that are not involved design after sale services
ISO (9003)	Quality assurance is test and inspection	Companies in the chemical process industrial that are not involved in product design (or) after sales services
ISO (9004)	Quality management and quality system elements	All industries

## Unit – (V)

### Material Management (Meaning)

Material Management with planning organization on control of flow of material From their initial purchase to destination.



### Definition:

Material management is the interrelated Functioning of the various section of an organization dealing with supply of raw material and allied activities.



### Purpose of Material Management

- To gain economy in purchasing
- To satisfy the demand during period of replenishment
- To carry reserve stock to avoid stock out
- To stabilize fluctuations in consumption
- To provide reasonable level of client services



## Objectives of Material Management:

### Primary Objective

- Efficient use of working capital
- Economy of purchase
- Continuity of supply
- Providing the best services of the customers
- Procurement of quality material

### Secondary Objective

- Planning and forecasting
- Make (or) buy decision
- New material and product development
- Co-operation with other department

## IMPORTANCE OF MATERIAL MANAGEMENT

1. Optimum materials acquisition
2. Greater promise as a cost reducing device.
3. Result in improved production capacity of plants.
4. Saving of labour time.
5. Reduction in inventory and storage space.
6. Reduction in damage to materials.
7. Smooth flow of production.
8. Easier production control.
9. Better utilization of resources.
10. Elimination of losses and pilferage.

## Purchasing :

Purchasing means buying goods and services from external sources to an organization.

(or)

Procurement of goods and services from external agencies.



## Definition:

Purchasing is defined as acquiring goods and services in the right amount at the right price at the right time

## Procedure of purchasing:

- Requirement an information gathering
- Supply a contact (Mentor)
- Background Review
- Negotiation
- Order fulfillment
- Consumption maintenance
- Contact renewal



## Store keeping

### Meaning:

Store keeping means art of preserving (or) storage of raw materials, working progress and finished goods in this stores.

### Define store keeping:

According “ Alford store keeping is the aspects of material control concerned with the physical storage of goods.

### Importance of store keeping:

- To prevent overstocking and under stocking of materials.
- To minimize the storage cost effective utilization of available storage space.
- To prevent materials from percentage pilferage theft fine and other risk
- Ideal stock must be maintained
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### Functions of Stores keeper:

- To receive the materials from the receiving department.



- Handling and speedy issue of materials
- To make arrangement for proper storage of materials and finished goods
- Ensure regular supply of materials
- Effective utilization of store space
- To keep details of items up-to-date
- Physical checking of stocks
- To prevent unauthorized person from entering this stores.
- To keep the stores in clean way
- To report an based scrap and absolute

### **Objectives of Store-keeping**

- \* To avoid over and under-stocking of materials.
- \* To maintain systematic records of materials.
- \* To protect materials from losses and damages.
- \* To minimize the storage costs of materials

### **Types of stores:**

Generally, there are three types of stores

1. Centralized Stores
2. Decentralized Stores
3. Centralized Stores With Sub-stores

### **It can be further classified as below**

- Functional stores
- Physical stores
- Raw materials stores
- Production stores
- General stores
- Store
- Salvage store
- Packing store
- Space parts store

## **JUST-IN-TIME (JIT)**

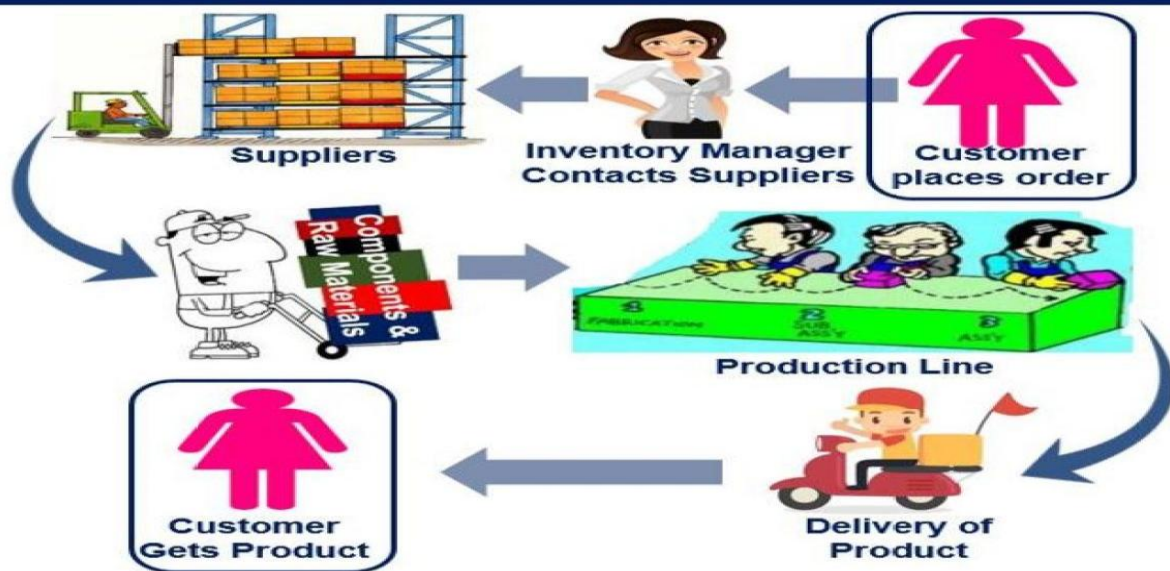
### **Meaning:**

Just In Time is an inventory management system which aims at procuring raw materials and labour as and when require without investing in storing it.

### **Definition:**

Just in time (JIT) inventory is a strategy to increase efficiency and decrease waste by receiving goods only as they are needed in the production process, thereby reducing inventory costs.

# Just In Time



## OBJECTIVES OF JIT

- ▶ Produce only the products the customer wants.
- ▶ Produce with perfect quality.
- ▶ Produce products with only those features the customer wants.
- ▶ Produce with minimum lead time.
- ▶ Produce with no waste of labour, material or equipment every movement must have a purpose so that there is zero idle inventory.

## Advantages

- Reduces cost on storing raw materials.
- Less investment in raw material
- Speeds up manufacturing process as material is available readily
- Eliminates lead time
- Helps in shorter production runs
- Eliminates wastage (in terms of time, inventory, transportation etc.)

## Disadvantages

- Lead to potential supply chain destruction
- Manufacturer have no margin to make errors
- Unable to meet any unexpected order from the customer
- No time for renegotiation with customer.

## Features of JIT

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- Reduction of wastage
- Pull system of production
- Use of kanbans
- Streamlined production
- Flexibility in production
- Low inventories
- Balanced system: Distribution of the workload evenly among work stations