DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE
(AUTONOMOUS)
(Approved by AICTE & Affiliated to Anna University, Chennai)
Re-Accredited with 'A' Grade by NAAC, Accredited by TCS
Accredited by NBA – BME, ECE & EEE
PERAMBALUR - 621 212. Tamil Nadu.
website : www.dsengg.ac.in

COURSE MATERIALS
PRODUCTION PLANNING AND CONTROL

Year/Section/Department	IV / Mechanical Engineering			
Credits Details	L: 3	T: 0	P: 0	C: 3
Total Contact Hours Required	45			

Syllabus:

UNIT I	**INTRODUCTION**	**No. of Periods : 9**
Objectives and benefits of planning and control-Functions of production control-Types of production- job-batch and continuous-Product development and design-Marketing aspect - Functional aspects- Operational aspect-Durability and dependability aspect aesthetic aspect. Profit consideration- Standardization, Simplification & specialization- Break even analysis-Economics of a new design.		
UNIT II	**WORK STUDY**	**No. of Periods : 9**
Method study, basic procedure-Selection-Recording of process - Critical analysis, Development - Implementation - Micro motion and memo motion study - work measurement - Techniques of work measurement - Time study - Production study - Work sampling - Synthesis from standard data - Predetermined motion time standards.		
UNIT III	**PRODUCT PLANNING AND PROCESS PLANNING**	**No. of Periods : 9**
Product planning-Extending the original product information-Value analysis-Problems in lack of product planning-Process planning and routing-Pre requisite information needed for process planning-Steps in process planning-Quantity determination in batch production-Machine capacity, balancing-Analysis of process capabilities in a multi product system.		
UNIT IV	**PRODUCTION SCHEDULING**	**No. of Periods : 9**
Production Control Systems-Loading and scheduling-Master Scheduling-Scheduling rules-Gantt charts-Perpetual loading-Basic scheduling problems - Line of balance - Flow production scheduling-Batch production scheduling-Product sequencing - Production Control systems-Periodic batch control-Material requirement planning kanban –Dispatching-Progress reporting and expediting-Manufacturing lead time-Techniques for aligning completion times and due dates.		
UNIT V	**INVENTORY CONTROL AND RECENT TRENDS IN PPC**	**No. of Periods : 9**
Inventory control-Purpose of holding stock-Effect of demand on inventories-Ordering procedures. Two bin system -Ordering cycle system-Determination of Economic order quantity and economic lot size-ABC analysis-Recorder procedure-Introduction to computer integrated production planning systems-elements of JUST IN TIME SYSTEMS-Fundamentals of MRP II and ERP.		

UNIT-1 - INTRODUCTION OF PRODUCTION PLANNING AND CONTROL
PART A

1) Define production planning and control (Nov. 2011)

PPC may be defined as the direction and coordination of the organizations materials and physical facilities towards the attainment of pre-specified goals in the most efficient way.

2) Define production planning

Production planning is defined as the determination, acquisition and arrangement of all facilities

necessary for future production of products.

3) What is meant by production control?

Production control through control mechanism, tries to take corrective action to match the plant and actual production .Thus production control reviews the progress of the work and takes corrective steps in order to ensure that programmed production takes place.

4) What are the Phases of PPC?

PPC involves three phases

1. Pre-planning phase, 2. Planning phase, 3. Control phase

5) List the various functions/activities of PPC? (Nov. 2011, May 2015)

1. Materials planning
2. Facility planning
3. Methods planning
4. Estimating
5. Process planning (routing)
6. Scheduling and loading
7. Dispatching
8. Expediting (or follow up)
9. Inspection and testing
10. Evaluation

6) Differentiate between routing and scheduling

Routing provides the best and the most economical production sequence, whereas scheduling prepares a logical time- table showing the starting and finishing time of each production work in accordance with some predetermined program. In simple words routing considers the 'where' aspects and scheduling 'when' aspects.

7) What is Production system? (April 2011)

A production system is the frame work within which the conversion of inputs into output occurs. At the one end of the production system are the inputs and at the other end outputs.

8) How can you classify the production system? (April 2016)

1. Job shop production
2. Batch production
3. Mass production
4. Process or continuous production

9) What do you mean by batch production?

In batch production, the products are made in small batches and in large variety. Each batch contains identical items but every batch is different from others.

10) Differentiate between intermittent and continuous production systems.

The job shop production and batch production are also known as intermittent production systems. The mass production and process production are termed as continuous production system.

11) What types of plant layouts are suitable for job shop, batch and continuous production?

- Job shop production – Process of functional layout
- Batch production - Cellular layout
- Continuous production – Line or product layout

12) What is the objective of product analysis?

The main objective of product analysis is to obtain qualitative as well as quantitative evaluation of the influencing factors which determine primarily the success of a manufactured product.

13) Distinguish the terms durability and dependability.

Durability refers to the length of the active life or endurance of the product under given working conditions.

Dependability refers to the reliability with which the product serves its intended function.

14) What do you mean by design manufacture and design for assembly?

Design for manufacture (DFM) means the design for ease of manufacture of the components of a product.

Design for assembly (DFA) means the design of the product for ease of assembly.

15) What do you understand by product standardization? (April 2016)

Standardization means setting up standards or measuring sticks by which extent, quality, quantity, value, performance, or service may be gauged or determined.

16) What are the 3S's with respect to product development techniques?

1. Standardization 2. Simplification 3. Specialization

17) What do you mean by specialization? (April 2016)

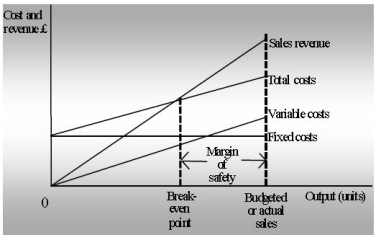
Specialization is the process whereby particular firms concentrate on the manufacture of a limited number of products or types of products.

18) What are the advantages of specialization?

1. Better utilization of equipment
2. Higher productivity
3. Greater efficiency

4. Better quality
5. Reduced production cost & hence lower unit price, and
6. Use of standardized methods.

19) What do you understand by break-even analysis? (April 2014, May 2015)



Break-even analysis, also known as cost-volume-profit analysis, is the study of inter-relationships among a firm's sales, costs and operating profit at various levels of output.

The break-even point is the point at which revenue is exactly equal to costs. At this point, no profit is made and no losses are incurred. The break-even point can be expressed in terms of unit sales or dollar sales.

20) Contrast product simplification with product diversification.

Product simplification is the process of reducing the variety of products manufactured i.e., variety reduction. **Product diversification** is completely opposite to simplification. Product diversification involves adding new products or lines products to achieve a balanced product range.

21) List the Objectives of Planning and Control (May 2015)

Production planning is an activity that is performed before the actual production process takes place. It involves determining the schedule of production, sequence of operations, economic batch quantities, and also the dispatching priorities for sequencing of jobs. Production control is mainly involved in implementing production schedules and is the corollary to short-term production planning or scheduling.

UNIT-2 WORK STUDY
PART A

1) Define work study

Work study is a generic term for those techniques, particularly method study and work measurement, which are used in the examination of human work in all its contexts and which leads systematically to the investigation of all factors which after the efficiency and economy of the situation being reviewed, in order to effect improvement.

2) List the objective of work study.

1. To find the most economical way of doing the work
2. To simplify and standardize the methods, materials, tools and equipment.
3. To determine the time required by a qualified worker to perform the work at a normal pace.
4. To plan the training program for the workers for the new methods.

3) Define method study. (Nov. 2011, Dec 2014, May 2015)

Method study is the systematic recording and critical examination of existing and proposed ways of doing work, as a means of developing and applying easier and more effective methods and reducing costs.

4) List the objectives of method study. (Dec. 2013)

1. To improve the processes and procedures.
2. To improve the design of plant and equipment
3. To improve the plant layout.
4. To improve the use of men, materials and machines.
5. To achieve efficient material handling.
6. To improve the flow of production and processes.

5) Differentiate between operation and inspection.

An operation always takes the material, component or service a stage further towards completion.

An inspection does not take the material any nearer to become a completed product.

It merely verifies that an operation has been carried out correctly as to quality and / or quantity.

6) Differentiate between 'Permanent storage' and 'Delay'.

The difference is that a requisition, chit, or other form of formal authorization is generally required to get an article out of permanent storage but not out of temporary storage.

7) What is a process chart? Mention its types

A process chart is a graphical representation of the sequence of events and related information that occur in the work method or procedures. There various types of process charts are

Outline process chart, Flow process chart, Two- handed process chart

8) Differentiate between outline process chart and flow process chart.

An outline process chart is a process chart given an overall picture by recording in sequences only the main operations and inspections. A flow process chart is a graphical representation of all operations, transportations, inspections, delays and storages occurring during a process or procedure.

9) Distinguish between flow diagram and string diagram.

The sting diagram must be drawn correctly to scale. The flow diagram can be drawn approximately to scale. The flow diagram would look cumbersome when there are too many to and fro movement between points but, such movements will not affect the string diagram.

11. Define time study. (Nov. 2011, Dec 2014)

Time study is defined as a work measurement technique for recording the times and rates of working for the elements of a specified conditions and for analyzing the data so as to obtain the time necessary for carrying out the job at a defined level of performance.

12. Why the job is divided into elements?

i) To ensure that productive work is separated from unproductive activity.
ii) To ensure better and accurate performance rating.
iii) To identify and distinguish different types of elements.
iv) To facilitate checking of method.

13. What is meant by performance rating?

Performance rating is the process of adjusting the actual pace of working of an operator by comparing it with the mental picture of pace of an operator working at normal speed.

14. List the various allowances to be considered while calculating the standard time of job.

i) Relaxation allowances
ii) Contingency allowances
iii) Process allowances
iv) Interference allowances
v) Special allowances

15. Define the terms basic time and standard time.

Basic time may be defined as the time for carrying out an element of work standard rating.

Standard time is the time allowed to an operator to carry out the specified task under specified conditions and defined level of performances.

16. What is meant by work sampling?

Work sampling is defined as a method of finding the percentage occurrence of a certain activity by statistical sampling and random observations.

17. What do you mean by synthetic data? (April 2016)

Synthetic data is the data derived from the analysis of the accumulated work measurement data in the form of tables and formulas where the data is arranged in a form suitable for building up the standard times and similarly machine processing times by synthesis.

18. What is PMTS?

PMTS stands for Predetermined Motion Time System. A predetermined motion time system consists of a set of time data which has been developed from many observations of a worker's performance.

19. Give the acronym for the following: MTA, WFS and MTM.

MTA - Methods Time Analysis, WFS – Work Force System, MTM – Method Time Measurements

20. Define time study.

Time study is defined as a work measurement technique for recording the times and rates of working for the elements of a specified conditions and for analyzing the data so as to obtain the time necessary for carrying out the job at a defined level of performance.

21. What are THERBLIGS. Give any four with symbols. (April 2014)

THERBLIG's are the basic building blocks of virtually all manual work performed at a single workplace and consisting primarily of hand motions. Frank Gilbreth was the first to catalog (list) the basic motion elements.

Symbols of any two THERBLIG's - G – Grasp  , A- Assemble , Select  , Find  , I - Inspect  , Search  .

22. List the steps involved in Time study. (April 2014)

- SELECT(Job to be timed)
- OBTAIN & RECORD(Details regarding method, operator, job & working condition)
- DEFINE(the elements, break the job into element convenient for timing)
- MEASURE (time duration for each element and assets the rating
- EXTEND(Observed time into normal time[basic time])
- DETERMINE(Relaxation and Personal Allowances)
- COMPUTE(Standard time for the operation for defined job or operation)

23. What are the advantages of SIMO chart? (April 2011)

Simultaneous motion Cycle Chart – (i) The principles behind the multiple activity chart and the two handed process chart are combined in SIMO chart, (ii) It is drawn on a time based scale, due to that which allows the job designer to see the relative time taken by each part of the job.

24. Mention the tools used in time study. (May 2015)

Stop watch Study, Work Sampling etc.

UNIT – 3 PRODUCT PLANNING AND PROCESS PLANNING

PART A

1. What is product planning?

i) The evaluation of the range, mix, specification and pricing of existing and new products in relation to present and

future market requirements and competition.
ii) Planning of product range, mix, specification and pricing to satisfy company object
iii) Specifying the research, design and development support required.

2. What is the purpose of feasibility study in relation to product planning?

The purpose of feasibility study is to extend the market analysis with the intent of arriving at a preferred system configuration that the firm is willing to offer the product or product-mix in response to an identified need.

3. List the information that can be obtained from the system operation concept.

i) Identification of prime mission of the system
ii) Definition of operating characteristics of the system
iii) Anticipated usage of the system and its elements
iv).Identification of effectiveness factors

4. List the information that can be obtained from the system maintenance concept.

i) Identification of level of maintenance support.
ii) Definition of repair policies
iii) Definition of effectiveness measures
iv). Establishment of supportability requirements in system/ equipment design
v) Establishment of requirements of logistics support

5. List the activities of advanced product planning. (April 2016)

i) Product selection and justification ii) Products specifications and plans
iii) Product acquisition plan iv) Product evaluation plan

6. What is value analysis? (April 2011, May 2015)

Value analysis is a disciplined approach that ensure the necessary functions at minimum cost without comprising on quality, reliability, performance and appearance.

7. What is value? List its types

Value, in general, taking the 'use value' as an objective, is the ratio between the function and the cost. Value=Types of economic value: 1. Use value, 2. Esteem value, 3. Cost value, 4.Exchange value.

8. How can you increase the value of a product?

The value of a product can be increased:

i) By reducing the costs ii) By improving function
iii) By increasing function by increasing the costs disproportionately low

9. Differentiate between primary and secondary functions with respect to value analysis.

Primary functions are the basic functions which the product is specially designed to perform. **Secondary functions** are those which if deleted would not prevent the devices from performing its primary functions

10. Distinguished between value analysis an value engineering (April 2014).

Value analysis is the application of a set of techniques to an existing product with a view to improve its value. Thus value analysis is a remedial process.

Value engineering is the application of exactly same set of techniques to a new product at the design stage itself. Therefore value engineering is a preventive process.

11. Mention any four uses of value analysis.

i) It reduces the cost of product and determines the appropriate cost for the liable performance of the product.
ii) It helps employees to understand their jobs in a better fashion
iii) It creates new ideas and concepts for R&D department
iv) It creates cost consciousness among the employees in the firm

12. When do you apply value analysis?

Value analysis can be applied in case of the following indications.

i) When the firm is unable to meet delivery schedules
ii) Due to change in technology
iii) When the cost of manufacturing is high
iv) When rate of profit has a falling trend

13. List any four reasons for product's unnecessary costs.

i) Failure to utilize specialized knowledge
ii) Poor design of the component
iii) Lack of ideas and relevant information
iv) Unavoidable delivery constraints

14. List the various phases of value analysis.

i) Orientation phase ii) Information phase iii) Functional analysis iv) Creative phase
v) Evaluation phase

15. What is meant by process planning?

Process planning can be defined as "an act of preparing a detailed processing documentation for the

manufacture of a piece part or assembly".

16. List the various information required for process planning. (April 2016)

1) Assembly and component drawings and bill of materials
2) Machine and equipment details
3) Standard time for each operation and details of set up time for each job
4) Availability of machines, equipment and tools

17. What are the factors affecting process planning?

i) Volume of production
ii) The skill and expertise of man power
iii) Delivery dates for parts or products
iv). Materials specifications
v) Accuracy requirements of parts or products.

18. What is meant by machine balancing?

Machine balancing refers to the procedure of adjusting the times at work centers to conform as much as possible to the required cycle time.

19. State the major objective of assembly line balancing. (Nov. 2011, April 2016)

It is to subdivide the network into several sub networks (stations) without violating the precedence relationships and allocating operations to each station without exceeding the cycle time. i.e the sum of the times of operations allocated to each station should not exceed the cycle time.

20. What are the considerations in selection of an equipment or process? (April 2014)

Consideration in selection of an equipment or process -Economic considerations, production rate and unit cost of production, Durability and dependability, lower process rejection, minimum setups and put away times, longer productive life of machine or equipment and functional versatility.

UNIT – 4 PRODUCTION SCHEDULING

PART- A

1. What do you mean by loading?

Loading may be defined as the assignment of work to a facility without specifying when the work is done and in what sequence.

2. What is scheduling? What are its objectives? (April 2016)

Scheduling refers to the setting of operation start dates so that jobs will be completely by their due date. The objectives of production scheduling are:

i) To meet due date ii) To minimize lead time iii) To minimize setup time or cost
iv) To minimize work-in process inventory v) To maximize machine or labor utilization

3. What is master scheduling?

The master schedule, also known as master production schedule (MPS), formalize the production plan and translates it into specific end-item requirements over a short to immediate planning horizon.

4. What is MPS?

The master schedule, also known as master production schedule (MPS), formalize the production plan and translates it into specific end-item requirements over a short to immediate planning horizon.

5. What are Gantt charts? (May 2015)

Gantt charts are usual aids used to depict the sequencing, load on facilities, or progress associated with work effort over a well-defined time period.

6. What is priority sequencing?

Priority sequencing is a systematic procedure for assigning priorities to waiting jobs thereby determining the sequence in which the jobs will be performed.

7. What are the dispatching rules?

Dispatching rules, also known as priority rules or sequencing rules or scheduling rules, are the rules used in obtaining a job sequence.

8. What is meant by product sequencing?

Priority sequencing is a systematic procedure for assigning priorities to waiting jobs thereby determining the sequence in which the jobs will be performed.

9. What is meant by EBQ scheduling?

EBQ scheduling is nothing is nothing but the economic batch quantity scheduling that can be performed by using aggregate run-out method.

10. What do you mean by line-of-balance? What are its uses?

Line-of-balance is a charting technique that uses lead times and assembling sequencing to compare planned component completion with actual component completions.

11. List the various charts that are used in line-of-balance analysis.

1. Operation programme chart/ or assembly chart, 2. Objective chart 3. Progress chart
4. Line of balance chart

12. What is the use of objective chart?

The objective chart shows the contrast between expected completion schedules of production and the actual performance.

13. When do you use progress chart?

The progress chart is a bar type chart which shows the actual number of items produced at each operation stage against the quantities that should have been produced as indicated by line of balance.

14. What is MRP? (April 2016)

Materials requirements planning (MRP) is a computational technique that converts the master schedule for final products into a detailed schedule for the raw materials and parts used in the final products.

15. List the various inputs required for MRP (April 2011)

1. Master production schedule 2. Bill of materials file 3. Inventory record file

16. What is MPS?

Master Production Schedule (MPS) is a detailed plan that shows how many end items will be available for sale or distribution during specific periods.

17. List some commonly used forms in dispatching.

1. Material requisitions 2. Job cards/ Tickets 3. Labour cards/Tickets 4. Move cards/Tickets
5. Inspection cards/Tickets 6. Tool and gauge tickets

18. What do you mean by expediting?

Expediting, also known as follow-up or progressing, is a control function that keeps track of the 'progresses of work in accordance with planned schedule.

19. List the various recording methods for the progressing purpose.

1. Gantt charts 2. Visual charts 3. Cumulative and weekly charts

20. What is meant by Line Efficiency and Balance Delay. (April 2014)

Line Efficiency – It is the ratio of Total station time to the product of Cycle time and no of work station.
Balance Delay – It is the percentage of total idle time on the line to total time spent by the product from the beginning to end of line.BD = number of work station X Cycle time –

$$\text{Line efficiency } (LE) = \frac{\text{Total station time}}{\text{Cycle time} \times \text{no. of workstations}} \times 100$$

$$\text{Balance delay } (BD) = \frac{\text{Total idle time for all workstations}}{\text{Total available working time on all stations}} \times 100$$

$$BD = (1 - LE)$$

22. What is meant by Gantt Chart and how it is constructed? (April 2014)

Gantt chart is a principal tool used for both loading and scheduling. It consists of a simple rectangular grid, divided by series of parallel horizontal and vertical lines. Vertical lines divide the chart into units of time. The scale units can be year months weeks or days or hours according to the duty for which chart is required. The horizontal lines divide the chart into sections, which can be used to represent either work status tasks or work centres. The four jobs which are to be processed on three work centres are shown.

UNIT-5 INVENTRY CONTROL AND RECENT TRENDS IN PPC

PART -A

1) Define term inventory and inventory control. (April 2016)

An inventory is a stock of an item or idle resource held for future use. Inventory control may be defined as the Scientific method of determining what to order , when to order and how much to order and how much to stock so that the costs associated with buying and storing are optimal without interrupting production and sales.

2) Mention at least four reasons for keeping an inventory.

1. To maintain independence of operations. 2. To meet variation in product demand.
3. To allow flexibility in production scheduling.
4. To provide a safeguard for variation in raw material delivery time.

3) What are inventory costs?

The major costs associated with procuring and holding inventories are:
1. Ordering costs, 2. Carrying (or holding) costs, 3. Shortage (or stock out) costs 4. Purchase costs.

4) Define the following terms: (a) Lead time (b) Re-order point

(a)**Lead time**: The time gap between placing of an order and its actual arrival in the inventory is known as a lead time.

(b) **Re-order point**: The level of inventory at which an order is placed is known as Re-order point or re-orders level.

5) Define the terms buffer stock, and re-order quantity.

Safety or buffer stock: This represents the minimum stock which must be maintained at all times. If stock is less than the buffer stock, then the work will stop due to shortage of materials.

Re-order quantity: The quantity of items to be ordered at re-orders level is known as re-order quantity.

6) What is EOQ?

The technique of economic ordering quantity (EOQ) strikes a balance between the ordering cost and the

carrying cost. EOQ is the size of order which minimizes the total cost of carrying inventory and ordering.

7) What do you understand by fixed-time period model/

The fixed time period models are also referred to us the periodic system, periodic review system, fixed order interval system and P model. In a fixed time period system, periodic review of inventories is made and order is invariably placed in that period.

8) What is JIT? List its Benefits (April 2011)

Just-In-Time is a management that strives to eliminate sources of manufacturing waste by producing the right part in the right place at the right time.

- Reduction in inventories
- Improved quality
- Reduced space requirements
- Shorter lead times
- Lower production costs
- Increased productivity
- Increased machine utilization
- Greater flexibility

9) What are the objectives of JIT? (April 2011)

The JIT is applied to achieve the following goals:

1. Zero defects
2. Zero setup time
3. Zero inventories
4. Zero handling
5. Zero breakdowns
6. Zero lead time and
7. Lot size of one.

10) List the seven wastes that becomes the target of elimination in a JIT process

1. Waste of overproduction 2. Waste of waiting 3. Waste of transportation
4. Waste of processing itself 5. Waste of stocks 6. Waste of motion
7. Waste of making defective products

11).What do you mean by kanban production control system? Brief about Kanban (May 2015)

Kanban means sign or instruction card in Japanese. A kanban is a card that is attached to a storage and transport container. It identifies the part number and container capacity, along with other information.

12). Differentiate between Pull system and Push system

A kanban system, is a Pull system, in which the Kanban is used to Pull parts to the next production state when they are needed i.e., in Pull system product is made to order.

A MRP system is a Push system in which a detail production scheduled for each part is used to Push the parts to the next production stage when scheduled i.e., in a Push system the product is made to stock.

13).What is MRP II? (May 2015)

MRP II is defined as a computer base system for planning scheduling and controlling the materials, resources and supporting activities needed to meet the Master Production Schedule. In fact MRP II consist of virtually functions in a PPC system plus additional business functions that are related to production.

14) What are the functions of MRP II? (April)

1. Management planning: Business strategy aggregate production planning, maser production scheduling, rough cut capacity planning and Budget planning.
2. Customer services: Sales forecasting, order entry, sales analysis and finished goods inventory
3. Operations planning: Purchase order and work order release
4. Operations execution: Purchasing, product scheduling and control, work in-process, inventory control shop floor control and labour hour tracking
5. Financial function: Cost accounts receivable, accounts payable, general ledger and payroll.

15. Define the terms inventory and inventory control?

An inventory is a stock of an item or idle resource held for future use. Inventory control may be defined as the scientific method of determining what to order, when to order and how much to order and how much to stock so that costs associated with buying and storing are optimal without interrupting production and sales.

16. Differentiate between anticipation and fluctuation inventories.

Anticipation inventories: these are stocks maintained to meet the anticipated i.e., expected demand. Fluctuation inventories: these are safety stocks maintained to meet the unexpected demand and thereby to avoid the risk of losing sales.

17. Contrast lot size inventories with transportation inventories.

Lot size inventories: Goods are brought in large to get the benefit of discount. The goods so purchased are stocked unit sale or use. Transportation inventories: When transport of items requires a long time, then items in transport represent the inventory.

18. Mention at least four reasons for keeping an inventory.

i. To maintain independence of operations ii. To meet variation in product demand
iii. To allow flexibility in production scheduling

19. What are inventory costs? (April 2014).

(i) Ordering costs ii) Carrying costs iii) Shortage costs iv) Purchase cost

20. What do you mean by inventory carrying costs?

Inventory carrying costs are the costs associated with holding a given level of inventory on hand. The

holding costs include: i) Costs for storage facilities ii) Handling costs iii) Depreciation, taxes and insurance iv).Costs on record keeping

21. What is EOQ?

The technique of economic ordering quantity (EOQ) strikes a balance between the ordering cost and the carrying cost. EOQ is that size of order which minimizes the total costs of carrying inventory and ordering.

22. What is two bin system? List its advantages (April 2011)(May 2015)

A two-bin system is a type of fixed-order system in which inventory is carried in two bins. A replenishment quantity is ordered when the first bin is empty. During the replenishment lead time, material is used from the second bin. A two-bin system is mostly used in assembly environments. The advantage of a two-bin system is a minimal chance of a stock-out and the ease to handle. Inventory control method (used usually for small or low value items) in which when the first bin is used up, an order is made out for replenishment. The second bin contains enough quantity of the item to last until the ordered quantity arrives.

23. State the elements of JIT? (April 2014, May 2015)

Basic elements of JIT - Flexible resources - Cellular layouts -Pull production system - Kanban production control - Small-lot production - Quick setups - Uniform production levels - Quality at the source - Total productive maintenance - Supplier networks

24. Mention any four ERP packages that are widely used in India.

1. SAP 2. JD Edwards 3. Manufacturing / Pro 4. BPCS 5. Marshal 6. Oracle Financials

25. List the "seven wastes" that becomes the target of elimination in a JIT process.

i) Waste of over production
ii) Waste of waiting
iii) Waste of transportation
vi) Waste of motion
vii) Waste of making defective products