UNIT-I

Two Marks Questions and Answers

1. Explain CIM.
CIM is the integration of the total manufacturing enterprise through the use of integrated systems and data communications coupled with new managerial philosophies that improve organizational and personnel efficiency.

2. What are the components of CIM?

3. What are the steps involved in designing and manufacturing a product?
   - Steps involved in designing and manufacturing a product.
   - Definition of product
   - Design analysis
   - Drifting
   - Pilot production
   - Inspection
   - Packing
   - Conceptual design
   - Prototype
   - Material and process selection
   - Production, Quality assurance and Final product

4. What is the role of CIM in manufacturing?
CIM is most closely associated with functions in manufacturing engineering such as process planning and numerical control (NC) part programming.

5. What are important applications of CIM in manufacturing planning?

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The applications of CIM can be divided into two broad categories.
1) Manufacturing planning 2) Manufacturing control

6. What are the important applications of CIM in manufacturing control?
The applications of computer process control are pervasive today in automated production systems.
Quality control includes a variety of approaches to ensure the highest possible quality levels in the manufactured product. Shop floor control refers to production management techniques.

7. What is management?
Management is the process of making decisions and directing the activities of personnel to achieve stated objectives. The objectives are successfully met when efforts are organized by communicating appropriate information for control and readjustment.

8. List our the tasks for the managers in effective management:
The following six tasks for the managers of CIM:
1. Develop a business model to understand the problem environment
2. Develop a functional model for the processes, functions, and activities to describe both "as is" and "to be".
3. Develop an information model that identifies system interfaces, information exchange patterns, database requirements and applicable technologies.
4. Develop a network model to identify communication and networking requirements
5. Develop an organizational model to investigate the implications of integrating the various islands of automation on the existing organization structure and culture, and how to safeguard against detrimental effects.
6. Finally, develop the implementation plan which should take into account special features of the business and operations.

9. What are the major communication used in manufacturing industry?
The major communication used in manufacturing industry
1. Telephones, including cellular systems
2. Facsimile terminals (or) Fax machines
3. Satellite dish and video conferencing
4. Personal computers (PCs)

10. What is videoconferencing?
The videoconferencing is a live, interactive television program delivered through satellite for a special audience. Videoconferencing can encompass several countries. In it, even two or more persons can participate. For example, in a videoconferencemanufacturing engineers may discuss "live" about the product with the designers whomay be located at company headquarters 1000kms away. Occasionally, customers or distributors may be called in "live" to clarify a point relating to the defect.

11. Define automation.
Automation is generally defined as the process of having machines follow a predetermined sequence of operations with little or no human labor, using specialized equipment and devices that performs and control manufacturing processes.

12. What are the goals of automation in manufacturing industry?
Automation has the following primary goals.
i) Process Integration
ii) Improve Productivity
iii) Economize on floor space
v) Improve quality
13. What are the functions of automated manufacturing systems?
Automating manufacturing systems operate in the factory on the physical product. They perform operations such as processing, assembly, inspection, or material handling, in some cases accomplishing more than one of these operations in the same systems.
14. Give the classification of automation.
Automated manufacturing systems can be classified into three basic types:
1) Fixed automation
2) Programmable automation
3) Flexible automation.
15. What are the benefits of automation?
To increase labour productivity
To reduce labour cost
To mitigate the effects of labour shortages
To reduce or eliminate routine and clerical tasks
To improve worker safety.
16. What are the capabilities of computer control?
The capabilities are:
1) Polling (or) Data sampling 2) Interlocks
3) Interrupt system 4) Exception handling
17. Explain the types of interlocks.
There are two types of interlocks:
i) Input interlocks ii) Output interlocks
i) Input interlocks: An input interlock that originates from an external device.
(e.g., a limit switch, sensor, or production machine) and is sent to the controller.
ii) Output interlocks: An output interlock is a signal from the controller to same external devices. It is used to control the activities of each external device and coordinate its operation with that of the other equipment in the cell.
18. What is MAP?
Manufacturing Automation Protocol (MAP) is a specialized LAN designed for a factory environment. It is hardware cum-software implementable set of rules that facilitate information transfer among networked computers and computer-based equipment.
19. What are the approaches of physical distributions?
Customer service: What level of customer service should be provided?
Transportation: How will the products be shipped?
Warehousing: Where will the goods be located? How many warehouses should be utilized?
Order processing: How should the order be handled?
Inventory control: How much inventory should be maintained at each location?
Protective packing and materials handling: How can efficient methods be developed for handling goods in the factory, warehouse, and transport terminals?
PART –B (16 MARKS)

1. List and discuss the various desirable features of a CAD package.

2. Explain with a suitable example how a solid model is generated using Boolean Operation.

3. Explain any four 2D geometric transformations with suitable illustration.

4. Explain 3D geometric transformation.

5. Explain the terms:
   i. Wire frame modeling.
   ii. Surface modeling.

6. Explain the design process proposed by shigley and the application of computer to the design process.

7. Differentiate between surfaces modeling solid modeling by bringing out their application, advantage and Limitations.

8. What are the various schemes for representing solid objects? Discuss boundary representation (B-rep) Technique.

9. List out and explain various application and benefits of CAD system.