

Total No. of Questions : 12]

SEAT No. :

**P1077**

**[4659]-148**

[Total No. of Pages : 3

**B.E.(Production)**

**b-INTELLIGENT MANUFACTURING SYSTEMS  
(2008 Course) (Elective-IV-)(411090)(Semester-II)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer any three questions from each section.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Use of electronic pocket calculator is allowed.*
- 6) *Assume suitable data, if necessary.*

**SECTION-I**

- Q1)** a) Why would a manufacturing company want to rely on a CAD system for design rather than more traditional drafting methods? What is the benefit of using a CAD system based on solid modeling rather than a wire-frame model? [9]
- b) What are the differences between a fixed automation system and a flexible manufacturing system? Under what circumstances would each of these types of systems be most appropriate? [9]

OR

- Q2)** a) What is the purpose of process planning? Why is Computer Aided Process Planning (CAPP) useful in manufacturing? Discuss some of the benefits of CAPP. [10]
- b) Define the term “feature.” Classify the manufacturing features. What are the advantages of feature-based modeling in manufacturing applications? [8]
- Q3)** a) Develop a taxonomy of the pioneering works in artificial intelligence and expert systems? [8]
- b) Discuss the differences between knowledge and ignorance with respect to artificial intelligence applications? Propose a set of criteria that must be met for machine or software to be considered intelligent? [8]

OR

**P.T.O.**

- Q4)** a) Define ‘Artificial intelligence’? List with reasons the ten most important manufacturing problems suitable for expert system applications? [8]
- b) Describe the system architecture of an intelligent manufacturing system? [8]
- Q5)** a) Discuss the basic differences between a knowledge base and a data base? Why is the user interface an important consideration in expert system? [8]
- b) Why is it important to restrict an expert system implementation to a narrow problem domain. Justify the reason with an example? [8]

OR

- Q6)** a) Engineering problem solving often involves developing a general solution model with liberal tolerance specifications. Does this approach enhance or impede expert systems applications to engineering problems? Explain? [8]
- b) Explain the following with an example. [8]
- i) Inductive and deductive reasoning.
  - ii) Breadth - First search.
  - iii) Depth - First search.

## SECTION-II

- Q7)** a) Discuss the differences between knowledge elicitation, knowledge extraction and knowledge acquisition? [8]
- b) What is ‘Machine Learning’? Explain with an example how neural networks are useful in machine Learning? [10]

OR

- Q8)** a) What is conceptual learning? List and characterize the basic concept learning strategies? [9]
- b) Explain how the fuzzy logic theory is useful on machine thinking? [9]

- Q9) a)** What are the decisive factors for applying the group technology concept in automated manufacturing system? Explain. [8]
- b) What is knowledge Based Group Technology (KBGT)? Explain with a neat diagram the structure of KBGT? [8]

OR

- Q10)a)** Discuss in detail the classification and cluster analysis approaches to Group Technology? [8]
- b) Write the steps involved in Clustering Algorithm? [8]
- Q11)a)** Develop a work breakdown structure for the installation of an expert system for engineering design? [8]
- b) Consider the following formation of an expert system team:

<b>Individual</b>	<b>Role</b>
Domain expert	Source of knowledge
Knowledge Engineer	Channel for knowledge transfer
Management	Source of resources
AI sponsor	Source of motivation
Systems personnel	Integration
Users	Supply of application

Suggest how the rules of the various individuals can be coordinated to facilitate an effective end product. [8]

OR

- Q12)** Explain the role of Artificial Intelligence in the following areas; [16]
- a) Job Scheduling
- b) Facility Planning

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