

IV B.Tech. II Semester Supplementary Examinations, June -2007
ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS
(Electronics & Control Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss the characteristics of production system.
(b) Explain about different control strategies used in problem solving. [16]
2. (a) Discuss the steps involved in A* algorithm.
(b) Give one suitable example problem. [16]
3. (a) Draw the functional block-diagram of a rule-based system and explain.
(b) State and explain Herbrand's theorem. [16]
4. (a) Explain how a semantic network gets evolved into a frame structure. Give an example.
(b) What is granularity representation. Explain. [16]
5. (a) Represent the following sentence in case structure "The train passes through tunnel".
(b) Describe the role of ATN in semantic analysis. [16]
6. (a) Explain the design issues in the implementation of a typical speech recognition system.
(b) What are the AI applications in medical diagnosis. [16]
7. (a) Describe the important features of PROLOG.
(b) Write a LISP program to find factorial of a given integer. [16]
8. (a) Explain about the role of knowledge in expert system.
(b) Give a detailed note about the structure of an expert system. [16]

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1. (a) List and explain the application areas of Artificial Intelligence.
(b) How do determine whether a machine is intelligent or not? Propose a suitable method. [16]
2. (a) Illustrate with suitable examples AND/OR graphs.
(b) Distinguish between forward and backward reasoning. [16]
3. Why does unification becomes necessary in resolution. Explain the algorithm for unification of two tests L1 and L2. [16]
4. (a) What is granularity of representation? Explain.
(b) Explain the features of declarative and procedural frames. [16]
5. (a) Discuss about the steps involved in language understanding.
(b) What is top-down parsing. How it is different from bottom-up parsing. [16]
6. (a) Explain about the role of decision trees in learning.
(b) Distinguish between induction and deduction methods of learning. [16]
7. (a) Write a program in PROLOG to find GCD of given two numbers.
(b) Describe the program structure of LISP language. [16]
8. (a) List and explain the basic characterstics of an expert system.
(b) Describe various of methods interacting with an expert system. [16]

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1. (a) Discuss about the factors determining the choice of direction of a particular problem.
(b) What are the primary characteristics of a production system. [16]
2. (a) Write an algorithm for checking the existence of duplicate nodes.
(b) Give a brief note about constraint satisfaction model. [16]
3. (a) What are tautologies, contradictions and contingencies. Give brief illustration about each.
(b) Convert the formula $((A \rightarrow B) \rightarrow C)$ into conjunctive normal form. [16]
4. (a) What are the advantages and disadvantages of scripts?
(b) What are the basic building blocks of a conceptual dependency representation. [16]
5. (a) Explain about the three general approaches to natural language processing.
(b) Illustrate about four classes of grammars. [16]
6. (a) What is meant by learning? When is a system said to be learnt.
(b) What are the AI applications in satellite imaging. [16]
7. (a) Describe the program structure of PROLOG and LISP languages.
(b) Write a LISP program to find Fibonacci series. [16]
8. (a) Give a brief note about Expert system shells. What is their role in building an expert system.
(b) Explain about the role of knowledge in expert system. [16]

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1. (a) List and explain about various control strategies in problem solving.
(b) Define the state space for the game of chess. [16]
2. Explain in what problem domain, constraint satisfaction model is well suited. Give one case study. [16]
3. (a) Distinguish between inferential and procedural knowledge.
(b) Distinguish the merits and demerits of adopting simultaneous forward and backward search strategies. [16]
4. (a) Explain the characteristics of semantic networks.
(b) With suitable example, explain how linking of subframes is done. [16]
5. (a) Discuss about Backus-Naur Form (BNF). Give an example.
(b) Explain how the design issues of isolated word recognition are different from continuous speech recognition. [16]
6. (a) What are the phase involved in implementation of a typical isolated word recognition system.
(b) What is meant by training of a neural networks? What kind of tasks can be performed using neural networks. [16]
7. (a) List and explain about different data structures in PROLOG.
(b) Write a LISP program to find GCD of two numbers. [16]
8. (a) Distinguish between expert system and conventional program.
(b) Describe the structure of a modern expert system. [16]
