

MCA/D07  
Artificial Intelligence  
MCA -502

Time : 3 Hours

MM:50

Note:- Attempt Five questions in all, selecting one question from each unit. All questions carry equal marks.

UNIT-I

- 1 What do you understand by Artificial Intelligence? Give brief overview of the different applications of Artificial Intelligence.
- 2 What do you understand by the following:  
Conjunctive Normal Form, Disjunctive Normal form, Prenex Normal Form and Skolem Normal form  
Explain using examples.
- 3(a) What is Conceptual graph? Differentiate between Conceptual graph and Semantic network.
- (b) What do you understand by Universal instantiation and Universal introduction?

UNIT-II

- 4(a) What do you understand by a Admissible Heuristic? Write the A\* Algorithm and using example show that A \* search algorithm is admissible.
- (b) What do you understand by Informedness? Show that Manhattan distance heuristic is more informed than hamming distance heuristic in 8-puzzle.
- 4 Define the Production system and discuss the following conflict Resolution strategies used in production systems.
  - (i) Refraction
  - (ii) Recency
  - (iii) Specificity
- 5 Differentiate between Forward reasoning and Backward reasoning. Which one would be better in the following problems and why
  - (a) Chess playing
  - (b) Theorem proving
  - (c) 8-Puzzle
- 6 Write short notes on the following:
  - (a) Beam Search
  - (b) Constraint satisfaction
  - (c) Hill Climbing search

UNIT-III

- 8(a) What is an anonymous variable in PROLOG? Explain it using suitable example.
- (b) What are the input/output predicates available in PROLOG? Explain.
- (c) Explain recursion in PROLOG using an example of your choice.
  
- 9(a) Discuss the Dempster-Shafer theory of evidence.
- (b) Define Expert System. Discuss its important applications.
  
- 10 What is Learning as Induction? Discuss the following general rules of induction:
  - (a) Generalization by disjunction
  - (b) Generalization by tree climbing
  - (c) Replacement of constant by variables.