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MCA/D-21 24168
ARTIFICIAL INTELLIGENCE
Paper–MCA-20-33

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Differentiate between Modus Ponen and Modus Tollen using suitable example.

   (ii) Discuss the time and space complexity of depth first and breadth first search.

   (iii) Write a note on fuzzy operators.

   (iv) Discuss the different replacement strategies in genetic algorithm.

UNIT-I

2. (a) What is Artificial Intelligence? Give a brief overview of the application areas of Artificial intelligence.

   (b) What is resolution? Discuss the different resolution strategies using suitable examples.

3. (a) What do you understand by clausal form? Illustrate the process of conversion to clausal form.

   (b) What are the desirable characteristics of a knowledge representation scheme? Discuss.

UNIT-II

4. (a) What do you understand by informed search? Write the algorithm of hill climbing search and its limitations.

   (b) Differentiate between forward and backward search.

5. (a) What is breadth first search? What are its merits/demerits over depth first search? Discuss.

(b) What do you understand by alpha and beta pruning? Illustrate.

UNIT-III

6. (a) What is production system? Differentiate between commutative and non-commutative production systems.

   (b) Write brief note on Stanford certainty factor algebra.

7. (a) What is expert system? Discuss the rule based architecture of expert system.

   (b) Differentiate between forward and backward reasoning.

UNIT-IV

8. (a) What do you understand by evolutionary computing? What are the essential requirements for evolution? Discuss.

   (b) Differentiate between rank and roulette wheel selection.

9. (a) Write a detailed note on crossover and mutation operations using binary encoding In genetic algorithm.

   (b) What do you understand by learning by induction? Explain using suitable examples.