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MCA/M-15 **10222**

ARTIFICIAL INTELLIGENCE

Paper–MCA–405 (iii)

Time Allowed : 3 Hours] [Maximum Marks : 80

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. Question No. **1** is compulsory.

Compulsory Question

1. (a) What is modus tollen? 3

   (b) What is tautology? 3

   (c) What is unit-preference resolution strategy? 3

   (d) What is the problem of plateau in hill-climbing search? 3

   (e) When is it advisable to use Depth-first search over Breadth-first search? 3

   (f) What are the different sections in PROLOG program? 3

   (g) What are the advantages of using Genetic Algorithm over hill-climbing search? 3

   (h) What is MYCIN? 3

UNIT–I

2. (a) What do you understand by Unification? What are the rules of unification? Discuss. 7

   (b) What is Resolution principle? Differentiate between set of support and linear input form resolution strategies. 7

3. (a) What is the difference between Declarative frames and Procedural frames? Explain using suitable examples. 7

   (b) What is a Clause? Explain the procedure of converting a predicate statement into clauses. Use suitable examples. 7

UNIT–II

4. (a) What do you understand by data-driven and goal-driven Search? When is it advisable to use data-driven search over goal-driven search and vice-versa? Discuss. 7

   (b) Write the A* algorithm. How is it different from best first search? 7

5. Differentiate between the following :

   (a) Admissibility and monotonicity 7

   (b) Alpha pruning and beta pruning. 7

UNIT–III

6. What is Production system? What is the difference between commutative and non-commutative production systems? Discuss. 14

7. Write a detailed note on Dempster Shafer theory for managing uncertainty in Expert systems. 14

UNIT–IV

8. (a) What is the difference between Roulette wheel selection and Rank selection in GA? 7

   (b) Explain the one-point and uniform crossover. 7

9. Write short notes on the following :

   (a) Prolog's unification mechanism 7

   (b) Learning automata. 7