MCA/MX 5272

Artificial Intelligence

Paper : MCA–405(iii)

Time : Three Hours] [Maximum Marks : 80

Note :– Attempt **FIVE** questions in all, selecting **ONE** question from each Unit, in addition to the question number 1 which is compulsory.

1. (i) What is PNF (Prenex Normal Form) ? 3

   (ii) Define Artificial Intelligence. 3

   (iii) What is a satisfiable statement ? 3

   (iv) What is horn clause ? 3

   (v) Define dominance property of search algorithms. 3

   (vi) What is fuzzy logic ? 3

   (vii) What is anonymous variable in PROLOG ? 3

   (viii) What is inductive inference ? 3

UNIT – I

2. Discuss the following rules using suitable examples: (a) Modus Ponen, (b) Modus Tollen, (c) Chain Rule, (d) Universal Instantiation, (e) Existential Introduction. 14

3. (a) Differentiate between declarative frames and procedural frames using suitable examples. 7

   (b) What is a clause ? Convert the following into clausal form:

   $$(\forall x)\{P(x) \rightarrow \{(\forall y[P(y) \rightarrow P(f(x,y))]\& \sim (\forall y)\{Q(x,y) \rightarrow P(y)]\}\}$$

   7

UNIT – II

4. Differentiate between the following :

   (a) Depth first search and breadth first search

   (b) Admissibility and monotonicity

   (c) Data Driven search and Goal Driven search. 14

5. What do you understand by heuristic function ? How does it help in pruning the search area ? Discuss the consequences of using overestimating and underestimating heuristics in A algorithm. 14

UNIT – III

6. (a) What is a production system ? What are its different components ? Explain. 7

   (b) Write short notes on the following conflict resolution strategies: (i) Refraction, (ii) Recency, (iii) Specificity. 7

7. Write a detailed note on Dempster-Shafer theory of evidence. 14

UNIT – IV

8. What is genetic algorithm ? Discuss the different types of crossover using suitable examples. 14

9. Write short notes on :

   (a) Cut and fail predicate 7

   (b) Learning by induction. 7