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BT-4/M-23 44228

INTELLIGENT SYSTEMS
PC-CS-AIML

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What is artificial intelligence ? Discuss its applications. 5

   (b) What is an NP-hard problem ? Explain in detail using a suitable example. Differentiate between NP-hard and NP-complete problems as AI. 10

2. Discuss in detail the following AI problems : 15

   (i) Symbolic and sub-symbolic

   (ii) Knowledge base and data driven AI.

Unit II

3. What are the applications of heuristic search techniques ? Discuss the Best First Search, Hill Climbing and Tabu Search algorithms in detail with suitable examples. 15

4. Discuss the following algorithms in detail with suitable examples : 15

(i) Simulated Annealing

(ii) Genetic Algorithm

(iii) Ant Colony Optimization.

Unit III

5. (a) Differentiate between forward chaining and backward chaining. 7

(b) Discuss various rule-based systems in detail. 8

6. Write short notes on the following : 15

(i) Knowledge acquisition,

(ii) Computational intelligence

(iii) Conflict resolution

(iv) Sources of uncertainty

(v) Certainty theory.

Unit IV

7. (a) What is UML ? Design a class diagram of a library management system ? 10

(b) Discuss in brief fuzzy sets and fuzzy logic. 5

8. Discuss the following application areas of AI : 15

(i) Expert System

(ii) Decision Support Systems

(iii) Speech and vision

(iv) Information Retrieval

(v) Semantic Web.