Code No: R1931054 **R19** **SET - 1**

III B. Tech I Semester Regular Examinations, February-2022

ARTIFICIAL INTELLIGENCE

(**Common to** Computer Science and Engineering, Information Technology)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

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UNIT-I

1. a) Define Artificial Intelligence? Illustrate the Tic-Tac-Toe problem with different approaches. [8M]
   b) List various categorizations of artificial intelligence systems. Explain each. [7M]

(OR)

2. a) What is an Intelligent System? Explain the first intelligent system ELIZA and its characteristics. [8M]
   b) Outline various fields in foundations of AI. [7M]

UNIT-II

3. a) What is state space? Explain problem statement and solution of water jug problem. [8M]
   b) What is meant by search strategy? Explain any two search strategies that come under uniformed search. [7M]

(OR)

4. a) Explain Constraint Satisfaction Problem (CSP) and solve a Crypt-arithmetic puzzle (TWO+TWO=FOUR), show the steps involved in finding the solution. [8M]
   b) Explain problem reduction with AND-OR graph for a three-disk Tower of Hanoi problem. [7M]

UNIT-III

5. a) Show by using truth table the expressions are logical equivalent [(A → B) →C, A→ (B → C)] and [(A ∧ ~ B) →C, ~ (A ∧ ~ B ∧ ~ C)]. [8M]
   b) Prove the following theorem using deductive inference rules From A → B ∧ C, A infer C, from A ∧ B, A → C infer C. [7M]

(OR)

6. a) What is resolution refutation method? Outline the conversion formula in propositional logic to transform into its equivalent CNF representation. [8M]
   b) Define Axiomatic system. State the axioms and the rules used in the Axiomatic system. [7M]

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UNIT-IV

7. a) Illustrate knowledge representation using Semantic network with a suitable example. [8M]
   b) Explain different Prolog facts. (At least seven). [7M]

(OR)

8. a) Define frames. Explain knowledge representation using frames. [8M]
   b) List and explain conceptual primitive actions (at least seven). [7M]

UNIT-V

9. a) Outline the characteristics of Expert Systems. [8M]
   b) Define certainty factor theory. Explain the various components of certainty factor. [7M]

(OR)

10. a) Explain any two fuzzy propositions with examples. [8M]
    b) Illustrate the functional operations in fuzzy expert system. [7M]

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