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Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (ECE) (Sem.-7,8)**  
**ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**  
**Subject Code : BTEC-909D-18**  
**M.Code : 90686**  
**Date of Examination : 16-05-2023**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) State the characteristics of an intelligent agent with the help of an example.
- b) Describe the Turing test for artificial intelligence.
- c) Differentiate between strong and weak artificial intelligence with the help of suitable examples.
- d) Write a brief note on fuzzy logic.
- e) Formulate the 8-puzzle problem as a state space search.
- f) Discuss the representation of categories in general ontology.
- g) Write a brief note on support vector machine.
- h) What are the various forms of learning?
- i) List the characteristics of non-parametric learning models.
- j) Explain the basic functioning of an expert system.

### SECTION-B

2. Define artificial intelligence as a science. Define an artificial agent. Draw the block diagram of an artificial agent and describe its various components.
3. Discuss the history and features of SWI-Prolog. Explain the procedure of its installation and environment setup.
4. Differentiate between informed and uninformed search techniques. Discuss any two uninformed search algorithms in detail.
5. Write a brief note on representing mental events and mental objects in general ontology. What are propositional attitudes?
6. Explain how decision trees are constructed? Discuss various approaches used for variable selection in decision trees.

### SECTION-C

7. Describe various types of environments an artificial agent may work in. Describe the characteristics of the environment of an autonomous vehicle. Discuss the concept of bounded and perfect rationality.
8. Write detailed notes on :
  - a) Theory of learning
  - b) Ensemble learning.
9. Explain the significance and process of reasoning with default information. List the issues in default reasoning.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**