

Roll No.

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 : 30-04-2024

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. Define state space search. Formulate the 8-queens problem as a state space search.
- b. Define ensemble learning and list its methods.
- c. What is computational learning theory?
- d. Describe practical machine learning.
- e. How are learning models used for classification?
- f. Discuss the ontological representation of mental events and objects.
- g. List the features of SWI Prolog.
- h. Differentiate between general artificial intelligence and narrow artificial intelligence.
- i. Explain the basic functioning of a problem solving agent.
- j. Write down knowledge representation for the internet shopping world.

## SECTION-B

2. Discuss the history of artificial intelligence briefly? Describe the Turing test for artificial intelligence and justify its validity from a modern standpoint.
3. What is fuzzy logic? Why is fuzzy logic leading to more human intelligent machines? Discuss the architecture of an expert system.
4. Differentiate between informed and uninformed search techniques. Discuss any two heuristic search algorithms in detail.
5. Write a brief note representing categories in general ontology. How are composite objects presented?
6. Explain the working of support vector machines. Discuss the process of kernelling with the help of an example.

## SECTION-C

7. Write detailed notes on :
  - a) Types of artificial agent environments
  - b) Strong and weak artificial intelligence.
8. Explain the process of regression as carried out by machine learning models. How is it different from classification? Discuss various types of regression and their applications.
9. Explain how decision trees are constructed? Discuss various approaches used for variable selection in decision trees.

**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.**