

22593

24225

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Assume suitable data, if necessary.

**Marks**

**1. Attempt any FIVE of the following :**

**10**

- (a) State two applications of AI.
- (b) Write the different types of AI agents.
- (c) Define “Beyond Classical Search”.
- (d) List four types of Search algorithms.
- (e) Define Training Dataset and Test Dataset.
- (f) Define Supervised and Unsupervised Learning.
- (g) Compare training vs testing.

**2. Attempt any THREE of the following :**

**12**

- (a) Describe the nature of environment in the context of intelligent agents.
- (b) Apply A\* algorithm to find the optimal path in a grid based environment.
- (c) Explain in detail Data Cleaning.
- (d) Compare Supervised, Semi-supervised and Unsupervised Learning on the following parameters :
  1. Input type
  2. Accuracy
  3. Complexity of algorithm
  4. Types of algorithm



- 3. Attempt any THREE of the following : 12**
- (a) Describe different approaches to design a knowledge based agent.
  - (b) State and explain different forms of Data.
  - (c) Explain clustering unsupervised learning algorithm.
  - (d) Explain any one Heuristic Search Technique with example.
- 4. Attempt any THREE of the following : 12**
- (a) Draw and explain the structure of agent.
  - (b) Explain different types of Search algorithms.
  - (c) Explain Bayes' Theorem and its significance in probabilistic reasoning.
  - (d) Explain any one supervised learning algorithm.
- 5. Attempt any TWO of the following : 12**
- (a) Demonstrate a Best First Search algorithm with an example.
  - (b) Describe the challenges associated with handling uncertainty in AI.
  - (c) Implement Simple Linear regression algorithm in Python.
- 6. Attempt any TWO of the following : 12**
- (a) Implement Multiple Linear Regression algorithm.
  - (b) Explain the concept of One vs. One and One vs. Rest.
  - (c) Describe Machine Learning cycle.
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