315330

**25226**

**3 Hours / 70 Marks** Seat No. | | | | | | | | |

***Instructions :*** (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Solve any 5 :** **10**

(a) List any two applications of AI.

(b) Define Reasoning.

(c) Differentiate between Data Analytics and Data Science (any two points).

(d) List different types of unsupervised machine learning Algorithms.

(e) State importance of confusion matrix.

(f) Why knowledge-based Agents are used in AI ?

(g) Define Term : FI Score, Recall

**2. Solve any 3 out of 4 :** **12**

(a) State and explain any two Heuristic Search Techniques with example.

(b) Explain different forms of data. Also illustrate different data cleaning process in machine learning.

(c) Explain Cross-validation, Positive and Negative class with its significance.

(d) List and explain different metrics for classification.

**3. Solve any 3 out of 4 :** **12**

(a) Differentiate between AI and ML.

(b) Explain need of probabilistic reasoning in AI, state Baye's Theorem.

(c) Explain A* algorithm in detail.

(d) Implement Multiple Linear Regression in Python.

**4. Solve any 3 out of 5 :** **12**

(a) Explain Machine Learning Life Cycle.

(b) Explain different Designing approaches for Knowledge – Based-Agents in AI.

(c) Describe working of BFS in AI with example.

(d) Explain Overfitting and Underfitting issues in ML.

(e) Implement a program K-means clustering Algorithm.

**5. Solve any 2 out of 3 :** **12**

(a) Illustrate Random forest Algorithm in Python. State its features.

(b) Explain working of Training and Testing data in ML with its significance.

(c) Explain the following Metrics for Regression :

(i) Mean Squared Error (MSE)

(ii) Root Mean Squared Error (RMSE)

(iii) Mean Absolute Error (MAE)

**6. Solve any 2 :** **12**

(a) Differentiate between Supervised and Unsupervised ML. (Any 6 points)

(b) Describe various components in AI.

(c) List and explain various types of reasoning in AI with its example.

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