

316316

25226

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) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following :** **10**
- a) Define machine learning.
 - b) What is missing data? List it's types.
 - c) List any two feature scaling method.
 - d) What is logistic regression?
 - e) Define clustering in simple words.
 - f) Differentiate between supervised and unsupervised learning.
(Write any two points)
 - g) What is data normalization?
 - h) State any two applications of PCA.
(Principal Component Analysis)

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) Explain basic steps in developing a machine learning model.
 - b) Explain different techniques for handling missing values.
 - c) Describe filter based feature selection with an example.
 - d) Explain how KNN (K-Nearest Neighbours) classifies data?
- 3. Attempt any THREE of the following : 12**
- a) Explain importance of standardization in data preprocessing.
 - b) Describe the steps involved in linear discriminant analysis (LDA).
 - c) Explain the working of decision trees with suitable example.
 - d) Describe dimensionality reduction with example.
- 4. Attempt any THREE of the following : 12**
- a) Explain the concept of reinforcement learning with simple example.
 - b) Describe need and steps of cross validation.
 - c) Compare K-means and Hierarchical clustering. (Write any four suitable points)
 - d) Explain how linear regression can be used to make predictions.
- 5. Attempt any TWO of the following : 12**
- a) Describe complete workflow of data cleaning with example.
 - b) Explain supervised, unsupervised and reinforcement learning with example.
 - c) Describe PCA process and explain how eigenvalues and eigenvectors help in feature extraction.
- 6. Attempt any TWO of the following : 12**
- a) Explain mutual information based feature selection method with example.
 - b) Explain importance of clustering in data analysis with example.
 - c) Describe model performance evaluation with confusion matrix, accuracy, precision and recall.
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