

(Time: 2½ Hours)

[Total Marks: 75]

N. B.: (1) **All** questions are **compulsory**.(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.(3) Answers to the **same question** must be **written together**.(4) Numbers to the **right** indicate **marks**.(5) Draw **neat labeled diagrams** wherever **necessary**.(6) Use of **Non-programmable** calculators is **allowed**.**1. Attempt any three of the following:**

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- What is business intelligence? Describe its architecture.
- Describe the various stages involved in developing a business intelligence system.
- What is a Decision Support System (DSS)? What factors influence the success of a Decision Support System (DSS)?
- Classify decisions based on their nature and scope.
- Define a system. Discuss the differences between a closed-cycle and open-cycle system with relevant examples.
- Outline the different stages involved in developing a Decision Support System (DSS).

2. Attempt any three of the following:

15

- Describe the main phases involved in the development of mathematical models.
- What are predictive models and optimization models?
- Discuss various application areas of data mining.
- Write brief notes on the Supervised learning and Unsupervised learning used in data mining.
- What is data validation? Explain the different types of data validation.
- Write a short note on the concept of data transformation.

3. Attempt any three of the following:

15

- Describe the top-down induction technique used for constructing decision trees and outline its key elements.
- What are the factors or measures used to assess the performance of classification algorithms?
- Provide a concise overview of Naive Bayes classifiers.
- Define clustering and discuss various approaches used for clustering data.
- Explain the K-means clustering algorithm, detailing the steps involved and illustrating with an example.
- Briefly explain what a confusion matrix is and its role in evaluating classification results.

4. Attempt any three of the following:

15

- Define relational marketing and discuss its goals and driving factors.
- What is the Use of Web Mining Techniques? What Are Its Various Objectives?
- Explain the concept of Market Basket Analysis.
- Describe in details optimization models for logistics planning.
- Briefly describe the idea behind supply chain optimization.
- Explain the CCR model.

5. Attempt any three of the following:
- Explain the cycle of a Knowledge Management System (KMS).
 - List and describe the features of Artificial Intelligence (AI).
 - Define Knowledge Engineering. Describe the steps involved in the knowledge engineering process.
 - Discuss the contribution of people in Knowledge Management.
 - Discuss practical uses of expert systems across industries.
 - Differentiate between Artificial Intelligence (AI) and Natural Intelligence.
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