(2½ Hours)

[Total Marks: 75]

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

1.   **Attempt** *any three* **of the following:**
a.   What is the difference between data, information and knowledge?
b.   Draw and explain architecture of business intelligence.
c.   Describe different phases in the development of a decision support system (DSS).
d.   Describe the extended architecture of decision support systems.
e.   Explain structured, unstructured and semi-structured decisions.
f.   What are the factors that affect rational choice of the decision-making?

2.   **Attempt** *any three* **of the following:**   15
a.   What is a model? Describe the phases in a development of the mathematical model for decision making.
b.   Explain predictive and optimization models.
c.   Describe categorical and numerical attributes with example for each one of them.
d.   Describe different transformation techniques for standardization (normalization).
e.   Write short note on principal component analysis (PCA).
f.   List and explain various applications of data mining.

3.   **Attempt** *any three* **of the following:**   15
a.   Write short note on confusion matrix.
b.   What is classification? Write a short note on Bayesian Method of classification.
c.   Write a short note on logistic regression used for prediction.
d.   Write k-means algorithm for clustering.
e.   Draw and explain a structure of classification tree with a suitable example.
f.   Explain agglomerative hierarchical clustering method.

4.   **Attempt** *any three* **of the following:**   15
a   Explain a lifetime of a customer in a cycle of relational marketing.
b   What do you understand by market-basket analysis?
c   What is supply chain management? Give an example of global supply chain.
d   List and explain basic principles of revenue management?
e   Explain data envelopment analysis (DEA)? How efficiency is measured?
f   Write short note on CCR (Charnes-Cooper-Rhodes) model.

5.   **Attempt** *any three* **of the following:**   15
a.   What are the differences between the process approach and the practice approach in a knowledge management system (KM)?
b.   How does Information Technology(IT) contribute to the management of knowledge?
c.   Describe different phases in the Knowledge Management Systems (KMS) cycle
d.   Who is chief knowledge officer (CKO)? What are the responsibilities of the CKO?
e.   Differentiate between conventional system and expert systems
f.   What is expert system? How it is different from Decision Support System (DSS)?