

Time: 3 Hours

Marks: 80

- N.B.: 1) Question No. 1 is compulsory.
 2) Answer any three out of remaining questions.
 3) Assume suitable data if necessary.
 4) Figures to the right indicate full marks.

- Q1. (a) Define Data Mining. Enlist five examples of the same. (5)
 (b) What is noisy data? How to handle noisy data? (5)
 (c) Define "Business Intelligence" and "Decision Support System" with example. (5)
 (d) Explain data preprocessing phase in data mining. (5)
- Q2. (a) Explain multidimensional and multilevel association rule with example. (10)
 (b) Explain DBSCAN algorithm using appropriate diagrams. (10)
- Q3. (a) Explain bagging and boosting in classifiers in brief. (10)
 (b) Using Hierarchical clustering algorithm to cluster the following 8 points into 3 clusters
 $A1=(2,10)$, $A2=(2,5)$, $A3=(8,4)$, $A4=(5,8)$, $A5=(7,5)$, $A6=(6,4)$, $A7=(1,2)$, $A8=(4,9)$. (10)
- Q4. (a) Explain the design of BI system for credit card fraud detection. (10)
 (b) Describe Birch algorithm in detail. (10)
- Q5. (a) Write short note on Data mining steps in KDD. Explain its Architecture. (10)
 (b) Explain the Business Intelligence issues in brief. (10)
- Q6. (a) Consider the transaction database details given in table below. Apply Apriori algorithm with minimum support of 50% and confidence of 50%. Find all the frequent itemsets and all the association rules. (10)

Tid	Items
100	1,3,4
200	2,3,5
300	1,2,3,5
400	2,5
500	1,2,3
600	3,5
700	1,2,3,5
800	1,5
900	1,3

- Q6. (b) Explain Market-Basket Analysis with suitable example. (10)
