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SEAT No. :

P119

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Oct.-16/BE/Insem.- 177

B.E. (Computer Engineering) (Semester - I)

DATA MINING TECHNIQUES AND APPLICATIONS

(2012 Pattern) (Elective - I(d))

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.

Q1) a) Describe three challenges to data mining regarding data mining methodology. [6]

b) Consider the following group of data [4]

200, 300, 400, 600, 1000

i) Use the min-max normalization to transform value 600 onto the range [0.0,1.0].

ii) Use the decimal scaling to transform value 600.

OR

Q2) a) What are the major tasks in data preprocessing? Explain them in brief. [6]

b) Differentiate between [4]

i) Supervised and Semi-supervised learning.

ii) Classification and Regression.

iii) Descriptive and Predictive data mining tasks.

Q3) a) A database has five transactions: [5]

TID	Items
1	F,C,A,M,P
2	F,C,A,B,M
3	F,B
4	C,B,P
5	F,C,A,M,P

Assuming the support count 2, construct an FP-tree.

b) State the antimonotonicity property. [2]

c) Define k--itemset, support count and strong association rules. [3]

P.T.O.

OR

- Q4) a)** Differentiate between [4]
 i) Multilevel and multidimensional associations
 ii) Pattern-pruning and data-pruning constraints
- b)** A database has five transactions. Let minimum support is 60%. [6]

TID	Items
1	Butter, Milk
2	Butter, Dates, Balloon, Eggs
3	Milk, Dates, Balloon, Cake
4	Butter, Milk, Dates, Balloon
5	Butter, Milk, Dates, Cake

Find all the frequent item sets using Apriori algorithm. Show each step.

- Q5) a)** Explain the following terms [6]
 i) Posterior probability
 ii) Prior probability
 iii) Class-conditional independence
- b)** Explain with neat diagram confusion matrix for a two class problem. [4]

OR

- Q6) a)** Consider the training examples shown in the table below for a binary classification problem. [6]

A1	A2	Class
T	T	Yes
T	T	Yes
T	F	No
F	F	Yes
F	T	No
F	T	No
F	F	No
T	F	Yes
F	T	No

- i) Compute the information gain for A1.
 ii) Compute the information gain for A2.
 iii) What is the best split between A1 and A2 according to Information gain?
- b)** Define the following terms with respect to Classifier [4]
 i) Precision ii) Recall iii) Accuracy iv) Misclassification rate.

