FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY
DEPARTMENT OF INFORMATION AND MEDIA TECHNOLOGY
First Semester B.Tech Examinations 2013/2014 ACADEMIC SESSION

Curse Title: Data Mining II — Credit Units: 2

Course Code: IMT412 — July 2014 — Time Allowed: 2½ hours

Section A

Answer any FOUR questions in this section

1. a) Explain Cluster analysis using two application areas to illustrate? (10 marks).

   b) List the types of Clusters you know then explain any two of them. (5 marks).

2. a) What is Classification? Explain the types of classification techniques you know. (10 marks).

   b) Sketch a lattice for all possible itemsets, $I=\{a,b,c,d,e\}$. (5 marks).

3. a) What are the major data mining processes. Discuss any 5 data mining techniques you know? (10 marks)

   b) Explain the following terms:

   i) Machine learning ii) Neural network iii) Intrusion Detection system iv) Data Mart v) Data warehouse (5 marks)

4. a) What is a Coincidence matrix? Illustrate with a simple 2-class classifier and use it to explain the concept of:
   i) True-Positive ii) False Positive iii) False Negative. and iv) True Negative. (10 marks).

   b) State the formulae of coincidence matrix then use it to calculate the Error rate and Accuracy rate of the 2-class classifier whose results are shown in the table. (5 marks)

	Class 1	*Class 2*
Class 1	674	91
Class 2	89	146

5. a) What is an Association rule. State the *Apriori* principle and use it to determine the frequent item-set of the following POS transactions.

Trans_ID	Items
1	{Bread, Milk}
2	{Bread, Diapers, Juice, Eggs}
3	{Milk, Diapers, Juice, Cola}
4	{Bread, Milk, Diapers, Juice}
5	{Bread, Milk, Diapers, Cola}

A POS Transactions.

(10 marks).

b) What are the evaluation metrics of an association rule, use it to determine the strength of {Milk Diapers, Juice} item-set? (5 marks).

Section B

Write on any FOUR of the following:

6. i) Descriptive modelling ii) Decision tree iii) Web content mining iv) Security risk exposure in data mining v) List all and explain any TWO attributes test conditions in a Decision tree (D3) algorithm

N.B: Illustrations and examples earn you additional credit. Please write legibly. AIO/JULY 2014.