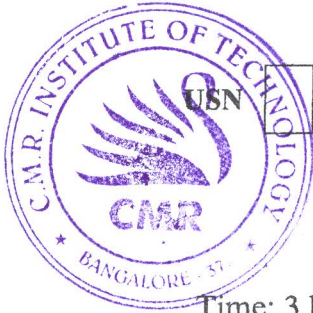


# CBCS SCHEME



18CS641

## Sixth Semester B.E. Degree Examination, June/July 2023 Data Mining and Data Warehousing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Define Datawarehouse. Explain Multitier Architecture of Data Warehousing with diagram. (10 Marks)  
b. Explain ETL process with the neat diagram. (10 Marks)

OR

- 2 a. Explain the schemas of multi-dimensional data models. (10 Marks)  
b. Explain data cube operations with example. (10 Marks)

### Module-2

- 3 a. Explain different methods of indexing OLAP data. (10 Marks)  
b. Explain the following preprocessing techniques :  
(i) Feature subset selection. (ii) Sampling. (10 Marks)

OR

- 4 a. List the different types of Dataset and explain with an example. (10 Marks)  
b. Consider  $X = (0, 1, 0, 1)$ ,  $Y = (1, 0, 1, 0)$ . Find cosine, correlation, Euclidean, Jaccard and SMC. (10 Marks)

### Module-3

- 5 a. A database has five transactions. Let min sup = 60% and min conf = 80%.

Table Q5 (a)

TID	Items.bought
T <sub>100</sub>	{M,O,N,K,E,Y}
T <sub>200</sub>	{D,O,N,K,E,Y}
T <sub>300</sub>	{M,A,K,E}
T <sub>400</sub>	{M,U,C,K,Y}
T <sub>500</sub>	{C,O,O,K,I,E}

- (i) Find all frequent itemsets using Apriori Algorithm. (12 Marks)  
(ii) List all the strong association Rules. (12 Marks)  
b. Identify and explain the alternative methods for generating frequent itemsets. (08 Marks)

OR

- 6 a. Construct FP tree by showing tree separately after reading each transaction and find the frequent itemset generation. Consider the transaction dataset :

Table : Q6 (a)

TID	Items.bought
100	{f, a, c, d, g, i, m, p}
200	{a, b, c, f, l, m, o}
300	{b, f, h, j, o}
400	{b, c, k, s, p}
500	{a, f, c, e, l, p, m, n}

- Let min-support = 3 (12 Marks)  
b. Explain the various measures of evaluating association patterns. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-4**

- 7 a. Explain the general approach for solving classification problem. (08 Marks)  
 b. Build a decision tree using Hun't Algorithm for the given dataset.

Tid	Home owner	Marital status	Annual Income	Defaulted Borrower
1	yes	Single	125 K	No
2	No	Married	100 K	No
3	No	Single	70 K	No
4	Yes	Married	120 K	No
5	No	Divorced	95 K	Yes
6	No	Married	60 K	No
7	yes	Divorced	220 K	No
8	No	Single	85 K	Yes
9	No	Married	75 K	No
10	No	Single	90 K	Yes

Table Q7 (b)

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(12 Marks)

**OR**

- 8 a. Explain K-nearest neighbor classification algorithm with example. (08 Marks)  
 b. State Bays theorem and explain how bayes theorem is used in the Naïve Bayesian classifier with example. (12 Marks)

**Module-5**

- 9 a. Calculate the cluster for the following 8 points (x, y). Represents into 3 clusters  
 $A_1(2, 10)$   $A_2(2, 5)$   $A_3(8, 4)$   $B_1(5, 8)$   $B_2(7, 5)$   $B_3(6, 4)$   $C_1(1, 2)$   $C_2(4, 9)$  (10 Marks)  
 b. Explain the following : (10 Marks)  
 (i) Density based clustering.  
 (ii) Graph based clustering.

**OR**

- 10 a. What are the basic approaches used for generating a agglomerative hierarchical clustering? (10 Marks)  
 b. Explain DBSCAN algorithm with example. (10 Marks)

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