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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**
Course Code: 22AM5PEKDI **Max Marks: 100**
Course: Knowledge Discovery **Date: 07.03.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT – I

1	a)	Define Data Mining. Explain the kinds of data that can be mined.	**8**
	b)	List and define the process in knowledge discovery.	**5**
	c)	List the major issues in Data Mining and explain any two in detail.	**7**

UNIT – II

2	a)	Define Multidimensional Data Model and explain it with an example.	**8**
	b)	Define Metadata Repository. List and explain what aspects need to be incorporated in Metadata Repository.	**8**
	c)	Explain: (i) Data Cube (ii) Lattice of Cuboid.	**4**

OR

3	a)	Define Fact table and dimension table. With a neat diagram explain Star Schema of *Sales* data warehouse.	**10**
	b)	With a neat diagram explain Fact Constellation schema of a Sales and Distribution data warehouse.	**10**

UNIT – III

4	a)	Define the following with an example for each. i) Market Basket Analysis ii) Frequent Itemset iii) Closed Frequent Itemset iv) Association Rules	**8**
	b)	Define Apriori property. Explain how is the Apriori property used in an algorithm explain**?**	**12**

OR

5	a)	For the following transaction dataset given below, generate rules using Apriori Algorithm. Consider the values of support = 22% and confidence = 70%. Plot the Frequent Pattern Tree for below transaction.	**10**

Transaction ID	Items Purchased
1	I2, I1,I5
2	I2, I4
3	I2, I3
4	I2, I1, I4
5	I1, I3
6	I2, I3
7	I1, I3
8	I2, I1, I3, I5
9	I1, I2, I3

b) Consider the transaction dataset given below, apply Apriori Algorithm to generate rules. (support = 50% and confidence = 75%). **10**

Transaction ID	**Items Purchased**
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

UNIT - IV

6 a) Explain the typical requirements of Clustering in Data Mining. **10**

b) Write K-means Algorithm. Explain its working with an example. **10**

UNIT-V

7 a) Define STING Clustering. Mention the advantages STING offers over other clustering methods in detail. **10**

b) Data Mining is applied on various applications, illustrate other data mining applications in detail with help of diagram. **10**

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