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VI SEMESTER B.TECH. (COMPUTER SCIENCE & ENGINEERING)

END SEMESTER EXAMINATIONS, MAY 2022

SUBJECT: DATA WAREHOUSE AND DATA MINING [CSE 4060]

REVISED CREDIT SYSTEM

(--/05/2022)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL FIVE** questions.
- Missing data may be suitably assumed.

		M	CO	AHEP LO	BL
1A.	Present a detailed outline of any four aspects of Mining methodology.	**4**	**1**	**1,3**	**2**
1B.	Summarize any four architectural types of Data Warehouses.	**4**	**1**	**1,3,5**	**2**
1C.	With the help of sufficient examples examine any 4 descriptors inside the Dimensional table of a Star Schema model	**2**	**2**	**2,3,5**	**2**
2A.	With the help of an example present an elaborate summarization of the general principles and method of application of Type 2 changes to Data Warehouses	**5**	**2**	**2,3,5**	**1**
2B.	Justify how Immediate Data extraction is carried out in Data Warehouses	**3**	**2**	**1,4,5**	**1**
2C.	With the help of an example, compare Interval Scaled and Ratio scaled attribute types	**2**	**2**	**2,4,6**	**1**
3A.	For the given dataset, assuming minimum support is set to a value of 2, generate all frequent itemsets using the FP-Growth algorithm. Show the detailed steps by constructing the Conditional (Sub-)Pattern Bases and also show the conditional FP-tree associated with the conditional node I3 using pictorial representation.	**5**	**3**	**2,3,5**	**6**

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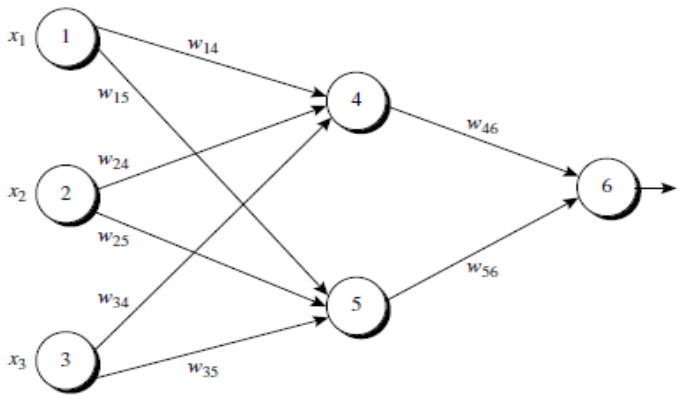
TID	List of item_IDs
T100	I1, I2, I5
T200	I2, I4
T300	I2, I3
T400	I1, I2, I4
T500	I1, I3
T600	I2, I3
T700	I1, I3
T800	I1, I2, I3, I5
T900	I1, I2, I3

3B.	Design the Apriori algorithm to discover frequent itemsets for mining Boolean association rules	**3**	**3**	**2,3,5**	**6**
3C.	For the contingency table shown in Table 3C determine what type of correlation exists between buying game and buying video 2×2 Contingency Table Summarizing the Transactions with Respect to Game and Video Purchases	**2**	**3**	**1,3**	**1**
4A.	Consider the following figure showing a multilayer feed-forward neural network. Let the learning rate be 0.9. The initial weight and bias values of the network are given in Table 1, Classify the tuple, ***X*** =(1, 0, 1) with a class label of 1 using Backpropagation algorithm. Show all steps in detail for the first iteration.	**5**	**4**	**1,3**	**4**

	game	$\overline{game}$	Σ_{row}
video	4000	3500	7500
$\overline{video}$	2000	500	2500
Σ_{col}	6000	4000	10,000



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	Initial Input, Weight, and Bias Values x_1 x_2 x_3 w_{14} w_{15} w_{24} w_{25} w_{34} w_{35} w_{46} w_{56} θ_4 θ_5 θ_6 1 0 1 0.2 −0.3 0.4 0.1 −0.5 0.2 −0.3 −0.2 −0.4 0.2 0.1					
4B.	With the help of examples give a detailed outline of the pruning techniques involved in mining Closed and Maximal Itemsets	**3**	**3**	**2,4,5**	**1**
4C.	Present a summary of the commonly used approaches for pruning Decision Trees	**2**	**4**	**3,4,5**	**4**
5A.	With the help of a diagram furnish an elaborate breakdown of the procedure involved in Agglomerative and Divisive Hierarchical clustering of data objects.	**4**	**5**	**3,5,6**	**2**
5B.	Using sufficient illustration present an intricate summary of the working of CHAMELEON algorithm for clustering of data.	**4**	**5**	**4,5**	**2**
5C.	With the help of a diagram examine how Support Vector Machines classify data when data are linearly separable	**2**	**4**	**4,5**	**4**