10-06-2026 TE CSE-AIML SEM-V C SCHEME DWM QP CODE: 20010174

Time: 3 hours **Max. Marks: 80**

N.B. (1) Question one is Compulsory.
(2) Attempt any 3 questions out of the remaining.
(3) Assume suitable data if required.

Q. 1 (a) Explain data warehouse features. 05
(b) Demonstrate with diagram the process of KDD. 05
(c) What is Market basket analysis? 05
(d) Explain with example confusion matrix, accuracy and precision. 05

Q. 2 a) Suppose that a data warehouse for an airline system consists of four dimensions: Passenger, Flight, Time, Destination, and two measures: ticket revenue and number of bookings.
i. Design the **star schema** for the airline system.
ii. Create a **base cuboid** and apply OLAP operations. 10

b) What is clustering? Explain K-means clustering algorithm. Suppose that the data mining task is to cluster the following items into two clusters.
{4, 8, 15, 12, 2, 25, 35, 11, 25}. Apply k-means algorithm. 10

Q. 3 a) Explain ETL process in detail. 10
b) i) Consider the transaction database given below:
Use Apriori Algorithm with min-support count= 2 and min-confidence = 60%, to find frequent itemset and strong association rules. 05

TID	Items
10	1, 3, 4
20	2, 3, 5
30	1, 2, 3, 5
40	2 , 5
50	1, 3, 5

ii) Apply FP-Growth Algorithm to build FP tree with min-support=2 for the above transactions. 05

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Q. 4 a) Illustrate any one classification technique for the following dataset. Show how we can classify new tuple **(Homeowner=YES, Status =Employed, Income = Average)**. 10

Sr. No	Homeowner	Status	Income	Defaulted
1	Yes	Employed	High	No
2	No	Business	Average	No
3	No	Employed	Low	No
4	Yes	Business	High	No
5	No	Unemployed	Average	Yes
6	No	Business	Low	No
7	Yes	Unemployed	High	No
8	No	Employed	Average	Yes
9	No	Business	Low	No
10	No	Employed	Average	Yes

b) Explain web content mining and web usage mining in detail. 10

Q. 5 a) Explain different data cleaning techniques. 10

b) Clearly explain the working of BIRCH algorithm. 10

Q. 6 a) Explain Multidimensional and multilevel rule mining with example. 10

b) Explain with example different data sampling techniques. 10

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