



CBCS SCHEME

17CS651

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Sixth Semester B.E. Degree Examination, July/August 2022

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

- What is Data Warehouse? What are its features? (06 Marks)
 - Explain with diagram, a three tier data warehouse architecture. (08 Marks)
 - Compare OLTP and OLAP systems. (06 Marks)

OR

- What is Metadata? Explain its features. (06 Marks)
 - Explain the following terms with examples: Star Schema, Snowflake schema and Constellation schema. (09 Marks)
 - List the major functions involved in ETL process. (05 Marks)

Module-2

- With respect to indexing explain bitmap index and join index. (08 Marks)
 - What is data mining? Explain KDD process in data mining. (08 Marks)
 - For the following vectors X and Y, calculate the similarity, where
 $X = \{0, 1, 0, 1\}$
 $Y = \{1, 0, 1, 0\}$ (04 Marks)

OR

- What is data preprocessing? Explain various data pre-processing tasks. (07 Marks)
 - Describe ROLAP, MOLAP and HOLAP. (09 Marks)
 - For the following vectors X and Y, calculate the Jaccard coefficient, where
 $X = \{0, 1, 0, 1\}$
 $Y = \{1, 0, 1, 0\}$ (04 Marks)

Module-3

- What is Apriori principle? Write and explain apriori algorithm for frequent itemset generation. (08 Marks)
 - Briefly explain the candidate generation procedure using $F_{k-1} \times F_{k-1}$ method. (06 Marks)
 - Generate frequent itemset for the given data with support = 50%.

TID	1	2	3	4
Items	{1, 3, 4}	{2, 3, 5}	{1, 2, 3, 5}	{2, 5}

(06 Marks)

OR

- What is FP growth algorithm? In what way it is used to find frequent itemsets. (08 Marks)
 - Explain the uses of Hash tree in support counting. (06 Marks)
 - Consider the following transaction dataset. Describe the construction of FP-tree in FP growth algorithm, assuming min-support as 2.

Tid	Items
1	{a, b}
2	{b, c, d}
3	{a, c, d, e}

(06 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. How decision trees are used for classification? Explain decision tree induction algorithm for classification. (10 Marks)
- b. List and explain the different characteristics of decision tree induction. (10 Marks)

OR

- 8 a. Explain k-nearest neighbor classification algorithm with an example. (07 Marks)
- b. Explain sequential covering algorithm in rule-based classifier. (07 Marks)
- c. Write a note on Bayesian classifier. (06 Marks)

Module-5

- 9 a. What is cluster analysis? Explain different types of clustering. (10 Marks)
- b. What are the basic approaches used for generating agglomerative hierarchical clustering? (10 Marks)

OR

- 10 a. Explain DBSCAN algorithm with example. (08 Marks)
- b. Explain k-means clustering algorithm in brief. (06 Marks)
- c. Define SSE. What are the strategies used for reducing SSE in k-means clustering algorithm. (06 Marks)

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