

**MASTER OF COMPUTER
APPLICATIONS (NEW)
(MCA-NEW)**

**Term-End Examination
December, 2022**

**MCS-221 : DATA WAREHOUSING
AND DATA MINING**

Time : 3 hours

Maximum Marks : 100

(Weightage : 70%)

Note : Question no. 1 is **compulsory**. Answer any **three** questions from the rest.

1. (a) Define Dimensional Modelling. With reference to this, define the terms Facts, Fact Table, Dimensions and Dimensional Table. Give an example use-case and derive fact table and dimension tables. 10
- (b) With the help of a Data Warehouse Architecture diagram, explain the following components and their significance : 10
- (i) ETL
 - (ii) Metadata
 - (iii) Data Warehouse Access Tools
 - (iv) Data Warehouse Reporting Layer

- (c) Define a Decision Tree. With the help of an example, explain the construction and representation of decision tree. Also, mention its strengths and weaknesses. 10
- (d) Discuss the following categories of Data Mining Issues : 10
- (i) Mining Methodology and User Iteration Issues
 - (ii) Performance-based Issues
 - (iii) Diverse Data Types Issues
- 2.** (a) Define Data Cleaning. Explain the ways and means of handling the Missing Values and Noisy Data while data preprocessing. 10
- (b) Write and explain the K-means algorithm for clustering. How does it work ? 10
- 3.** (a) Why does dimensionality reduction of text need to be done ? Explain Tokenization process and Vector from text approach, with the help of a suitable example for each. 10
- (b) Enumerate the best practices for Data Warehouse Architecture. 5
- (c) Describe the following types of data marts : 5
- (i) Dependent data marts
 - (ii) Independent data marts

4. (a) With the help of an example use-case, explain the Snowflake schema. List its advantages and disadvantages. 10
- (b) Define Web Mining. What kind of tasks can be performed using it ? Discuss its features and also a few applications. 10
5. Write short notes on the following : 4×5=20
- (a) Data Transformation (with reference to data preprocessing)
- (b) Cloud Data Warehousing
- (c) Data Lake and its Architecture
- (d) Data Warehouse Automation
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