CBCS SCHEME

USN | | | | | | | | | | |

22MCA21

Second Semester MCA Degree Examination, June/July 2023
Database Management System

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain the Database System Environment with neat diagram. **(10 Marks)**
b. Discuss the characteristics and advantages of Database Approaches. **(10 Marks)**

OR

2 a. Explain with proper diagram, the 3 – schema architecture of DBMS. **(10 Marks)**
b. What are the different types of attributes? Explain with example. **(10 Marks)**

Module-2

3 a. Explain Unary Operation SELECT (σ) and prove it is commutative. **(10 Marks)**
b. Explain Schema Update Operations, with a suitable examples. **(10 Marks)**

OR

4 a. With a suitable example, explain Join and division operation in relational algebra. **(10 Marks)**
b. Explain in detail ER – to – Relational Mapping algorithm. **(10 Marks)**

Module-3

5 a. Explain with suitable example the basic structure of SQL query. **(10 Marks)**
b. What are Views in SQL? Explain. **(10 Marks)**

OR

6 a. In SQL how to handle the Aggregate functions with group by and having clauses? With examples. **(06 Marks)**
b. What are Aggregate functions? Explain with an examples. **(06 Marks)**
c. Explain the architecture of JDBC main components and types of drivers. **(08 Marks)**

Module-4

7 a. Discuss informal design guidelines for relational schema. **(10 Marks)**
b. What is Normalization? What are its advantages? Discuss 1NF , 2NF and 3NF. **(10 Marks)**

OR

8 a. Explain with an example the Boyce – Codd Normal Form (BCNF). **(10 Marks)**
b. Discuss the different inference rules for functional dependencies. **(10 Marks)**

Module-5

9 a. Explain ACID properties of transaction in details. **(10 Marks)**
b. Discuss the characterizing schedules based on recoverability. **(10 Marks)**

OR

10 a. Discuss a Lock – based concurrency control issue in DBMS transaction processing. **(10 Marks)**
b. Describe Granularity of data items and Multiple Granularity locking. **(10 Marks)**

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