



## Third Semester MCA Degree Examination, Jan./Feb. 2023 Database Management System

Time: 3 hrs.

Max. Marks:100

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

### Module-1

- 1 a. Define DBMS. Describe the characteristics of DBMS approach. (10 Marks)
- b. Describe 3-schema architecture with diagram. How does it contribute to Data-independence? (10 Marks)

**OR**

- 2 a. Describe high level conceptual data model using E-R model design. (10 Marks)
- b. Explain different types of cardinality ratio for binary relationship with example. (10 Marks)

### Module-2

- 3 a. Illustrate JOIN, DIVISION, SELECT and PROJECT operations in relational algebra. (10 Marks)
- b. Describe various update operations on relation and type of integrity constraints that must be checked for each update operation. (10 Marks)

**OR**

- 4 a. Define the term 'Domain' with example. (10 Marks)
- b. Branch(br\_name, br\_city, address)  
Customer(Cs\_name, Cs-street, Co\_id)  
Account(acc\_no, br\_name, balance)  
Loan(loan\_num, br\_name, amount)  
Depositor(Cs\_name, acc\_no)  
borrower(Cs\_name, load\_num)  
Solve the following query using relational algebra.
  - i) Find the loan number for each load amount greater than Rs.1200
  - ii) Find the names of all customers who have loan at 'perryridge' branch
  - iii) Find all customers who have an account from atleast the "Downtown" and "uptown" branches
  - iv) Find the names of all customers who have a load at the "perryridge" branch but do not have an account at any branch of bank. (10 Marks)

### Module-3

- 5 a. Define 'Orderby', 'groupby' and 'having' clauses with example. (10 Marks)
- b. Explain Aggregate functions in SQL. (10 Marks)

**OR**

- 6 a. Explain the concept of embedded SQL. (10 Marks)
- b. Explain the following terms :  
'Drop', "Create", 'alter' and "update". (10 Marks)

**Module-4**

- 7 a. Brief about Triggers with syntax and appropriate example. (10 Marks)  
b. Describe the informal design guidelines for relation schema. (10 Marks)

OR

- 8 a. Define functional dependency. (10 Marks)  
b. Explain the concept of 1NF, 2NF, 3NF and BCNF with example. (10 Marks)

**Module-5**

- 9 a. Define transaction and explain ACID properties of transaction. (10 Marks)  
b. With the help of shadow copy techniques, explain atomicity and durability. (10 Marks)

OR

- 10 a. Explain the concept of deadlock detection and recovery system. (10 Marks)  
b. Describe different types of storage media. (10 Marks)

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