

**FACULTY OF INFORMATICS**

**M.C.A. (2 Years Course) II-Semester (CBCS) (Backlog) Examination, March /April 2024**

**Subject: Database Management Systems**

**Time: 3 Hours**

**Max. Marks: 70**

**Note: I. Answer one question from each unit. All questions carry equal marks.**

**II. Missing data, if any, may be suitably assumed.**

**Unit - I**

1. a) What is DBMS? What are the advantages of DBMS?  
b) Explain about Database Design Steps.

**(OR)**

2. a) Discuss about ER Modeling.  
b) Draw the ER Diagram for Banking Enterprise.

**Unit – II**

3. a) Give an account on Structure of Relational Databases.  
b) Discuss about Fundamental Relational Algebra Operations.

**(OR)**

4. a) What is SQL? Elaborate DDL commands in SQL.  
b) Explain about Aggregate Functions in SQL.

**Unit – III**

5. a) Describe different types of Integrity Constraints with Example.  
b) Explain about Procedures in SQL with Example.

**(OR)**

6. What is Functional Dependency? Illustrate different types of Normal Forms with suitable Example.

**Unit – IV**

7. Discuss about the following  
a) B+ Trees  
b) Hash based Indexing

**(OR)**

8. a) Briefly explain about Transaction Properties.  
b) Define Serializability? Write about Conflict and View Serializability with Example.

**Unit – V**

9. a) Elaborate Lock based Concurrency Control Protocols.  
b) Briefly describe the approaches for handling Deadlocks.

**(OR)**

10. Discuss the following  
a) Aggregate Data Models  
b) Key Value Databases