

A-0826

Total Pages : 4

Roll No.

MCS-505/MIT(CS)-402

**DATABASE MANAGEMENT SYSTEM/
INTRODUCTION TO DBMS**

(MCA/MSCT/MSCCS)

Examination, June 2025

Time : 2:00 Hrs.

Max. Marks : 70

Note :- This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

Section-A

Long Answer Type Questions 2×19=38

Note :- Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Explain the need for a Database Management System in modern applications. Compare DBMS with traditional file systems in terms of structure, functionality, and efficiency. Provide suitable examples to support your explanation.
2. Explain the Entity-Relationship model in detail. Discuss its components, such as entities, attributes, and relationships, and explain how it is used to design a database schema. Illustrate the process of converting an ER diagram into a relational database schema with a practical example.
3. Explain the concepts of First Normal Form, Second Normal Form and Third Normal Form. Provide a detailed example to show how a database schema is normalized from an unnormalized form to 1NF, and then from 1NF to 2NF. Discuss the problems that 1NF and 2NF address in terms of data redundancy and functional dependency.
4. What is SQL ? Explain its characteristics and why SQL is considered the standard language for managing and manipulating relational databases. Discuss the different types of SQL commands and their purposes with suitable example.

5. What are the different types of database failures ? Explain the corresponding recovery techniques that can be used to restore database operations effectively.

Section–B

Short Answer Type Questions 4×8=32

Note :– Section ‘B’ contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Define the terms Relation, Tuple, and Attribute in the context of the relational data model. Explain how these components form the foundation of a relational database, with examples.
2. What are the different types of keys in a database ? Explain each type with examples.
3. Describe the roles of Entity Integrity Constraints, Referential Integrity Constraints, and Domain Constraints with suitable examples.
4. What is a full backup in DBMS ? Describe its features, advantages, and limitations. When is it most suitable to perform a full backup ?
5. Explain the various types of operators that can be used in SQL query.

6. What are the various components of database management system. Discuss in detail.
7. Illustrate the various types of aggregate functions.
8. Write short notes on : Data Dictionary, Degree of relationship, Database manager
