

K-971

Total Page No. : 4]

[Roll No.]

MCA-13/MSCIT-14

**MCA/MSCIT IVth Semester
Examination Dec., 2023**

**ADVANCED DATABASE
MANAGEMENT SYSTEM**

Time : 2 Hours]

[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 there in. 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.

K-971

(1)

P.T.O.

1. Explain the significance of data modeling in the context of a DBMS. Discuss the differences between the entity-relationship (ER) model and the relational model. Provide examples to illustrate the concepts.
2. Discuss the concept and types of normalization in detail. Explain the importance of normalization in database design and provide a step-by-step example of normalizing a set of relations. Discuss potential benefits and drawbacks of normalization.
3. Explain about the transaction and transaction states. Explain the ACID properties. Discuss the importance of maintaining these properties in database transactions. Provide an example scenario where maintaining the ACID properties is crucial.
4. What do you mean by concurrency control ? Why is it needed ? Elaborate any *two* concurrency control techniques with example.
5. Discuss and differentiate between DBMS and RDBMS. Explain Codd's rule with example.

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. Discuss and differentiate between network model and hierarchical model.
2. What do you mean by the term constraint ? How many types of constraint ? Explain with suitable example.
3. Illustrate the term cardinality of relationship in detail.
4. Differentiate between a table and view. Discuss the different types of view and its advantages. Write the syntax to create a view.
5. Define different types of aggregate functions and explain their role in database queries.
6. Describe a real-world scenario (e.g., a library system or university database) and create a simplified ER diagram for it, including entities, relationships, and attributes.

7. Explain why serializability is an important property for database systems. Differentiate between view and conflict serializability.
8. Define Role-Based Access Control (RBAC) and explain how it is implemented in a DBMS.
