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[Roll No.]

MCS-505/MIT(CS)-402

MCA/MSCIT/MSCCS II/IV Semester

Examination Dec. 2023

**DATABASE MANAGEMENT SYSTEM/
INTRODUCTION TO DBMS**

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.

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(1)

P.T.O.

1. Discuss the main components of a DBMS architecture, including the data storage, query processor, and transaction manager.
2. Explain the concept of data model and discuss the difference between hierarchical, network, and relational data models.
3. Define the Entity-Relationship (ER) model and discuss its role in database design. How does it aid in representing relationships between entities ?
4. What is Normalization ? Also explain various forms of normalization with example ?
5. Explain the role of foreign keys in establishing relationships between tables in SQL databases. How are foreign keys used to maintain referential integrity, and what actions are typically taken on updates and deletes ?

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 the advantages of using a DBMS over traditional file-based systems for data management.

2. Explain the role of a Database Administrator (DBA) in a database management system. What are their responsibilities ?
3. Compare and contrast centralized and distributed database systems. What are the advantages and challenges of each ?
4. Discuss the challenges and considerations in database security. How can a DBMS ensure data confidentiality, integrity, and availability ?
5. Examine the difference between primary keys and candidate keys. How are they used in normalization, and what role do they play in achieving a well-structured database ?
6. Explain the concept of database recovery. What are the goals of a recovery system in a database management system ?
7. What are the different types of failure ?
8. What are the different types of constraints ? Explain with suitable examples.
