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MCS-023

**MASTER OF COMPUTER
APPLICATIONS / BACHELOR OF
COMPUTER APPLICATIONS
(REVISED) (MCA/BCA)
Term-End Examination
June, 2026**

**MCS-023 : INTRODUCTION TO DATABASE
MANAGEMENT SYSTEM**

Time : 3 Hours

Maximum Marks : 100

Weightage : 75%

Note : *Question No. 1 is compulsory. Attempt any three questions from the rest.*

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1. (a) Define the three levels of DBMS architecture with a neat diagram. Explain the concept of data independence. 10

- (b) Explain the problems of concurrent transactions with suitable example. 10
- (c) Explain any three types of relational constraints (Domain key integrity) with examples. 10
- (d) What is client/server architecture ? Differentiate between 2-tier and 3-tier client/server models with suitable diagrams. 10
2. (a) Explain optimistic concurrency control phases with suitable example. 10
- (b) Explain, why is a B+ tree better than B-tree for implementation of an indexed sequential file. 10

3. (a) What is the need of normalization ?

Explain 1NF, 2NF and 3NF with suitable examples. 10

(b) Explain the aim of software development project. Describe how software requirements are determined.

10

4. Write short notes the following : $4 \times 5 = 20$

(a) Relational Algebra

(b) Distributed database system

(c) SQL views

(d) Comparison between DBMS and file system.

5. Differentiate between the following : $4 \times 5 = 20$

(a) ER Diagram *vs.* Relational Schema

- (b) Clustered Index *vs.* Non-Clustered Index
- (c) DELETE *vs.* TRUNCATE command in SQL
- (d) Embedded SQL *vs.* Dynamic SQL

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