



BTECH
(SEM V) THEORY EXAMINATION 2023-24
DATA BASE MANAGEMENT SYSTEM

TIME: 3 HRS

M.MARKS: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt all questions in brief.** **2 x 7 = 14**

	Define join. Explain different types of join.
	Explain normalization. What is normal form?
	Discuss the concept of Boyce-Codd Normal Form.
	Discuss log-based recovery methods.
	Define deadlock and discuss the various strategies.
	Explain the concept of isolation levels in concurrency control.
	Define multiple granularity in concurrency control.

SECTION B

2. **Attempt any three of the following:** **7 x 3 = 21**

	Draw overall structure of DBMS and explain its components in brief.
	Highlight the characteristics and advantages of SQL (Structured Query Language).
	Define Minimal Cover. Suppose a relation R (A,B,C) has FD set F = {A→B, B→C, A→C, AB→B, AB→C, AC→B} convert tis FD set into minimal cover.
	What do you understand by ACID properties of transaction? Explain in details.
	Explain two phase locking protocol with suitable example.

SECTION C

3. **Attempt any one part of the following:** **7 x 1 = 7**

(a)	Explore the extended Entity-Relationship (ER) model, focusing on relationships of higher degree.
(b)	Differentiate between Data Definitions Language (DDL) and Data Manipulation Language (DML).

4. **Attempt any one part of the following:** **7 x 1 = 7**

(a)	Discuss the concepts of tables, views, and indexes in SQL. Explain how these database objects are used to organize and optimize data retrieval.
(b)	Explain the concepts of tuple calculus and domain calculus in relational databases. Discuss how these calculi are used for specifying queries and constraints.

5. **Attempt any one part of the following:** **7 x 1 = 7**

(a)	Define functional dependencies and explain their significance in the context of a relational database.
(b)	Explain the concept of lossless join decompositions in the normalization process.

6. **Attempt any one part of the following:** **7 x 1 = 7**

(a)	Explain the process of recovering from transaction failures in a database system. Discuss the role of logs and mechanisms for identifying and rectifying failures.
(b)	Differentiate between conflict and view serializable schedules. Explain the criteria and conditions for a schedule to be considered conflict or view serializable.

7. **Attempt any one part of the following:** **7 x 1 = 7**

(a)	Explain the phantom phenomena. Discuss a time stamp protocol that avoids the phantom phenomena.
(b)	Explain the validation-based protocol for concurrency control.