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2605N645

Candidate's Seat No : _____

B.Sc. Sem.-4 Examination

CC-205

Computer Science

May-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q:1 (A) Explain the need for a database system. Discuss the roles of a Database Manager and Database Administrator. (7)

Q:1 (B) Differentiate between DDL and DML with examples. (7)

OR

Q:1 (A) What are the different types of joins in PL/SQL? Explain with examples. (7)

Q:1 (B) Describe the structure and execution of a PL/SQL block. (7)

Q:2 (A) Write a PL/SQL program to demonstrate the use of triggers and exception handling. (7)

Q:2 (B) Differentiate between correlated and non-correlated subqueries. Give examples. (7)

OR

Q:2 (A) What is the purpose of the EXISTS operator in SQL? Demonstrate with an example. (7)

Q:2 (B) Explain how constraints are used when creating a table. Provide examples of PRIMARY KEY and FOREIGN KEY. (7)

Q:3 (A) What are views in SQL? How can views be updated? Explain with examples. (7)

Q:3 (B) Describe the use of the GRANT command with ALL and PUBLIC options. (7)

OR

Q:3 (A) Explain the components of an Entity Relationship Model with diagrams. (7)

Q:3 (B) What are mapping constraints? How are they used in ER models? (7)

Q:4 (A) What are functional dependencies? Explain the importance of normalization in relational databases. (7)

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Q:4 (B) What is the concept of transaction and how do ACID properties apply to it? (7)

OR

Q:4 (A) Explain shadow paging and its use in crash recovery. (7)

Q:4 (B) Discuss concurrency control methods including locking protocols and deadlock handling. (7)

Q:5 True/False Attempt any seven out of Twelve (Each carries 2 Marks) (7)

1 A database administrator is responsible for maintaining the structure of the database.

2 DML commands are used to define the structure of database objects.

3 PL/SQL supports exception handling using TRY, CATCH, and THROW.

4 The LIKE operator is used to match patterns in string comparisons.

5 HAVING clause is used to filter groups based on aggregate functions.

6 A subquery can return multiple rows when used with IN clause.

7 Views cannot be updated if they include group functions or joins.

8 A FOREIGN KEY can reference the same table in a self-join.

9 In an ER diagram, relationships are shown using diamonds.

10 Relational algebra is used to retrieve data from NoSQL databases.

11 Shadow paging ensures atomicity in transaction recovery.

12 Deadlocks occur when two or more transactions wait for each other's resources indefinitely
