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(21225) Roll No.
B.Sc. (C.S.)-V Sem.

NP-3608

B.Sc. Examination, Dec.-2025

Computer Science

(BCS-501)

(Data Base Management System)

Time : 3 Hours] [Maximum Marks : 75

Note : Attempt **all** the sections as per instructions.

Section-A

(Very Short Answer Questions)

Note : This section contains **five** questions.

All question will be **compulsory**. Each question carries 3 marks. $5 \times 3 = 15$

1. Differentiate between database systems and file system.
2. Define data abstraction, instance and schema.

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3. What is the difference between entity, entity types and entity sets.
4. What is the various data type of SQL.
5. Differentiate between shared mode and exclusive mode locks.

Section-B

(Short Answer Questions)

Note : This section contains **three** questions. Attempt any **two** questions. Each question carries 7.5 marks. Short answer is required not exceeding 200 words. $7.5 \times 2 = 15$

6. Design an Entity-Relationship (E-R) diagram for university course registration system. The system allows students to enroll in course offered by the university. Make the necessary assumption if required and mention them.

NP-3608/2

7. Explain the concept of BCNF and 3NF with suitable example highlighting their differences and similarities.
8. Describe ACID properties of Transaction. Explain the testing for serializability?

Section-C

(Descriptive Answer Questions)

Note : This section contains **five** questions.

Attempt any **three** questions. Each question carries 15 marks. Answer is required in details. $15 \times 3 = 45$

9. Generalization is sometimes called "Bottom-up" approach, while aggregation is "abstract relationship." Justify with examples.
10. What are integrity constraints? Explain various types of integrity constraints with the help of example of each.

11. Explain the process of normalization in DBMS using Functional Dependencies (FD), Multivalued Dependencies (MVD), and join Dependencies (JD). Illustrate with suitable examples.
12. Explain the difference between conflict and view serializable schedule with suitable example?
13. Explain the concept of multiple granularity locking with suitable examples. Also describe multi-version concurrency control (MVCC).