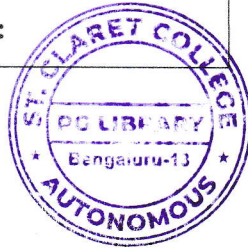


St. Clare College

Autonomous, Bengaluru

ROLL NO:

DATE:



MCA END SEMESTER EXAMINATION-SEPTEMBER 2026

MCA: SECOND SEMESTER

MCA 2425: DATABASE MANAGEMENT SYSTEM

TIME: 3 hours.

MAX. MARKS: 70

This paper contains TWO printed pages and FOUR parts

Instructions:

1. Verify and ensure that the question paper is completely printed.
2. Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.
3. Students must check the course title and course code before answering the questions.

PART-A

Answer any EIGHT questions out of TEN. Each answer carries TWO marks.

[2X8 = 16]

1. What is data independence? Mention its types.
2. State the purpose of the three-schema architecture.
3. Mention any two insertion anomalies.
4. List any two unary relational algebra operations.
5. Write the syntax of the UPDATE and ALTER statement.
6. Define functional dependency.
7. What is deadlock? Give an example.
8. Explain static hashing.
9. Define index. Mention its purpose.
10. Differentiate between XML DTD and XML Schema.

PART-B

Answer any FOUR questions out of SIX. Each answer carries FIVE marks.

[5X4=20]

11. Discuss various DBMS users and their responsibilities.
12. Describe different SQL constraints with examples.
13. Explain normalization up to 3NF with suitable examples.
14. Describe lock-based concurrency control.
15. Differentiate between static hashing and dynamic hashing.
16. Compare Object-Oriented and Object-Relational Databases.

PART-C

Answer any TWO questions out of FOUR. Each answer TEN marks.

[10X2=20]

17. Construct an ER diagram for a University Database Management System and explain the entities, attributes, relationships, and constraints.
18. A relation STUDENT (StudentID, Name, Department, Course, Faculty, FacultyPhone) contains redundancy. Normalize it up to BCNF with justification.
19. Explain transaction processing and concurrency control techniques with suitable examples.
20. Explain the Object-Oriented Database Model and discuss its advantages over the relational model.

PART-D

Answer the following question. Answer carries FORTEEN marks.

[14X1=14]

21. Write SQL statements for the following:

- (a) Create a table **EMPLOYEE** with appropriate constraints.
- (b) Insert suitable records into the table.
- (c) Alter the structure of the table using ADD and MODIFY key words
- (d) Create a view to display employees with salary greater than ₹50,000.
- (e) Create a trigger to prevent deletion of employee records.
- (f) Create an index on the employee name column.

(3+2+2+2+3+2)
