

Roll No: _____

Date: ___/___/___

St. Claret College

Autonomous, Bengaluru

UG END SEMESTER EXAMINATION - NOVEMBER 2025

B.Sc. III SEMESTER

CS 325: DATABASE MANAGEMENT SYSTEM

TIME: 3 hours.

9

MAX. MARKS: 80



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 **ALL** questions. Each answer carries **ONE** mark.

[10 x 1 = 10]

1. Which of the following is *not* a characteristic of the database approach?
a) Self-describing nature of a database system b) Program-data independence
c) Multiple views of data d) High data redundancy
2. The actual data stored in a database at a particular time is called
a) Schema b) Instance c) Model d) Domain
3. A primary key is
a) An attribute that can take null values b) A unique identifier for each entity
c) Always composite d) Optional in every entity type
4. The relationship that helps identify weak entities is called
a) Strong relationship b) Identifying relationship c) Supporting relationship d) Key relationship
5. Which file organization provides the fastest retrieval for key-based access?
a) Sequential b) Indexed c) Heap d) Hash
6. The UNION operation in relational algebra
a) Returns tuples present in both relations b) Returns tuples present in either relation
c) Returns tuples not present in the first relation d) Returns tuples present only in the second relation
7. A natural JOIN automatically
a) Joins relations based on attributes with the same name b) Requires explicit join conditions
c) Produces duplicate attributes d) Joins on all attributes
8. The notation $A \rightarrow B$ represents
a) Multivalued dependency b) Functional dependency c) Transitive dependency d) Partial dependency
9. When a transaction completes all its operations successfully, it enters the
a) Failed state b) Partially committed state c) Aborted state d) Invalid state

10. Problems due to lack of concurrency control include
- a) Lost updates
 - b) Dirty reads
 - c) Inconsistent analysis
 - d) All of the above

PART-B

Answer any **TEN** questions. Each answer carries **TWO** marks.

[10 x 2= 20]

11. Define DBMS with an example.
12. What is meta data?
13. List the different Data Models
14. Define Primary Key.
15. List the various secondary storage devices.
16. What is a tuple?
17. What is a View in SQL?
18. List any two operations in relational algebra.
19. Mention the anomalies in database design.
20. Define a transaction.
21. Mention any two features of NoSQL database.
22. Differentiate between commit and rollback.

PART-C

Answer any **FOUR** questions. Each answer carries **FIVE** marks.

[4 x 5= 20]

23. Explain the three-schema architecture with a neat diagram.
24. Define Data Independence. Explain its types.
25. Explain any five different types of attributes with examples.
26. Briefly describe different types of relationships with appropriate example.
27. Explain aggregate functions in SQL with example.
28. Briefly explain any two concurrency control techniques.

PART-D

Answer any **THREE** questions. Each answer carries **TEN** marks.

[3 x10 =30]

29. Describe the characteristics of the Database Approach and the advantages of DBMS.
30. a) Draw ER Diagram for Company Database.
b) Compare strong and weak entity with a suitable example. [5+5]
31. Define Normalization. Explain 1NF, 2NF and 3NF with an example
32. a) Write notes on Database recovery technique
b) Discuss the ACID properties of transaction in detail with an example [5+5]
33. a) Explain delete and update statements in SQL with appropriate examples.
b) Explain SELECT and PROJECT operations in relational algebra. [5+5]