



SE – 258

**III Semester B.C.A. (Full Stack Development) (AI and ML) (Data Science)
Degree Examination, Jan./Feb. 2026**

(SEP 2024-25)

COMPUTER APPLICATION

24BCA31 : Database Management System

Time : 3 Hours

Max. Marks : 80

SECTION – A

I. Answer **any 8** of the following.

(2×8=16)

- 1) Define DBMS.
- 2) What is a data model ?
- 3) What is the role of DBA ?
- 4) Define surrogate key.
- 5) State Armstrong's axioms.
- 6) What is denormalization ?
- 7) Differentiate between DDL and DML.
- 8) What is a relation ?
- 9) What is NoSQL ?
- 10) What is big data ?

SECTION – B

II. Answer **any 4** of the following.

(6×4=24)

- 11) Draw ER diagram for a student-course database.
- 12) Explain selection and projection operations in relational algebra with examples.
- 13) Define deadlock and describe methods to handle it.
- 14) What is file organization in DBMS ? Explain.
- 15) Explain MongoDB operators with examples.
- 16) Explain CRUD operations in NoSQL with an example.

P.T.O.



SECTION – C

III. Answer **any 5** of the following.

(8×5=40)

- 17) a) Describe the roles and responsibilities of database users.
b) Explain the advantages and disadvantages of DBMS in detail. **(3+5)**
- 18) a) Explain the basic relational algebra operations with examples.
b) Explain the purpose of the GROUP BY and HAVING clauses in SQL with suitable example. **(4+4)**
- 19) Explain join operations with suitable examples.
- 20) Explain the process of normalization in database design.
- 21) a) Define transaction. Explain the ACID properties with examples.
b) Explain Two-Phase Locking with a neat diagram. **(4+4)**
- 22) a) What is indexing ? Explain its types and advantages.
b) Explain serializability and recoverability of schedules in transaction management. **(4+4)**
- 23) a) Write short notes on CAP Theorem.
b) Describe the different types of NoSQL databases with examples. **(4+4)**
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