

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-GURAJADA VIZINAGARAM
II B. Tech I Semester Regular/Supply Examinations, November – 2025
Database Management Systems
CSE (AI&DS), AI&DS

Time: 3 hours**Max. Marks: 70**

Question paper consists of Part A, Part B.
Part A is compulsory, Answer all questions.
In Part B, Answer any one question from each unit.

PART-A**(20 Marks)**

- 1 a) Define DBMS. [2]
- b) Explain the concept of a Schema. [2]
- c) Define Primary key with an example. [2]
- d) Write the difference between Strong and Weak entity. [2]
- e) What is Functional Dependency? [2]
- f) Define 2NF. [2]
- g) Explain Schedule in Transaction Management. [2]
- h) What is a Deadlock? [2]
- i) What is Hashing in file organization? [2]
- j) Write any two advantages of Indexing. [2]

PART-B**(50 Marks)****Unit-1**

- 2 a) Describe 3-tier DBMS architecture with a neat diagram. [5]
 - b) Explain Data Models with examples. [5]
- (OR)

- 3 a) Explain Database Users and DBA Responsibilities. [5]
- b) Discuss different types of keys with examples. [5]

Unit-2

- 4 a) Explain various constraints in SQL with examples. [5]
- b) Write SQL queries for the following EMP(ENO, ENAME, JOB, SAL, DNO): [5]
 - (i) Display employees working as 'CLERK'.
 - (ii) Find employees with salary > 20000.
 - (iii) List distinct job roles.
 - (iv) Count employees department-wise.
 - (v) Display highest salary.

(OR)

- 5 a) Draw an ER diagram for Online Shopping System. [5]
- b) Explain JOIN operations with SQL examples. [5]

Unit-3

- 6 a) Explain 3NF and BCNF with examples. [5]
 - b) Compare Relational Algebra and Calculus. [5]
- (OR)
- 7 a) Explain lossless join decomposition with example. [5]
 - b) Discuss Multivalued Dependencies. [5]

Unit-4

- 8 a) Explain ACID properties. [5]
b) What is Concurrency Control? Explain Lock-based protocols. [5]
(OR)

- 9 a) Explain Deadlock prevention techniques. [5]
b) Write about Transaction States with diagram. [5]

Unit-5

- 10 a) Explain Static and Dynamic hashing. [5]
b) Describe B+ Tree structure and operations. [5]
(OR)

- 11 a) Explain Clustered and Unclustered Indexes. [5]
b) What is File Organization? Explain types. [5]
