

## EXAMINATION NOVEMBER 2025

B. Tech. (AICTE) V Sem. IT54 [Data Base Management System]

B. Tech. (AICTE) V Sem. IT505 [Data Base Management System]

Information Technology

Paper Code: BA23C564

Maximum Marks: 70

Minimum Marks: 22

**Time: Three Hours****No. of Pages: 02****Instructions:**

01. Attempt any two parts of a question from each module.

02. Draw neat diagrams in support of your answer.

**Module-I**

- Q.1 (a) Describe the evolution of database systems from file systems to modern DBMS. What limitations led to the development of DBMS? (07)[CO1]
- (b) Who is Database Administrator (DBA)? Explain various roles of DBA. (07)[CO1]
- (c) Explain data independence. Differentiate between logical and physical data independence. (07)[CO1]

**Module-II**

- Q.2 (a) What are integrity constraints? Explain various types of integrity constraints with suitable examples. (07)[CO2]
- (b) How to represent generalization, specialization and aggregation using ER diagram? Explain with suitable ER diagram. (07)[CO2]
- (c) A university maintains examination records of its students. The details stored are: (07)[CO2]
- (i) Student: Roll\_No, Name, Semester, Branch, Email.
  - (ii) Course: Course\_ID, Course\_Name, Credits.
  - (iii) Each course is taught by one or more Teachers.
  - (iv) Exam: Exam\_ID, Exam\_Date, Exam\_Type (Mid/End-Sem).
  - (v) A student can appear in many exams, and an exam can have many students.
  - (vi) Each appearance generates a Result with Marks and Status (Pass/Fail).

Draw a neat E-R Diagram for the above details showing:

- (i) Entities with attributes.
- (ii) The M-M relationship between Student and Exam using Result.
- (iii) Cardinality of the relationships.

**Module-III**

- Q.3 (a) Consider the following tables: (07)[CO3]

Employee (Emp\_no, Emp\_name, Emp\_city)

Company (Emp\_no, Company\_name, Salary)

- (i) Write a SQL query to display Employee name and Company name.
- (ii) Write a SQL query to display Employee name, Employee City, Company name and salary of all the employees whose salary > 10000.
- (iii) Write a query to display all the employee's names working in "XYZ" company.

**Cont...**

(b) Differentiate DML, DDL and DCL in detail. (07)[CO3]

(c) Explain select, project and division operations with examples. (07)[CO3]

#### Module-IV

Q.4 (a) Explain functional dependency and trivial functional dependency with examples. (07)[CO4]

(b) Consider a relation R with five attributes A, B, C, D, E having the following dependencies:

$$A \rightarrow B, BC \rightarrow E, \text{ and } ED \rightarrow A$$

(i) List all keys for R      (ii) In which normal form is the table? (07)[CO4]

Justify your answer.

(c) What is lossless decomposition in database? How it is useful in database? (07)[CO4]

#### Module-V

Q.5 (a) What do you mean by transaction processing? Explain ACID properties of transaction. (07)[CO5]

(b) What is a deadlock? Discuss strategies for preventing deadlock. (07)[CO5]

(c) What is distributed database system? How it is different from the centralized database system? Give the use of distributed system.

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