**Bachelor of Computer Applications (BCA)**

**Subject:** Database Management Systems  
**Time:** 3 Hours  
**Max Marks:** 100

**Instructions:**

1. All questions are compulsory.
2. Answer the questions as directed.
3. Use diagrams wherever necessary.

**Section A: Short Answer Questions**

*(Each question carries 5 marks)*

1. Define a database and explain its advantages over traditional file systems.
2. What are primary keys and foreign keys? Provide examples.
3. Explain the concept of normalization. Why is it important?
4. What is the difference between DELETE, TRUNCATE, and DROP commands in SQL?
5. List and explain ACID properties in a transaction.

**Section B: Long Answer Questions**

*(Each question carries 10 marks)*

1. Write an SQL query to create a table for storing employee details, including fields for Employee ID, Name, Department, Salary, and Joining Date.
2. Discuss the different types of database models with examples.
3. Explain the concept of an ER diagram and draw an ER diagram for a college management system.
4. Write an SQL query to:
   * Retrieve all employees with a salary greater than 50,000.
   * Update the department name for a specific employee.
   * Delete records of employees who have not joined in the last 5 years.
5. What are database indexes? Explain their types and significance in database performance.

**Section C: Case Study**

*(Each question carries 15 marks)*

1. A library management system requires a database to store information about books, members, and issued books. Design a database schema with at least three tables. Provide table structures and discuss the relationships between them.
2. A company wants to track the projects and tasks assigned to its employees. Design an ER diagram and write SQL queries to:

* Insert data into the tables.
* Fetch details of employees working on a specific project.
* List projects with more than 5 tasks.