



CBCS SCHEME

18MCA31

Third Semester MCA Degree Examination, June/July 2024

Database Management System

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define DBMS. Discuss the main characteristics of the database approach and how it differs from traditional file system. (10 Marks)
- b. Discuss the main activities of Actors on the scene and workers behind the scene. (10 Marks)

OR

- 2 a. With a neat diagram, explain the three – schema architecture of DBMS. (06 Marks)
- b. Discuss database languages and interfaces. (08 Marks)
- c. What is Entity type, Entity set? Explain the difference between entity, entity type and entity set. (06 Marks)

Module-2

- 3 a. Describe the entity integrity and referential integrity constraints in detail with necessary example. (10 Marks)
- b. Describe about the different unary relational operations and binary relational operators. (10 Marks)

OR

- 4 a. Explain about the various notations used in E-R diagram with example. (10 Marks)
- b. Describe the steps involved in ER-to-relation mapping with a suitable example. (10 Marks)

Module-3

- 5 a. Define SQL data definition and data types in brief and explain with example, Aggregate functions. (10 Marks)
- b. Explain the different clauses of SELECT – FROM – WHERE – GROUP – HAVING with an example for each. (10 Marks)

OR

- 6 a. Consider the following tables and write the SQL for the following :
- DEPARTMENT (Dnumber , Dname , MgrSSN, MgrStartDate)
 PROJECT (Pnumber , Pname , Plocation , Dnumber)
 EMPLOYEE (SSN , Name , Bdate , Addr , Sex , Salary , SuperSSN , Dno)
 WORKS_ON (Essn , Pno , Hours)
 DEPENDENT (Essn, Dependent_name , Sex , Bdate, Relationship)
- Retrieve the name and address of all employees who work for the 'Research Department'.
 - For each employee, retrieve the employee's first and last name and first and last name of his or her immediate supervisor.
 - Retrieve list of employees and the projects they are working on, ordered by department and within each department , ordered alphabetically by last name, first name.
 - Retrieve all employees whose address is in Houston , Texas.
 - Find the sum of the salaries of all employees, the maximum salary, the minimum salary and the average salary. (10 Marks)
- b. Discuss database programming issues and techniques. (10 Marks)

Module-4

- 7 a. What is Functional Dependency? Write the six inference rules for FD's. (08 Marks)
 b. What is Normalization? Explain 1NF, 2NF and 3NF, with suitable example. (12 Marks)

OR

- 8 a. Explain the use of Database stored procedures with example. (08 Marks)
 b. Explain the informal guidelines for relation schema design and illustrate how violation of these guidelines may be harmful. (12 Marks)

Module-5

- 9 a. Define Transaction. Explain about ACID properties of transaction. (10 Marks)
 b. What is a lock? Describe the two-phase locking protocol. (10 Marks)

OR

- 10 a. Describe in detail about deadlock handling. (10 Marks)
 b. Explain about recovery and atomicity. (10 Marks)
