CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

18MCA31

Third Semester MCA Degree Examination, June/July 2023
Database Management System

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Define DBMS. Discuss the characteristics of Database approach. **(05 Marks)**
  b. Describe three – schema architecture, with a neat diagram. **(10 Marks)**
  c. Discuss in detail about the advantages of DBMS over traditional file system, **(05 Marks)**

OR

2 a. What are the responsibilities of DBA? **(05 Marks)**
  b. Briefly explain any 2 types of attributes in E – R model. **(05 Marks)**
  c. Define the following terms, with an example for each :
   i) Entity set   ii) Cardinality ratio   iii) Participation   iv) Weak entity. **(10 Marks)**

Module-2

3 a. Define the following terms : i) Join   ii) Division   iii) Cartesian product
   iv) Union   v) Set difference. **(10 Marks)**
  b. Consider the following relations and write relational algebra queries.
   EMPLOYEE (Fname , SSN , Salary , Superssn, Dno)
   WORKSON (ESSN, Pno, Hours)
   DEPARTMENT (Dname, ESSN)
   DEPENDENT (ESSN, Department, name)
   i) Retrieve the highest salary paid in each department.
   ii) Retrieve the name of Manager who have more than two dependents.
   iii) Retrieve the number of Employees and their average salary working in each department.
   (10 Marks)

OR

4 a. What are Integrity Constraints? Discuss the various update operations on relations and the type of integrity constraints that must be checked for each update operation. **(10 Marks)**
  b. Explain SELECT and PROJECT Operation with suitable example. **(10 Marks)**

Module-3

5 a. Discuss Insertion , Deletion and Update anomalies by taking suitable examples. **(10 Marks)**
  b. Explain i) Aggregation function   ii) Embedded SQL. **(10 Marks)**

OR

6 a. How is a View created and dropped? What problems associated with updating of view?
   (10 Marks)
  b. Explain SQL dates definition and DROP and ALTER Command. **(10 Marks)**

Module-4

7 a. Demonstrate the Informal design guidelines for the relation schema. **(10 Marks)**
  b. Define Functional Dependency. List out the six inference rules of functional dependency.
   (10 Marks)

OR

| 8 | a. | What is Normalization? Explain the 1NF , 2NF and 3NF with example. | (10 Marks) |
| | b. | Explain BCNF, with the help of an example. | (10 Marks) |

Module-5

| 9 | a. | With the help of State transition diagram, explain the States of transition execution. | (10 Marks) |
| | b. | Define Transition. Explain ACID properties of transaction. | (10 Marks) |

OR

| 10 | a. | Explain how to deal with deadlock in concurrent control mechanism. | (10 Marks) |
| | b. | What is a Lock? Explain the 2 phase locking. | (10 Marks) |

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