Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION, MANIPAL
MANIPAL SCHOOL OF INFORMATION SCIENCES, MANIPAL

FIRST SEMESTER MASTER OF SCIENCE – M.Sc. (INFORMATION SCIENCE)

DEGREE EXAMINATION – NOVEMBER 2021

SUBJECT: MIS 503 – DATABASE MANAGEMENT SYSTEMS

Friday, November 26, 2021

Time: 10.00 – 13.00 Hrs. Max. Marks: 100

Note: All questions carry equal marks.

1. What is database system? Give differences between Dbms and traditional file system (TLO 1.1) (10 Marks)

2. Differentiate between schemas and instances (TLO 3.2) (10 Marks)

3. Briefly discuss the different types of attributes in a table (TLO 2.1) (10 Marks)

4. Discuss any 4 aggregation functions in relational algebra with an example. (TLO 3.2) (10 Marks)

5. Design an ER Diagram for the following Data Requirements (10 Marks)

   - The company is organized into departments. Each department has a unique name, a unique number, and a particular employee who manages the department. We keep track of the start date when that employee began managing the department. A department may have several locations.

   - A department controls a number of projects, each of which has a unique name, a unique number, and a single location.

- We store each employee's name, SSN, address, salary, sex, and birth date. An employee is assigned to one department but may work on several projects, which are not necessarily controlled by the same department. We keep track of the number of hours per week that an employee works on each project. We also keep track of the direct supervisor of each employee.

- We want to keep track of the dependents of each employee: first name, sex, birth date, relationship to the employee (TLO 3.2)

6. How Business Rules are used to define entities, attributes, relationships and constraints? (TLO 4.1) (10 Marks)

7. Briefly Discuss in SQL (TLO 4.1) (10 Marks)
   A. Alter Table construct
   B. Domain types in SQL
   C. Integrity constraints in Create Table
   D. Drop Table construct

8. Consider a database with the following relations (TLO 6.1) (10 Marks)

   loan (loan-number, branch-name, amount)
   customer (customer-name, customer-street, customer-city)
   depositor (customer-name, account-number)
   borrower (customer-name, loan-number)
   account (account-number, branch-name, balance)
   branch (branch-name, branch-city, assets)

   Write SQL query statements for following operations
   a. Delete all account records in the Perryridge branch.
   b. Delete all loan records with amount in the range of 0 to 50
   c. Delete all accounts at branches located in Needham.
   d. Find the names of all branches where the average account balance is more than $1,200 (Use Having clause)

9. Explain implementation of Atomicity and Durability using the shadow-database scheme (TLO 6.1) (10 Marks)

10. Explain levels of abstraction in DBMS (TLO 5.1) (10 Marks)

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