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**Bengaluru**

**School of Computer Science and Engineering**

**Mid - Term Examinations - November 2024**

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| **Semester**: 3 | **Date**: 09/11/2024 |
| **Course Code**: CSE3156  | **Time**: 11:45am to 01:15pm |
| **Course Name**: Database Management Systems | **Max Marks**: 50 |
| **Program:** B.Tech | **Weightage**: 25% |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

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| **Answer ALL the Questions. Each question carries 2marks. 5Qx2M=10M** |
| **1** |  | Define DBMS and DBMS Catalog. | 2 Marks | L1 | CO1 |
| **2** |  | Define Actors on the Scene and list the different actors on the Scene in DBMS. | 2 Marks | L1 | CO1 |
| **3** |  | List the basic operations of relational algebra and write their operators. | 2 Marks | L1 | CO1 |
| **4** |  | Give syntax and example for CREATE command in SQL to create a table. | 2 Marks | L1 | CO2 |
| **5** |  | What is Data Manipulation Commands? List all DML commands. | 2 Marks | L1 | CO2 |

**Part B**

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| **Answer ALL Questions. Each question carries 10 marks. 4QX10M=40M** |
| **6** | **a.** | Explain three main categories of Data Model. | 4 Marks | L2 | CO1 |
| **b.** | Describe the characteristics of DBMS. | 6 Marks | L2 | CO1 |
| **Or** |
| **7** | **a.** | Differentiate Primary key and Foreign key with an example. | 4 Marks | L2 | CO1 |
| **b.** | Explain in detail degree of relationship and types of relationship with an example.  | 6 Marks | L2 | CO1 |
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| **8** |  | Develop an ER diagram for employee database with following constraints1. An employee works for a department.
2. Every department is headed by a manager.
3. An employee works on one or more projects.
4. An employee has dependents.
5. A department controls the project
 | 10 Marks | L3 | CO1 |
| **Or** |
| **9** |  | Construct the relational algebra expressions to perform the following operations with the help of following schema.Employee (Eid, EName, Address, Salary, Deptid)Department (Id, DName, HOD)Project (Pid, PName, Deptid, Location)Dependent (Name, Eid, Age)Work On (Pid, Eid, Hours)1. Retrieve the name and address of employees who works for department no 5.
2. Retrieve the id of employee who has no dependents.
3. Retrieve name and department id of employees who put up from ‘Bengaluru’ and earning salary greater than 60000/-.
4. Find all the names of employees who work on all projects controlled by department 3.
5. Find the employee names who are working under HOD “Dr. ABC”.
 | 10 Marks | L3 | CO1 |
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| **10** | **a.** | Describe the following SQL commands with syntax and example.1. INSERT
2. DELETE
 | 4 Marks | L2 | CO2 |
| **b.** | Explain in detail different types of constraints in SQL. | 6 Marks | L2 | CO2 |
| **Or** |
| **11** | **a.** | Explain the following terms with an example.1. Revoke
2. Grant
3. Commit
4. Rollback
 | 4 Marks | L2 | CO2 |
| **b.** | Describe briefly inner joins with examples | 6 Marks | L2 | CO2 |
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| **12** |  | Construct the SQL queries with the help of following database schema.Student (USN, Name, Department, Percentage, Sem)Faculty (Fid, Fname, Department, Designation, Salary)Course (CID, Cname, Fid)Enroll (CID, USN, Grade)1. Retrieve student count semester wise.
2. Retrieve total number of employees who earns salary more than 40000.
3. List the faculty and their designation who earns highest salary.
4. List the faculty id handling course ‘AOA’ and ‘Data Mining’.
5. Display the student USN, Name and their Percentage increased by 10 percent.
 | 10 Marks | L3 | CO2 |
| **Or** |
| **13** |  | Construct the SQL queries with the help of following database schema.Depositor (AccNum, Name, DOB, Address, Age, Bank\_ID, Balance)Bank (Bank\_ID, Name, Branch)1. Create Depositor relational table which holds following constraints.

Constraint 1: Primary key fieldConstraint 2: Not null fieldConstraint 3: Check (age>=18)Constraint 4: Foreign key field1. Rename field Name to FName
2. Add new field Address
3. Insert 5 records to Depositor table.
4. Display balance of the customers by adding interest of 7% to all the customers.
 | 10 Marks | L3 | CO2 |