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**ST JOSEPH’S UNIVERSITY, BENGALURU -27**

**BSc (Computer Science) – IV SEMESTER**

**SEMESTER EXAMINATION: April 2024**

**(Examination conducted in May/June 2024)**

**CS 422 – Database Management System And Software Engineering**

**(For current batch students only)**

**This paper contains two printed pages and three parts.**

**Time: 2 Hours Max Marks: 60**

**PART A**

**Answer the following questions 2\*5=10**

1. What do you remember about database users? List its type.
2. Compare and contrast key attribute and composite attribute.
3. How do you compare delete command with drop command? Illustrate with an example.
4. Write any two importance of agile software development process.
5. How would you express the purpose of use case diagrams in software engineering?

**PART B**

**Answer any FIVE questions 4\*5=20**

1. With a neat diagram write the difference between physical data abstraction and logical data abstraction.
2. How would you present the working of second and third normal form?
3. What can you say about various key constraints in DBMS?
4. **Elaborate on various DML operations with examples.**
5. How would you compare black-box and white-box testing?
6. Analyze different steps involved in Waterfall model during software development.
7. Explain the various stages involved in Formal Technical Reviews

**PART C**

**Answer any THREE question 3\*10=30**

1. a) Describe the framework activities involved in the software process. (5 marks)

b) Write short notes on

i. Sprint review

ii. Sprint Retrospective (5 marks)

1. a) Elaborate on integration testing (5 marks)

b) How can you describe about the role of Database Administrator. (5 Marks)

1. Consider a relational database schema with two tables

Employee

Columns: **Employee-id,** (Primary Key), **Name**, **DepartmentID** (Foreign Key), **Salary**

**Department**

Columns: **DepartmentID** (Primary Key), **Name**, **ManagerID** (Foreign Key)

(Note: Create “Employee” and “Department” tables and insert the values).

Write Relational Algebra queries for the following tasks

1. Retrieve the names of all employees who work in the "Marketing" department.
2. Calculate the average salary of all employees.
3. List the names of all departments along with the number of employees in each department.
4. Find the highest salary among all employees.
5. Consider two tables named "Employees" and "Departments" with the following attributes

**Employees**

**Emplyeeid (Primary key)**

**FirstName**

**LastName**

**DepartmentID (Foreign Key referencing DepartmentID in Departments table)**

**Salary**

**Departments**

**DepartmentID (Primary key)**

**Department name**

(Note: Create “Employee” and “Department” tables and insert the values).

Write SQL commands to perform the following tasks

1. Insert a new department named "Marketing" into the Departments table and assign it a DepartmentID of 4.
2. Increase the salary of all employees in the Marketing department by 10%.
3. Transfer all employees from the Marketing department to the Sales department.