Savitribai Phule Pune University

S.Y. B.C.A. (Science) (Semester-III) Practical Examination

BCA 235: s(Database Management Systems II Laboratory)

Duration: 3Hrs. **Max Marks: 35+15=50**

Note: - 1. Read the questions carefully and insert data in the database accordingly.

2. Insert sufficient number of records in the database.

3. No query should generate empty output.

4. For count queries output should be more than 2 records. (If asked)

Create the following database in 3NF using PostgresSQL. **[Total Marks: 10]**

Q.1) Q1) Consider the following Student-Teacher database maintained by a college. It also gives information of the subject taught by the teachers.

Student (Sno integer, sname varchar (20), sclass varchar (10), saddr varchar(30))

Teacher (Tno integer, tname varchar (20), qualification char (15), experience integer)

Relationship:

Student-Teacher related with many to many relationship with descriptive attribute subject.

Constraints: Primary Key, student and teacher name should not be null.

Create a View: **[10]**

1. To display teacher details having qualification as 'Ph.D.'.

2. To display student details living in 'Pune'.

Q.2) Using above database solve following questions: **[Total Marks: 20]**

1. Write a trigger before inserting experience into a teacher table; experience should be minimum 5 years. Display appropriate message. **[10]**

2. Write a cursor to list the details of the teachers who are teaching to a student named '___'. (Accept student name as an input parameter). **[10]**

Q.3) **External Viva** **[05]**

Q.4) **Internal Evaluation** **[15]**

STUDENT-TEACHER DATABASE

CREATE TABLE Student (Sno INTEGER PRIMARY KEY, sname VARCHAR(20) NOT NULL, sclass VARCHAR(10), saddr VARCHAR(30));

CREATE TABLE Teacher (Tno INTEGER PRIMARY KEY, tname VARCHAR(20) NOT NULL, qualification CHAR(15), experience INTEGER);

CREATE TABLE Student_Teacher (Sno INTEGER REFERENCES Student(Sno), Tno INTEGER REFERENCES Teacher(Tno), subject VARCHAR(30), PRIMARY KEY (Sno, Tno));

INSERT INTO Student (Sno, sname, sclass, saddr) VALUES (1, 'Rahul', '10th', 'Pune'), (2, 'Sneha', '12th', 'Mumbai'), (3, 'Amit', '11th', 'Pune'), (4, 'Vijay', '10th', 'Nashik');

INSERT INTO Teacher (Tno, tname, qualification, experience) VALUES (1, 'Sharma', 'Ph.D.', 10), (2, 'Joshi', 'M.Sc.', 4), (3, 'Singh', 'Ph.D.', 7), (4, 'Gupta', 'M.A.', 5);

INSERT INTO Student_Teacher (Sno, Tno, subject) VALUES (1, 1, 'Mathematics'), (1, 3, 'Physics'), (2, 2, 'Chemistry'), (3, 1, 'Mathematics'), (4, 3, 'Biology');

Q.1) Create a View:

CREATE VIEW PhDTeachers AS SELECT * FROM Teacher WHERE qualification = 'Ph.D.';

SELECT * FROM PhDTeachers;

CREATE VIEW StudentsInPune AS SELECT * FROM Student WHERE saddr = 'Pune';

SELECT * FROM StudentsInPune;

Q.2) Using above database solve following questions:

```
CREATE OR REPLACE FUNCTION validate_teacher_experience()
RETURNS TRIGGER AS $$
BEGIN
   IF NEW.experience < 5 THEN
      RAISE EXCEPTION 'Experience should be a minimum of 5 years';
   END IF;
   RETURN NEW;
END;
$$ LANGUAGE plpgsql;

CREATE TRIGGER before_insert_teacher_experience
BEFORE INSERT ON Teacher
FOR EACH ROW
EXECUTE FUNCTION validate_teacher_experience();

INSERT INTO Teacher VALUES (1, 'Mr. Smith', 'M.Sc.', 3);
```

```
CREATE OR REPLACE FUNCTION
list_teachers_for_student(student_name VARCHAR)
RETURNS SETOF Teacher AS $$
DECLARE
   teacher_record Teacher%ROWTYPE;
   cur CURSOR FOR
      SELECT t.*
      FROM Teacher t
      JOIN Student_Teacher st ON t.Tno = st.Tno
      JOIN Student s ON st.Sno = s.Sno
      WHERE s.sname = student_name;

BEGIN
   OPEN cur;
   LOOP
      FETCH cur INTO teacher_record;
      EXIT WHEN NOT FOUND;
      RETURN NEXT teacher_record;
   END LOOP;
   CLOSE cur;
   RETURN;
END;
$$ LANGUAGE plpgsql;

SELECT * FROM list_teachers_for_student('Rahul');
```