

Part A

1. For the relation schema below, give an expression in SQL for each of the queries

that follows:

employee (ID, person_name, street, city)

works (ID, company_name, salary)

company (company_name, city)

manages (ID, manager_id)

- i) Find the employees whose name starts with 'C'
- ii) Find the name of managers of each company
- iii) Find the ID, name, and city of residence of employees who works for "First Bank Corporation" and earns more than Rs50000
- iv) Find the name of companies whose employees earn a higher salary, on average, than the average salary at "First Bank Corporation"

2. Differentiate correlated and non-correlated nested queries with suitable

examples

Consider the following relation schema and write SQL queries to find:

EMPLOYEE(Fname, Minit, Lname, SSN, Bdate, Address, Sex, Salary SuperSSN, Dno)

DEPARTMENT(Dname, Dnumber, MgrSSN, MgrStartDate)

DEPT_LOCATIONS(Dnumber, Dlocaions)

PROJECT(Pname, Pnumber, Plocation,Dnum)

WORKS_ON(ESSN, Pno,Hours)

- i. Retrieve the name and address of all employees who work for the 'Research' department.
- ii. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
- iii. Retrieve the name of each employee who works on all the projects controlled by department number
- iv. Make a list of all project numbers for projects that involve an employee whose last name is 'Smith' as a worker or as a manager of the department that controls the project.
- v. Retrieve the SSN of all employees who work on project number 1, 2, or 3.

3. Consider the following Database with two tables:

Table: Employees

EmployeeID INT PRIMARY KEY

FirstName VARCHAR(50)

LastName VARCHAR(50)

JobTitle VARCHAR(100)

Salary DECIMAL(10,2)

HireDate DATE

DepartmentID INT

Table: Departments

DepartmentID INT PRIMARY KEY

DepartmentName VARCHAR(100)

ManagerID INT

Foreign Key: Employees.DepartmentID references Departments.DepartmentID

Frame SQL queries for the following problems:

- (i) Calculate the average salary per department.
- (ii) List the employees with the highest salary in each department:
- (iii) Find departments with more than 25 employees.
- (iv) Get the employee names starting with 'S' in alphabetical order

4. Consider the following relation schema and write SQL queries to find:

EMPLOYEE(Fname, Minit, Lname, SSN, Bdate, Address, Sex, Salary SuperSSN, Dno)

DEPARTMENT(Dname, Dnumber, MgrSSN, MgrStartDate)

DEPT_LOCATIONS(Dnumber, Dlocaions)

PROJECT(Pname, Pnumber, Plocation,Dnum)

WORKS_ON(ESSN, Pno,Hours)

- i. Retrieve the name and address of all employees who work for the 'Research' department.
- ii. For each employee, retrieve the employee's name, and the name of his or her

immediate supervisor.

iii. Retrieve the name of each employee who works on all the projects controlled by department number 5.

iv. Make a list of all project numbers for projects that involve an employee whose last name is 'Smith' as a worker or as a manager of the department that controls the project.

v. Retrieve the SSN of all employees who work on project number 1, 2, or 3.

Part B

1. Create an electricity billing system, rent rs 20/-

Slab 1 : 1-40 units-0

Slab2: 40-80 units -40

Slab3: >80 -1.40+excess of 80

2. An examination has been conducted to a class of 5 students and four scores of each student have been provided in the data along with register number and name. Write a PL/SQL block to do the following

Assign a letter grade to each student based on the average score;

Average Score	Grade
90-100	a
75-89	b
60-74	c
50-59	d
0-49	e

3. A salary statement contains Name, Basic pay , allowance total , deduction (include , IT), gross pay, and net pay .

Allowance = 20% of basic pay

gross pay = Basic pay + Allowance.

Deduction = 10% of basic pay

income tax is calculated on the basis of annual income under the following condition.

annual salary

<=300,000

>30,000 but <55,000

>=55,000

Income tax

Nil

30% of excess over the amount Rs = 30,000/-

50% of excess over the amount Rs = 55,000/-