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Instructions – (1) All Questions are *Compulsory*.

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(5) Possibly solve questions in order.

Marks

1. a) **Attempt any <u>SIX</u> of the following:**   **12**

(i) List first four codd rules.

(ii) List four symbols used in E-R diagram.

(iii) How to apply NOT NULL constraint at the time of table creation? Give syntax.

(iv) List four DML commands.

(v) State use of '%' character in string operations.

(vi) What is index? List its types.

(vii) What is trigger? List its types.

(viii) What is Sigma (σ) operator in Relational Algebra? Give example.

Marks

b) **Attempt any <u>TWO</u> of the following:**   **08**

    (i)   Describe data abstraction with neat diagram.

    (ii)   Explain group by clause with suitable example.

    (iii) Write step by step syntax to create, open and close cursor in PL/SQL block.

2.   **Attempt any <u>FOUR</u> of the following:**   **16**

a) Describe strong and weak entity set.

b) State and explain 1NF and 2NF with example.

c) Consider following database and solve queries

    emp (empno, ename, ph, sal, dept_no, comm)

    (i)   Change employee name 'Rahul' to 'Ramesh'.

    (ii)   Give increment of 20 % in salary to all employees.

d) Consider following schema:

    Depositor (Acc_no, Name, PAN, Balance)

    Create a view on depositor having attributes (Acc_no, PAN) where balance is greater than 100000.

e) List two advantages of each of the following:

    (i)   functions

    (ii)   procedures.

f) Draw neat labelled diagram of overall DBMS structure.

Marks

3. **Attempt any <u>FOUR</u> of the following:** 16

   a) Consider following schema:

   Employee (emp_no, emp_name, dept, designation, salary, Dept_location)

   Solve following queries:

   (i) list all Managers in Mumbai location

   (ii) set salary of all 'project leaders' to 70000/-

   (iii) list employees with having alphabet 'A' as second letter in their name.

   (iv) display details of those employees who work in Mumbai or Chennai.

   b) State two advantages of PL/SQL and give its block structure.

   c) Explain need of normalization and state 3NF.

   d) What are synonyms? How to create and drop synonym?

   e) Define lock? Explain shared and exclusive locks.

   f) Explain data mining. List four features of data mining.

4. **Attempt any <u>FOUR</u> of the following:** 16

   a) Draw an E-R diagram of library management system considering issue and return, fine calculation facility.

   b) Write PL/SQL program to display square of any number.

   c) Explain Alter command. Give syntax of add and modify option.

   d) State and explain ACID properties.

   e) What are sequences? Create sequence for 'student' table.

   f) State 4 (four) differences between DBMS and RDBMS.

Marks

5. **Attempt any <u>FOUR</u> of the following:** **16**

a) List four functions of database administrator.

b) What are snapshots? Create snapshot for employee table.

c) Explain 'exception handling' in 'PL-SQL'.

d) Consider following relational algebra schema

Student (Roll_no, Name, DOB, percentage course)

Department (Deptno, DeptName, Head)

Write relational algebra expressions for:

(i) Find student name and percentage from computer department.

(ii) Get the students name who has percentage greater than 70.

e) Explain implicit and explicit locking strategies.

f) Consider following schema:

depositor (cust_name, acc_no)

Borrower (cust_name, loan_no)

Solve following queries:

(i) Find customer name having savings account as well as loan account.

(ii) Find customer names having loan account but not the savings account.

Marks

6. **Attempt any <u>FOUR</u> of the following:** 16

a) State and explain four advantages of DBMS over file processing system.

b) Explain multivalued dependencies with example.

c) Explain:

(i) order by clause

(ii) grant command

(iii) commit command

(iv) savepoint command.

d) Describe following keys:

(i) primary key

(ii) foreign key.

e) Explain word comparison operators:

(i) IN and NOT IN

(ii) BETWEEN and NOT BETWEEN.

f) Explain while-loop in PL/SQL with example.

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