3 Hours/100 Marks   Seat No. ☐☐☐☐☐☐☐☐

Instructions :   (1) **All** questions are **compulsory**.

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

(3) *Figures to the* **right** *indicate* **full** *marks.*

(4) **Assume** *suitable data, if* **necessary**.

MARKS

1. A) Solve **any six** :   **12**

   1) Define DBMS. List any two applications of DBMS.

   2) List and draw any four symbols used in ER Model.

   3) What is Primary Key ? Give example.

   4) List any four DML commands.

   5) Draw transaction state diagram.

   6) How to create view ?

   7) What is cursor ?

   8) What are the atomic values ?

   B) Solve **any two** :   **8**

   1) Explain Data Redundancy and Integrity.

   2) What is the use of GRANT and REVOKE ?

   3) How to create trigger ? State any two advantages of trigger.

2. Solve **any four** :   **16**

   a) What is the difference between weak entity set and strong entity set ?

   b) Explain Functional and Transitive dependency.

   c) What are the four ways to insert a record in a table ?

   d) Explain with example simple and composite index.

   e) Write a PL/SQL program which handles divide by zero exception.

   f) What is data mining and data ware housing ?

3. Solve **any four** :   **16**

   a) Given –

   Employee(EMP_ID, FIRST_NAME, LAST_NAME, SALARY, JOINING_DATE, DEPARTMENT)

   Write SQL queries for –

   i) Get FIRST_NAME, LAST_NAME from employee table.

   ii) Get unique DEPARTMENT from employee table.

   iii) Get FIRST_NAME from employee table using alias name "Employee Name"

   iv) Get FIRST_NAME from employee table after removing white spaces from left side.

   b) Draw the block structure of PL/SQL. List advantages of PL/SQL.

   c) Explain Foreign Key and ON DELETE CASCADE with suitable example.

   d) What is sequence ? What are the various operations with respect to sequences ?

   e) Explain Lock Compatibility Table. What is Two-phase locking protocol ?

   f) Differentiate between DBMS and RDBMS.

4. Solve **any four** : 16

   a) Draw an ER diagram for Library Management System.

   b) What are the various datatypes of PL/SQL ?

   c) Explain the difference between DROP and TRUNCATE with example.

   d) What is schedule ? Explain conflict serializability.

   e) Write a PL/SQL program to create any snapshot.

   f) Draw diagram for overall architecture of DBMS.

5. Solve **any four** : 16

   a) What is data abstraction ? What are the levels of abstraction ?

   b) Explain types of JOINs.

   c) Write PL/SQL procedure to calculate factorial of a given number.

   d) Differentiate between function and procedure.

   e) Given :

      driver(driver_id, driver_name, age, rating)

      bus(bus_id, bus_name, color)

      reserves(driver_id, bus_id, date) ;

      Write Relational Algebra Queries for

      i) Find the colors of bus reserved by 'John Mark'.

      ii) Find the names of drivers who have not reserved a yellow bus.

   f) How to use COMMIT, SAVE POINT, ROLLBACK commands.

MARKS

6. Solve **any four** : **16**

    a) Explain two disadvantages of file processing system.

    b) Given : Student(Roll_No, Name, Class, Total_Marks, Percentage, Grade)

       Find appropriate dependencies and normalise up to 3NF.

    c) Explain ACID properties.

    d) What are the types of attributes ?

    e) Explain GROUP BY, ORDER BY clause of SQL with example.

    f) What are the various control structure statements used in PL/SQL ?

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