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.

1. Attempt any FIVE of the following: [10]
   (a) List any four applications of DBMS.
   (b) State the four database users.
   (c) Define normalization. Enlist its type.
   (d) Enlist DDL and DML commands.
   (e) Define the primary and foreign keys.
   (f) Define the following:
      (i) Instance   (ii) Schema
   (g) State four advantages of DBMS over file processing system.

2. Attempt any THREE of the following: [12]
   (a) Explain PL/SQL block structure.
   (b) Write and explain syntax for creating procedure.
   (c) Explain grant and revoke command with syntax and example.
   (d) Distinguish any four points between network model and hierarchical model.

3. Attempt any Three of the following: [12]
   (a) Explain aggregate functions with example
   (b) Explain set operators in SQL
   (c) Explain predefined and user defined exception handling with the help of example.
   (d) Explain ACID properties of transaction.

4. Attempt any THREE of the following: [12]
   (a) Write and explain the syntax for creating and dropping synonyms with an example.
   (b) Write and explain syntax for creating function.
   (c) Explain cursor with example
   (d) Explain 2NF with example.
   (e) Explain the four roles of database administrator.
5. Attempt any **TWO** of the following:  
(a) Draw ER diagram for Hospital Management System  
(Use DOCTOR, PATIENT, HOSPITAL and MEDICAL_RECORD Entity).  
Identify Primary Key and Foreign Key.  
(b) Normalize database  
Employee(emp_id, emp_name, phone, skill, salary, deptno, dept_name, jobno, job_title) upto 3NF  
(c) Write SQL query for following consider table  
EMP(empno, deptno, ename, salary, Designation, joiningdate, DOB, city)  
(i) Display names of employees whose experience is more than 10 years  
(ii) Display age of employees  
(iii) Display average salary of all employee  
(iv) Display name of employee who earned highest salary  

6. Attempt any **TWO** of the following:  
(a) Create table  
EMP(empno, deptno, ename, salary, Designation, joiningdate, DOB, city).  
(i) Insert one row into the table  
(ii) Save the data  
(iii) Insert second row into the table  
(iv) Undo the insertion of second row  
(v) Insert two rows into the table  
(vi) Create Savepoint s1  
(vii) Insert one row into the table  
(viii) Undo upto savepoint s1  
(b) Write a PL/SQL program to check whether specified employee is present in EMP table or not. Accept empno from user. If employee does not exist display message using exception handling.  
(c) Write SQL query for following consider table  
EMP(empno, deptno, ename, salary, Designation, joiningdate, DOB, city)  
(i) Display employees name and number in an increasing order of salary  
(ii) Display employee name and employee number dept wise  
(iii) Display total salary of all employee  
(iv) Display number of employees dept wise  
(v) Display employee name having experience more than 3 years  
(vi) Display employee name staring with “S” and working in deptno 1002

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