1. Create Database schema for given application

1. Define Database and Database Management System.
2. Describe Primary key.
3. Draw E-R diagram for Library Management System.
4. Normalize the following table of EMP to 3NF **EMP(empno,ename,mgr,job,deptno,loc,dname)**

2. Execute DDL Commands to manage database using SQL

1. Create table for stud using attributes Rollno, Studname, Percentage. Apply primary key for rollno and check constraint on percentage that the percentage should not be greater than 100.
2. Change the stud table structure by adding column City.
3. Increase the size by 10 of studentname column.
4. Write difference between Drop and Truncate command.

3. Execute DML Commands to 5manipula6te data using SQL

1. Delete record of SMITH from the above table
2. Change the job of ADAMS to MANAGER
3. Display contents of empno and sal
1. Describe referential integrity constraint.

4. Execute DCL Commands to control the access to data using SQL

Consider table EMPLOYEE and DEPARTMENT with following schema:
EMP (empno, empname, salary, phno) Dept (deptno, empno, deptname, location, jobtype)

Write the output of the following queries:

- Create user Jay with any passwaord;
- Grant create table, create view to Jay;
- Grant select, insert, update on Emp to Jay;
- Change password of Jay;
- Revoke create table, create views from Jay;
- Revoke select, insert, update on Emp from Jay;
- Create role emp_pvr;
- Grant create table, create views to emp_pvr;

5. Execute TCL Commands to control transactions on data using SQL

1. Write TCL command to save all the changes made so far in the EMP
2. Delete any one record in the EMP table created earlier and undo the deletion operation
3. You are in the middle of a transaction and want to set a savepoint named BeforeSalaryUpdate. Write the SQL command to set this savepoint.
4. Describe ACID properties of transaction

6. Implement Queries using Arithmetic operators

Consider the following schema **Orders(cust_id, order_id, items, amount)**
Write queries for the following:

i Display new column named total_amount which is 200 added to the amount field.
ii Display new column named offer_price which is 100 subtracted from the amount field.
iii Display new column named revised_amount which is multiplied by 5 times the amount field.
iv Display new column named half_amount which is divided by 2 to the amount field.

7. Implement Logical operators to apply various conditions in query

Consider the following schema **Emp(empno,ename,job,mgr,hiredate,sal,comm,deptno)**

Write queries for the following:

i Display employees whose city is 'Mumbai' and earns more than 50000
ii Display employees who job is Clerk or commission is 500
iii Display details of employees whose salary is between 20000 and 50000
iv Display details of employees who stays at Mumbai, Pune, Nashik or Nagpur

8. Implement Relational operators to apply various conditions in query

1. List all Relational operators with their use in SQL.
2. Consider the following schema **Student (stu_name, course_id, Roll_no, percentage)**

Write queries for the following:

i Select stu_name, course_id, from Student WHERE percentage is >=60 and <=100;
ii Select details of students whose Roll numbers are above 15;
iii Select stu_id, Roll_no from Student WHERE course_id! =121;

9. Write Queries to implement SET operations using SQL

Consider following Schema : **emp1(empno,ename,deptno) emp2(empno,ename,deptno)**

Write SQL commands for the following statements.

1. Display the names of employees including duplicate employee names.
2. Display the names of employees excluding duplicate employee names.
3. Display the common employee names from both the tables.
4. List employees who are not assigned to any department?

10. Execute queries using String functions

Write output of the following queries.

1. Select concat ('Jay' 'IITB') from Dual;
2. Select ltrim ('Shreya','s') from Dual;
3. Select upper('raj') from Dual;
4. Select rpad ("HR', 10, '*') from Dual;

11. Execute queries using Arithmetic functions

1. Calculate cube of following numbers: 12,14,16
2. Display details of salary of employees with roundup value.
3. Differentiate between round() and trunc()
4. Differentiate between floor() and ceil()

12. Implement queries using Date and Time functions

Write output of the following queries.

1 Select sysdate from Dual;
2 Select last_day() from Dual;
3 Write the use of months_between function with syntax and example.
4 Calculate your age in Years using date and time function

13. Implement queries using Aggregate functions

Consider the following schema **Emp(empno,ename,job,mgr,hiredate,sal,comm,deptno)**

1. Display the minimum, maximum, sum and average salary of all employees. Label the columns Maximum, Minimum, Sum and Average respectively.
2. Determine the number of managers without listing them. Label the column number of managers
3. Write a query that will display the difference between the highest and lowest salaries. Label the column DIFFERENCE.
4. Display the number of employees in department 10 who earns a commission

14. Execute Queries for ordering and grouping data

Write output of the following queries.

1) Display minimum salary of employee from every department;
2) Display total salary of every department.
3) Display the department having total employees more than 5.
4) Display details of employees with employee name in ascending order.
5) Display emp_no, dept_no from dept Group By deptname.

15. Execute the queries based on Inner & outer join

1. Describe outer join.
2. Display employee Nikhil's employee number, name, department number, and department location.
3. Display the list of employees who work in the sales department.
4. Display the list of employees who do not work in the sales department.
5. Display the employee names and salary of all employees who report to Sumit Patil.

16. Create and manage Views for faster access on relations

Write output of the following queries.

i Create view emp_view as select emp_no, enema, salary from emp;
ii Update emp_view set e_name='Jay' where emp_no=101;
iii Delete from emp_view where emp_no= 105;
iv Drop view emp_view;
v Modify location of dept_no of dept_view;

17. Implement PL/SQL program using Conditional Statements

Describe any three conditional statements in PL/SQL

Write a PL/SQL program that checks if a given number is positive, and if it is, prints "Number is positive".

18. Implement PL/SQL program using Iterative Statements

List Iterative statement in PL/SQL.

Write a PL/SQL program to calculate the prime numbers between 1 to 50.

19. Implement PL/SQL program using Sequential Control

Describe the sequential control statement.

Write a PL/SQL program that prints numbers from 1 to 10, but skips printing the number 5 [Use GOTO statement]

20. Create implicit & explicit cursors

Distinguish between Implicit and Explicit cursors in oracle.

Write a PL/SQL program to display the number of items having price more than 10000 in store table using cursors.

21. Implement PL/SQL program based on Exception Handling (Predefined exceptions)

Explain pre-defined exception with an example.

Write a PL/SQL program that asks the user to input two numbers and divide the first number by the second. Handle the predefined exception for division by zero and display an appropriate message if it occurs.

22. Implement PL/SQL program based on Exception Handling (user defined exceptions)

Explain how to define and call user defined exception?

Write a PL/SQL program that asks for customer Id, when user enters invalid Id, the exception **Invalid-Id** is raised.

23. Create Procedures and stored procedures for modularity

Write syntax for creating PL/SQL Procedure. List types of parameters in Procedure

Write a procedure emp_count () to count number of employees in department, use dept_no as input parameter

24. Create function for given database

Write syntax for creating and replacing function.

Write PL/SQL function which will compute and return the maximum of two values.

25. Implement triggers for given database

Differentiate between row level trigger and statement level trigger

Create a trigger on EMP table which is invoked when salary is below 5000 .