1. Decide a case study related to real time application in group of 2-3 students and formulate a problem statement for application to be developed. Propose a Conceptual Design using ER features using tools like ERD plus, ER Win etc. (Identifying entities, relationships between entities, attributes, keys, cardinalities, generalization, specialization etc.) Convert the ER diagram into relational tables and normalize Relational data model.

2.a. Design and Develop SQL DDL statements which demonstrate the use of SQL objects such as Table, View, Index, Sequence, Synonym, different constraints etc.

2. b. Write at least 10 SQL queries on the suitable database application using SQL DML statements.

3. Write SQL Left Join queries for suitable database application using SQL statements.

4. Write SQL Right Join queries for suitable database application using SQL statements.

5. Write SQL Inner Join queries for suitable database application using SQL statements.

6. Write SQL Cross Join queries for suitable database application using SQL statements.

7. Create a table Employee with attribute Empno, Ename, Job, Salary and Write SQL Query on aggregation Functions avg( ), count( ), min( ), max( ) for suitable database application using SQL statements.

8. Consider Tables:
a) Borrower (Roll_no, Name, DateofIssue, NameofBook, Status)
b) Fine(Roll_no,Date,Amt)

- Accept Roll_no and NameofBook from user.
- Check the number of days (from date of issue).
- If days are between 15 to 30 then fine amount will be Rs 5per day.
- If no. of days>30, per day fine will be Rs 50 per day and for days less than 30, Rs. 5 per day.

9) Write a PL/SQL code block to calculate the area of a circle for a value of radius varying from 5 to 9. Store the radius and the corresponding values of calculated area in an empty table named areas, consisting of two columns, radius and area.

10) Write a Stored Procedure namely proc_Grade for the categorization of student. If marks scored by students in examination is <=1500 and marks>=990 then student will be placed in distinction category if marks scored are between 989 and 900 category is first class, if marks 899 and 825 category is Higher Second Class.
Write a PL/SQL block to use procedure created with above requirement.
Stud_Marks(name, total_marks) Result(Roll,Name, Class)

11)Write a PL/SQL block of code using parameterized Cursor that will merge the data available in the newly created table N_RollCall with the data available in the table O_RollCall. If the data in the first table already exist in the second table then that data should be skipped.

12)Write a database trigger on Library table. The System should keep track of the records that are being updated or deleted. The old value of updated or deleted records should be added in Library Audit table.

13) Write a program to implement MySQL/Oracle database connectivity with any front end language to implement Database navigation operations (add, delete, edit etc.)

14) Create a view on existing Employee table and perform select, insert, update and delete operation using view.

15) Design and Develop MongoDB Queries using CRUD operations.

16) Demonstrate the Primary key, Unique key, Not Null key and Foreign key constraints using MySQL.

17) Design and Develop MongoDB Queries using aggregation function with suitable example using MongoDB.

18) Create an index on existing Employee table and perform all possible operations on index using MySQL.

19) Implement Map reduces operation with suitable example using MongoDB.

20) Consider the table Employee and demonstrate the WHERE clause, Having clause, Order by clause in a single query using MySQL.