DBMS QUESTION BANK

1. Explain the informal design Guidelines used as measures to determine the quality of relation schema design.

2. Define normal form. Explain 1NF, 2NF, 3NF with suitable example each.

3. Consider the universal relation R.
   R{A,B,C,D,E,F,G,H,I,J} and set of functional dependencies
   F={(A,B)->(c), A->(D,E), B->F, F->(G,H), D->(I,J) . Find the candidate
   keys and also decompose the relations into 2NF, 3NF.

4. Define the following with Example.
   - Functional Dependency
   - Candidate key
   - Super key
   - Prime and non-prime attributes
   - Partial dependency
   - Transitive dependency
   - Multivalued Dependency

5. What is the need for Normalization? Consider the relation
   Emp_Proj={ssn,Pnumber,Hours,Ename,Pname,Plocation}
   Assume {ssn,pnumber} as primary key
   The dependencies are
   {ssn,pnumber}->Hours
   Ssn->Ename
   Pnumber->{pname,plocation}
   Normalize the above relation into 3NF.

6. Explain Insertion, Deletion and Modification Anomalies with examples.

7. What are the desirable properties of transactions. Explain with examples.

8. Explain transaction support in SQL. Also Write a short notes note on Database recovery management.

9. Why concurrency control is needed? Demonstrate with example. Also explain 2 phase locking system.

10. Explain with example, the comparison between SQL and NOSQL and when to use NOSQL.
11. Explain with examples Schema change statements in SQL.

12. **write a SQL query to find those employees whose salary matches the lowest salary of any of the departments. Return first name, last name and department ID. Consider the below schema.**
EMPLOYEE_ID | FIRST_NAME | LAST_NAME | EMAIL | PHONE_NUMBER | HIRE_DATE | JOB_ID | SALARY | COMMISSION_PCT | MANAGER_ID | DEPARTMENT_ID |

13. **write a SQL query to find those employees who do not work in the departments where managers' IDs are between 100 and 200 (Begin and end values are included.). Return all the fields of the employees.**

    EMPLOYEE_ID | FIRST_NAME | LAST_NAME | EMAIL | PHONE_NUMBER | HIRE_DATE | JOB_ID | SALARY | COMMISSION_PCT | MANAGER_ID | DEPARTMENT_ID |
    | DEPARTMENT_ID | DEPARTMENT_NAME | MANAGER_ID | LOCATION_ID |