A) Write the query for the following

1) Create the following tables and include the necessary constraints NOT NULL, DEFAULT, CHECK, PRIMARY KEY, UNIQUE.

a) Student (sid, sname, gender, dob, remark,marks, class, email)

```
SQL> create table student(sid int primary key, sname varchar(10) not null, gender varchar(10) not null, dob date n
ot null, marks int check(marks>50), class varchar(10)default 'FYCS', emailid varchar(10));

Table created.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
```

b) Course (cid, cname, credits)

```
SQL> create table course(cid int primary key,cname varchar(10) not null, credits int not null);

Table created.

SQL> desc course;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(10)
 CREDITS                                   NOT NULL NUMBER(38)
```

2) Alter the structure of the course table

c) Modify data type of cname

```
SQL> alter table course
  2  modify cname varchar(20);

Table altered.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
```

d) Add a column coursehours with minimum course hours greater than 45

```
SQL> alter table course
  2  add coursehours int check(coursehours>45);

Table altered.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
```

e) Add a column cdesc

```
SQL> alter table course
  2  add cdesc varchar(10);

Table altered.

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
 CDESC                                              VARCHAR2(10)
```

3) Alter the structure of the student table

f) Add column age with minimum age as 17

```
SQL> alter table student
  2  add age int check(age>17);

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
```

g) Delete column dob

```
SQL> alter table student
  2  drop column dob;

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
```

h) Add a column phoneno

```
SQL> alter table student
  2  add phonrno int;

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
 PHONRNO                                            NUMBER(38)
```

i) Rename phoneno to contactno

```
SQL> alter table student
  2  rename column phonrno to contactno;

Table altered.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)
```

4) Rename student table as Student_details

```
SQL> alter table student
  2  rename to students_detail;

Table altered.

SQL> desc students_detail
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(10)
 GENDER                                    NOT NULL VARCHAR2(10)
 MARKS                                              NUMBER(38)
 CLASS                                              VARCHAR2(10)
 EMAILID                                            VARCHAR2(10)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(38)
```

6) Drop the table student_details and course.

```
SQL> drop table students_detail
  2  ;

Table dropped.

SQL> drop table course;

Table dropped.

SQL> desc course
ERROR:
ORA-04043: object course does not exist
```

B) 1. Create a table EMPLOYEE with following attributes and specific data types and constraints required (Emp_no, E_name, E_address, E_ph_no, Dept_no, Dept_name,Job_id , Salary)

```
SQL> create table employee(Emp_no int primary key,E_name varchar(10) not null,E_address varchar(20),E_p
h_no int,Dept_no int not null,Dept_name varchar(10),Job_id int,salary int);

Table created.

SQL> desc empoyee
ERROR:
ORA-04043: object empoyee does not exist


SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             NUMBER(38)
 SALARY                                             NUMBER(38)
```

2. Add a new column HIREDATE to the existing relation.

```
SQL> alter table employee
  2  add hiredate date;

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             NUMBER(38)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

3. Change the datatype of JOB_ID from char to varchar2.

```
SQL> alter table employee
  2  modify Job_id varchar(20);

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             VARCHAR2(20)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

4. Change the name of column/field Emp_no to E_no.

```
SQL> alter table employee
  2  rename column Emp_no to E_no;

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 E_NO                                      NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             VARCHAR2(20)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

5. Modify the column width of the job field of emp table.

```
SQL> alter table employee
  2  modify Job_id varchar(10)
  3  ;

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 E_NO                                      NOT NULL NUMBER(38)
 E_NAME                                    NOT NULL VARCHAR2(10)
 E_ADDRESS                                          VARCHAR2(20)
 E_PH_NO                                            NUMBER(38)
 DEPT_NO                                   NOT NULL NUMBER(38)
 DEPT_NAME                                          VARCHAR2(10)
 JOB_ID                                             VARCHAR2(10)
 SALARY                                             NUMBER(38)
 HIREDATE                                           DATE
```

C) Create the following tables with specified attributes and constraints

1.Department Table: Department_Id varchar2(20) primary key, Department_Name varchar2(25) with required data.

```
SQL> create table Department(Department_Id varchar(20) primary key, Department_Name varchar(25));

Table created.

SQL> alter table Department
  2  modify Department_Name varchar(25) not null;

Table altered.

SQL> desc Department
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPARTMENT_ID                             NOT NULL VARCHAR2(20)
 DEPARTMENT_NAME                           NOT NULL VARCHAR2(25)
```

2. Instructor Table: Instructor_id varchar2(20) primary key, Department_Id varchar2(20) Foreign key, Last_Name varchar2(25), First_Name varchar2(200) must have value, Telephone varchar2(20) must be unique, gender char(1) must be either ‘F’ or ‘M’,city varchar(10) default value must be ‘MUMBAI’.

```
SQL> create table Instructor(Instructor_id varchar(20) primary key, Department_Id varchar(20) reference
s Department(Department_Id),Last_name varchar(20),First_name varchar(200) not null,Telephone varchar(20
) unique,gender char(1) check(gender='F' or gender='M'),city varchar(10) default 'MUMBAI');

Table created.

SQL> desc Instructor
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 INSTRUCTOR_ID                             NOT NULL VARCHAR2(20)
 DEPARTMENT_ID                                      VARCHAR2(20)
 LAST_NAME                                          VARCHAR2(20)
 FIRST_NAME                                NOT NULL VARCHAR2(200)
 TELEPHONE                                          VARCHAR2(20)
 GENDER                                             CHAR(1)
 CITY                                               VARCHAR2(10)
```

D) Create the following described below:

Table Name: EMP

Column	Data Type	Length	Precision	Scale	Primary Key	Nullable
EMPNO	Int	-	-	-	Yes	-
ENAME	Varchar2	10	-	-	-	No
JOB	Varchar2	9	-	-	-	✓
MGR	Int	-	-	-	-	✓
HIREDATE	Date	-	-	-	-	✓
SAL	Number	-	7	2	-	✓
COMM	Int	-	-	-	-	✓
DEPTNO	Int	-	-	-	-	✓

Table Name: DEPT

Column	Data Type	Length	Precision	Scale	Primary Key	Nullable
DEPTNO	Int	-	-	-	Yes	-
DNAME	Varchar2	14	-	-	-	No
LOC	Varchar2	13	-	-	-	✓

```
SQL> create table aangi_DEPT(Dept_no int primary key,Dname varchar(14) not null,Loc varchar(13));

Table created.

SQL> desc aangi_DEPT
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPT_NO                                   NOT NULL NUMBER(38)
 DNAME                                     NOT NULL VARCHAR2(14)
 LOC                                                VARCHAR2(13)
```

```
SQL> create table aangi_EMP(EMP_no int primary key,Ename varchar(10) not null,Job varchar(9),MGR int,Hi
redate date,SAL decimal (7,2),Comm int,Dept_no int references aangi_DEPT(Dept_no));

Table created.

SQL> desc aangi_EMP
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMP_NO                                    NOT NULL NUMBER(38)
 ENAME                                     NOT NULL VARCHAR2(10)
 JOB                                                VARCHAR2(9)
 MGR                                                NUMBER(38)
 HIREDATE                                           DATE
 SAL                                                NUMBER(7,2)
 COMM                                               NUMBER(38)
 DEPT_NO                                            NUMBER(38)
```

Practical 2: Study of Data Manipulation Language Statement

A) Insert the following records in above created table

EMP TABLE

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT		17-Nov-81	5000		10
7698	BLAKE	MANAGER	7839	01-May-81	2850		30
7782	CLARK	MANAGER	7839	09-Jun-81	2450		10
7566	JONES	MANAGER	7839	02-Apr-81	2975		20
7788	SCOTT	ANALYST	7566	19-Apr-87	3000		20
7902	FORD	ANALYST	7566	03-Dec-81	3000		20
7369	SMITH	CLERK	7902	17-Dec-80	800		20
7499	ALLEN	SALESMAN	7698	20-Feb-81	1600	300	30
7521	WARD	SALESMAN	7698	22-Feb-81	1250	500	30
7654	MARTIN	SALESMAN	7698	28-Sep-81	1250	1400	30
7844	TURNER	SALESMAN	7698	08-Sep-81	1500	0	30
7876	ADAMS	CLERK	7788	23-May-87	1100		20
7900	JAMES	CLERK	7698	03-Dec-81	950		30
7934	MILLER	CLERK	7782	23-Jan-82	1300		10

DEPT TABLE

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

```
SQL> insert into aangi_DEPT values(10,'ACCOUNTING','NEW YORK');

1 row created.

SQL> insert into aangi_DEPT values(20,'RESEARCH','DALLAS');

1 row created.

SQL> insert into aangi_DEPT values(30,'SALES','CHICAGO');

1 row created.

SQL> insert into aangi_DEPT values(40,'OPERATIONS','BOSTON');

1 row created.

SQL> SELECT * FROM TABLE aangi_DEPT;
SELECT * FROM TABLE aangi_DEPT
                    *
ERROR at line 1:
ORA-00906: missing left parenthesis


SQL> select * from aangi_DEPT;

   DEPT_NO DNAME          LOC
---------- -------------- -------------
        10 ACCOUNTING     NEW YORK
        20 RESEARCH       DALLAS
        30 SALES          CHICAGO
        40 OPERATIONS     BOSTON
```

```
SQL> select * FROM aangi_EMP
  2  ;

    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7839 KING       PRESIDENT            17-NOV-81       5000
        10

      7698 BLAKE      MANAGER         7839 01-MAY-81       2850
        30

      7782 CLARK      MANAGER         7839 09-JUN-81       2450
        10


    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7566 JONES      MANAGER         7839 02-APR-81       2975
        20

      7788 SCOTT      ANALYST         7566 19-APR-87       3000
        20

      7902 FORD       ANALYST         7566 03-DEC-81       3000
        20


    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7369 SMITH      CLERK           7902 17-DEC-80        800
        20

      7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300
        30

      7521 WARD       SALESMAN        7698 22-FEB-81       1250        500
        30


    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
```

```
    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400
        30

      7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0
        30

      7876 ADAMS      CLERK           7788 23-MAY-87       1100
        20


    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7900 JAMES      CLERK           7698 03-DEC-81        950
        30

      7934 MILLER     CLERK           7782 23-JAN-82       1300
        10
```

B) Update and Delete Queries

1) Update the salary of employees working as CLERK by 500.
2) Update the manager of James as CLARK.
3) Change the role of Miller as MANAGER.
4) Delete the records of Manager
5) Delete the records when salary is greater than 1000.

```
SQL> update aangi_EMP
  2  set SAL=SAL+500
  3  where JOB='CLERK';

4 rows updated.
```

```
   EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
--------- ---------- --------- ---------- --------- ---------- ----------
  DEPT_NO
----------
     7369 SMITH      CLERK           7902 17-DEC-80       1300
       20

     7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300
       30

     7521 WARD       SALESMAN        7698 22-FEB-81       1250        500
       30


   EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
--------- ---------- --------- ---------- --------- ---------- ----------
  DEPT_NO
----------
     7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400
       30

     7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0
       30

     7876 ADAMS      CLERK           7788 23-MAY-87       1600
       20


   EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
--------- ---------- --------- ---------- --------- ---------- ----------
  DEPT_NO
----------
     7900 JAMES      CLERK           7698 03-DEC-81       1450
       30

     7934 MILLER     CLERK           7782 23-JAN-82       1800
       10
```

2) update the manager of james as clark

```
SQL> update aangi_EMP
  2  set JOB='CLARK'
  3  where Ename='JAMES';

1 row updated.
```

```
  EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
--------- ---------- --------- ---------- --------- ---------- ----------
 DEPT_NO
---------
    7900 JAMES      CLARK           7698 03-DEC-81       1450
      30
```

3) Change the role of Miller as MANAGER.

```
SQL> update aangi_EMP
  2  set JOB='MANAGER'
  3  where Ename='MILLER';

1 row updated.
```

```
      30

    7934 MILLER     MANAGER         7782 23-JAN-82       1800
      10
```

4) Delete the records of Manager

```
SQL> delete FROM aangi_EMP
  2  where JOB='MANAGER';

1 rows deleted.

SQL> select * FROM aangi_EMP;

    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7839 KING       PRESIDENT            17-NOV-81       5000
        10

      7788 SCOTT      ANALYST         7566 19-APR-87       3000
        20

      7902 FORD       ANALYST         7566 03-DEC-81       3000
        20


    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7369 SMITH      CLERK           7902 17-DEC-80       1300
        20

      7499 ALLEN      SALESMAN        7698 20-FEB-81       1600        300
        30

      7521 WARD       SALESMAN        7698 22-FEB-81       1250        500
        30


    EMP_NO ENAME      JOB              MGR HIREDATE         SAL       COMM
---------- ---------- --------- ---------- --------- ---------- ----------
   DEPT_NO
----------
      7654 MARTIN     SALESMAN        7698 28-SEP-81       1250       1400
        30

      7844 TURNER     SALESMAN        7698 08-SEP-81       1500          0
        30

      7876 ADAMS      CLERK           7788 23-MAY-87       1600
        20
```

5) Delete the records when salary is greater than 1000.

```
SQL> delete from aangi_EMP
  2  where SAL>1000;

10 rows deleted.

SQL> select * FROM aangi_EMP;

no rows selected
```