A) Write the query for the following.

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

a) Student (sId,sname,gender,dob,marks,class,email)

```
SQL> create table student(sid int primary key, sname varchar(10) not null, gender varchar(10) not
 null,dob date not null,marks int check(marks>50), class varchar(10) default 'FYCS', emailid varc
har(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 phoneno 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)
 PHONENO                                            NUMBER(38)
```

i) Rename phoneno to contactno

```
SQL> alter table student
  2  rename column phoneno 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 student_details;

Table altered.
```

```
SQL> desc student_details
 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 course;

Table dropped.

SQL> drop table student_details;

Table dropped.

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


SQL> desc student_details
ERROR:
ORA-04043: object student_details 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_ph_no int,Dept_no int not null,Dept_name varchar(10),Job_id int,salary int
);

Table created.

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>
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
```

alter

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);

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) references
Department(Department_Id),Last_name varchar(20),First_name varchar(200) not null,Telephone varchar(20) u
nique,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 surabhi_DEPT(Dept_no int primary key,Dname varchar(14) not null,Loc varchar(13));

Table created.

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

```
SQL> create table surabhii_EMP(EMP_no int primary key,Ename varchar(10) not null,Job varchar(9),MGR int,Hiredate date,SA
L decimal (7,2),Comm int,Dept_no int references surabhi_DEPT(Dept_no));

Table created.

SQL> desc surabhii_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)
```