1.

a. Explain the following terms in the context of the relational data model
I. Relation- a set of tuples where each element is a member of a data domain
II. Attribute- a characteristic of database component, the column of relation
III. Domain- the set of allowed values for each attribute
IV. Tuple- the rows of a relation, has one component for each attribute of the relation V. Degree- number of attributes a relation contains
VI. Cardinality- number of tuples a relation contains

b. Use Employee-Department database from appendix 1 to provide examples of each term
I. Relation- EMP and Dept are relations
II. Attribute- EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO III. Domain- INT, VARCHAR, DATE
IV. Tuple- (7369, SMITH, CLERK, 7902, 1980-12-17, 800, 20)
V. Degree- The degree of EMP is 8
VI. Cardinality- The cardinality of EMP is 14

2.

a. Explain the following terms in the context of the relational data model.
▪Candidate Key- A key is a candidate key if it is a super key and minimal. If K is a subset of R, then K is a superkey of R if values for K are sufficient to identify a unique tuple of each possible relation r(R). And if it's minimal, that means that the tuple can't be broken into smaller pieces and still be unique.
▪Primary Key- is a candidate key that's been chosen to be the principle means of identifying tuples in a relation. It's the "lucky" candidate key
▪Foreign Key- A relations attribute that corresponds to the primary key of another relation.

b. Use the Employee-Department database from appendix 1 to provide examples of each term.

- Candidate key- (EMPNO), (ENAME, JOB), (DEPTNO) in DEPT

- Primary key - (EMPNO) and (DEPTNO)

- Foreign key- DEPTNO is a foreign key to DEPTNO

3. CREATE TABLE CATEGORY ( CatCode varchar(2), CatDesc varchar(10));

4. CREATE TABLE EMPLOYEES( Emp_num int(5), Lastname varchar(15), Firstname varchar(15), Job_class varchar(4) );

5. ALTER TABLE EMPLOYEES ADD EmpDate DATE, ADD EndDate DATE;

6. ALTER TABLE EMPLOYEES MODIFY Job_class varchar(2);

7. ALTER TABLE EMPLOYEES DROP COLUMN EndDate;

8. ALTER TABLE EMPLOYEES RENAME TO JL_EMPS;

9.

   a. CREATE TABLE EMP ( EMPNO int(4), ENAME varchar(10), JOB varchar(10), MGR int (4), HIREDATE DATE, SAL int(4), COMM int(4), DEPTNO int(2), primary key (EMPNO) );

   b. CREATE TABLE DEPT ( DEPTNO int(2), DNAME varchar(10), LOC varchar(10), primary key (DEPTNO) );