The following table schema will be used in these questions.

EMPLOYEE

ENAME	SSN	BDATE	ADDRESS	DNUMBER
Smith,John B.	123456789	1965-01-09	731 Fondren,Houston,TX	5
Wong,Franklin T.	333445555	1955-12-08	638 Voss,Houston,TX	5
Zelaya,Alicia J.	999887777	1968-07-19	3321 Castle,Spring,TX	4
Wallace,Jennifer S.	987654321	1941-06-20	291 Berry,Bellaire,TX	4
Narayan,Remesh K.	666884444	1962-09-15	975 Fire Oak,Humble,TX	5
English,Joyce A.	453453453	1972-07-31	5631 Rice,Houston,TX	5
Jabbar,Ahmad V.	987987987	1969-03-29	980 Dallas,Houston,TX	4
Borg,James E.	888665555	1937-11-10	450 Stone,Houston,TX	1

DEPARTMENT

DNAME	DNUMBER	DMGRSSN
Research	5	333445555
Administration	4	987654321
Headquarters	1	888665555

DEPT_LOCATIONS

DNUMBER	DLOCATION
1	Houston
4	Stafford
5	Bellaire
5	Sugarland
5	Houston

WORKS_ON

SSN	PNUMBER	HOURS
123456789	1	32.5
123456789	2	7.5
666884444	3	40.0
453453453	1	20.0
453453453	2	20.0
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
999887777	30	30.0
999887777	10	10.0

PROJECT

PNAME	PNUMBER	PLOCATION	DNUM
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

a) Create table WORKS_ON by using SQL statements.

(2 mark)

```
CREATE TABLE WORKS_ON (
   SSN int NOT NULL,
   PNUMBER int NOT NULL,
   HOURS float NOT NULL,
   PRIMARY KEY (SSN, PNUMBER),
   CONSTRAINT FK_EmployeeWorksOn FOREIGN KEY (SSN) REFERENCES Employee(SSN),
   CONSTRAINT FK_ProjectWorksOn FOREIGN KEY (PNUMBER) REFERENCES Project(PNUMBER)
);
```

b) Retrieve the ssn number, name and address of all employees who work for the 'Research' department. Display the results ordered by name.

(2 marks)

SELECT Ssn, Ename, Address
FROM EMPLOYEE E, DEPARTMENT D
WHERE E.Dnumber = D.Dnumber AND D.Dname = 'Research'

c) For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's name, address, and birth date.

(2 marks)

SELECT PNumber, DNumber, Ename, Address, Bdate
FROM PROJECT P, DEPARTMENT D, EMPLOYEE E
WHERE P.DNumber = D.DNumber AND D.Dmgrssn = E.Ssn AND P.PLocation = 'Stafford'

d) Count how many employees whose address is in Houston, Texas (TX). Display the results with variable named **NUMBER_OF_EMPLOYEE.**

(2 marks)

SELECT COUNT (*) AS NUMBER_OF_EMPLOYEE
FROM EMPLOYEE
WHERE Address LIKE '%Houston, TX%'

e) Make a list of all project numbers and name for projects that involve an employee whose name is 'Smith', either as a worker or as a manager of the department that controls the project.

(2 marks)

SELECT DISTINCT PNumber, PName
FROM PROJECT P, DEPARTMENT D, EMPLOYEE E
WHERE P.DNum = D.DNumber AND D.Dmgrssn = E.Ssn AND EName LIKE '%Smith%'

UNION

SELECT DISTINCT PNumber, PName
FROM PROJECT P, WORKS_ON W, EMPLOYEE E
WHERE P.PNumber = W.PNumber AND W.Ssn = E.Ssn AND Ename LIKE '%Smith%'