Eshwar Prasad Thamburi

7.1 $T_1 \times T_2$

P	Q	T1.R	A	B	T2.R
10	a	5	10	b	6
10	a	5	25	C	3
10	a	5	10	b	5
15	b	8	10	b	6
15	b	8	25	C	3
15	b	8	10	b	5
25	a	6	10	b	6
25	a	6	25	C	3
25	a	6	10	b	5

7.2 $T_1 \bowtie T_2$

P	Q	R	A	B
10	a	5	10	b
25	a	6	10	b

8.1)
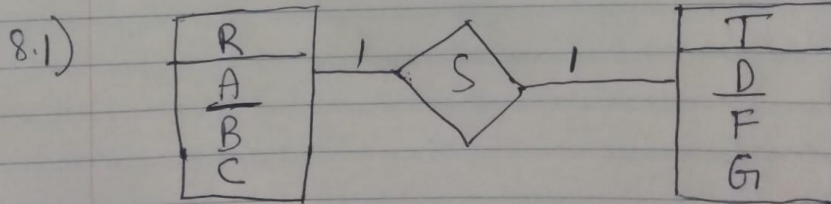
$R(\underline{A}, B, C)$ $S(\underline{A}, \underline{D})$ $T(\underline{D}, F, G)$

8.2) CREATE TABLE SUPPLIER (
          Sid   Int,
          Sname   varchar(20),
          address   varchar (20),
          PRIMARY KEY (sid)   )

     CREATE TABLE   PART (
          Pid   Int,,
          Pname   Varchar(10),
          Color   Varchar (10),
          PRIMARY KEY (Pid)   )

     CREATE   TABLE CATALOG (
          Sid   Int,
          Pid   Int,
          Cost   REAL
          PRIMARY KEY (Sid, Pid)
          FORIEGN KEY Sid REFERENCES PER SUPPLIER,
          FORIEGN KEY Pid REFERENCES PART)

8.3) The Equivalent SQL Expression is

          Select Pid ~~from~~ From PART, CATALOG
          where   Color = 'red' and Color = 'green'.

```
10.1) CREATE    TABLE    EMPLOYEE(
            Emp-ID          Int,
            E-name          Varchar(20) NOT NULL,
            gender          char (1),
            DoB             DATE,
            disability      Char(1),
            health-Status   Varchar (10),
            PRIMARY KEY     (Emp-ID) )


        CREATE    TABLE    COMPANY(
            COMPANY-NAME    Varchar (20),
            Tax-ID          char (10),
            Company-Status  Varchar (10),
            PRIMARY KEY     (Company-NAME) )


        CREATE    TABLE    LIVES(
            EMP-ID          Int,
            Street          Varchar (15),
            City            Varchar (12),
            PRIMARY KEY     (EMP-ID),
            FOREIGN KEY EMP-ID REFERENCES EMPLOYEE)
```

```
CREATE TABLE WORKS (
    EMP-ID     INT,
    Company-name   Varchar (20),
    Salary         NUMERIC (10,2),
    PRIMARY KEY (EMP-ID, company-name)
    FOREIGN KEY  EMP-ID REFERENCES EMPLOYEE,
    FOREIGN KEY  Company-name REFERENCES (COMPANY)


CREATE TABLE LOCATED_IN(
    COMPANY_NAME      Varchar(20),
    CITY              Varchar (12),
    PRIMARY KEY       (company Name),
    FOREIGN KEY       Company-Dame REFERENCES
                                   COMPANY)
```

10th question below

(02.)

(a.)

$$\pi_{\text{Employee.E-name}} \left(\sigma_{\substack{(\text{WORKS.Company-Name}="\text{Ruston Bank}") \\ \wedge \\ (\text{WORKS.Emp-ID} = \text{EMPLOYEE.Emp-ID}) \\ \wedge \\ (\text{Employee.Gender} = "\text{Female}")}} (\text{EMPLOYEE} \times \text{WORKS}) \right)$$

(b)

$$\sim (\text{Located IN}) \times (\text{Located IN})$$

$$\pi_{\substack{\text{Located1} \\ \cdot \\ \text{Company-Name}}} \left(\sigma_{\substack{(\text{Located IN.Company-Name}="\text{Ruston Bank}") \\ \wedge \\ (\text{Located IN.City} = \text{Located 1.City})}} \left(\text{Located IN} \times \rho_{\text{Located1}} (\text{Located IN}) \right) \right)$$

(c.)

$$\pi_{\text{Employee.E-name}} \left(\sigma_{\substack{\text{WORKS.Company Name} = "\text{Ruston Bank}" \\ \wedge \\ \text{WORKS.Emp-ID} = \text{Employee.Emp-ID}}} (\text{EMPLOYEE} \times \text{WORKS}) \right)$$

10.2

(D)

$$\Pi_{\substack{Employee.E\text{-}name,\\ Lives.Street,\\ Lives.City}} \left(\sigma_{\substack{Works.Company\text{-}name = ``Ruston~Bank'' \\ \land \\ Works.Salary > \$10,500}} (Employee \bowtie WORKS \bowtie LIVES) \right)$$