7) $T_1 \times T_2$

7.1)

P	Q	$T_1.R$	$T_2.R$	A	B
10	a	5	b	10	b
10	a	5	3	25	c
10	a	5	5	10	b
15	b	8	6	10	b
15	b	8	3	25	c
15	b	8	5	10	b
25	a	6	6	90	b
25	a	6	3	25	c
25	a	6	5	10	b

7.2) $T_1 \bowtie T_2$

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

8.1)
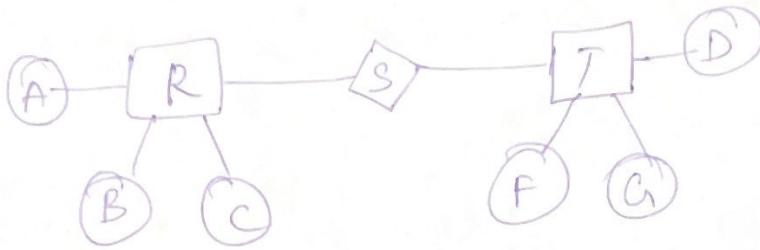
8.2) CREATE TABLE SUPPLIER (
         SID INT,
         SNAME VARCHAR (20),
         ADDRESS VARCHAR (20),
         PRIMARY KEY (SID))

     CREATE TABLE PART (
         PID INT,
         P.NAME VARCHAR (20),
         P.COLOUR VARCHAR (10),
         PRIMARY KEY (PID))

     CREATE TABLE CATALOG (
         SID INT,
         PID INT,
         COST REAL,
         PRIMARY KEY (SID, PID)
         FOREIGN KEY SID REFERENCES SUPPLIER,
         FOREIGN KEY PID REFERNCES PART)

8.3) Select PID
      FROM   Part Catalog
      WHERE   Colour = 'red' and Colour = "green"

Q. 10-1

Ans

```sql
CREATE TABLE EMPLOYEE (
    EMP.ID  INT,
    E.NAME  VARCHAR (20)
    E. GENDER  CHAR ,
    E. DOB   DATE ,
    E. DISABILITY  BOOL,
    E.  HEALTH_STATUS  VARCHAR (10)
    PRIMARY KEY (EMP-ID))
CREATE TABLE COMPANY (
    COM . NAME  VARCHAR (20),
    COM. , TAX_ID  VARCHAR (9),
    COM , STATUS  VARCHAR (10),
    PRIMARY KEY (COMPANY_NAME))
CREATE TABLE LIVES (
    L. EMP_ID   INT,
    L. STREET    VARCHAR (20),
    L. CITY     VARCHAR (15),

    PRIMARY KEY (EMP_ID)
    FOREIGN KEY  EMP_ID REFERNCES EMPLOYEE)
CREATE TABLE WORKS (
    W. EMP_ID  INT,
    W. COMPANY-NAME VARCHAR (20),
    W. SALARY NUMERIC (8, 2),
    PRIMARY KEY (EMP_ID, COMP_NAME)
    FOREIGN KEY EMP_ID REFERENCE EMPLOYEE,
    FOREIGN KEY COMPANY_NAME REFERENCE (COMPANY))
```

```
CREATE TABLE LOCATED-IN (
    LIN. COMPANY_NAME VARCHAR (20),
    LIN. CITY              VARCHAR (15),
    PRIMARY KEY (COMPANY_NAME)
    FOREIGN KEY COMPANY_NAME REFERENCE COMPANY) )
```

10.2)

Female employees

(a) $\Pi_{\text{Emp.name}} \left(\sigma_{\text{GENDER} = \text{'FEMALE'} \atop \wedge \atop \text{Comp. name} = \text{"RUSTON BANK"}} (\text{EMPLOYEEE} \bowtie \text{Works}) \right)$

b. $\Pi_{\text{located. Companyname}} \left(\sigma_{(\text{Located\_IN . Company name} = \text{"RUSTONBANK"}} (\text{Employee} \bowtie \text{Works}) \right)$

c. $\Pi_{\text{Emp\_name}} \left(\sigma_{(\text{Comany\_name} = \text{"RUSTON BANK"}} (\text{Employee} \bowtie \text{lives} \bowtie \text{Works}) \right)$

d. $\pi_{\text{Emp\_name, Street, City}} \left(\sigma_{\text{Company\_name} = \text{"RUSTON BANK"} \atop \wedge \atop \text{Salary} > 10,500} \right)$