

Set-3

1.

```
CREATE TABLE Teacher (  
    TeacherId INT PRIMARY KEY,  
    TName VARCHAR(50),  
    Department VARCHAR(50)  
);
```

```
CREATE TABLE Student (  
    RollNo INT PRIMARY KEY,  
    SName VARCHAR(50),  
    DOB DATE,  
    SAddress VARCHAR(100)  
);
```

```
CREATE TABLE Teaches (  
    TeacherId INT,  
    RollNo INT,  
    Subject VARCHAR(50),  
    PRIMARY KEY(TeacherId, RollNo),  
    FOREIGN KEY(TeacherId) REFERENCES Teacher(TeacherId),  
    FOREIGN KEY(RollNo) REFERENCES Student(RollNo)  
);
```

2.

-- inserting rows in Teacher table

```
INSERT INTO Teacher (TeacherId, TName, Department) VALUES
```

```
(101, 'John Doe', 'CS'),  
(102, 'Jane Smith', 'Math'),  
(103, 'Peter Parker', 'CS'),  
(104, 'Mary Johnson', 'Economics'),  
(105, 'David Lee', 'Chemistry');
```

-- inserting rows in Student table

```
INSERT INTO Student (RollNo, SName, DOB, SAddress) VALUES
```

```
(1, 'Alice Brown', '2002-05-01', 'Delhi'),  
(2, 'Bob Davis', '2001-10-15', 'Mumbai'),  
(3, 'Charlie Green', '2003-03-25', 'Bangalore'),  
(4, 'David Johnson', '2002-08-08', 'Kolkata'),  
(5, 'Emily Wilson', '2001-12-31', 'Chennai');
```

-- inserting rows in Teaches table

```
INSERT INTO Teaches (TeacherId, RollNo, Subject) VALUES
```

```
(101, 1, 'DBMS'),  
(101, 2, 'DBMS'),  
(103, 3, 'DBMS'),  
(104, 4, 'EVS'),  
(105, 5, 'Chemistry');
```

3.

a)

```
SELECT SName, SAddress
```

```
FROM Student
```

WHERE RollNo IN (SELECT RollNo FROM Teaches WHERE Subject = 'DBMS');

Output:

SName	SAddress
Alice Brown	Delhi
Bob Davis	Mumbai
Charlie Green	Bangalore

b)

```
SELECT TName, Department
FROM Teacher
WHERE TeacherId IN (
    SELECT TeacherId
    FROM Teaches
    WHERE Subject IN ('DBMS', 'EVS')
);
```

Output:

TName	Department
John Doe	CS
Peter Parker	CS
Mary Johnson	Economics
David Lee	Chemistry

c)

```
SELECT SName
FROM Student
WHERE RollNo IN (
    SELECT RollNo
```

```

FROM Teaches
WHERE TeacherId IN (
    SELECT TeacherId
    FROM Teacher
    WHERE Department = 'CS'
)
);

```

Output:

SName
Alice Brown
Charlie Green

d)

```

ALTER TABLE Student
ADD Course VARCHAR(50) NOT NULL
CHECK (Course NOT LIKE '%[0-9]%');

```

Output:

RollNo	SName	DOB	SAddress	Course
1	Alice Brown	2002-05-01	Delhi	B.Tech
2	Bob Davis	2001-10-15	Mumbai	MBA
3	Charlie Green	2003-03-25	Bangalore	B.Com
4	David Johnson	2002-08-08	Kolkata	B.Sc
5	Emily Wilson	2001-12-31	Chennai	BA

e)

```

ALTER TABLE Student ADD Age INT;
UPDATE Student SET Age = YEAR(GETDATE()) - YEAR(DOB);

```

Output:

RollNo	SName	DOB	SAddress	Course	Age
1	Alice Brown	2002-05-01	Delhi	B.Tech	21
2	Bob Davis	2001-10-15	Mumbai	MBA	22
3	Charlie Green	2003-03-25	Bangalore	B.Com	19
4	David Johnson	2002-08-08	Kolkata	B.Sc	20
5	Emily Wilson	2001-12-31	Chennai	BA	22

f)

```
SELECT TName, GROUP_CONCAT(Subject) AS Subjects
FROM Teacher
INNER JOIN Teaches ON Teacher.TeacherId = Teaches.TeacherId
GROUP BY TName;
```

Output:

TName	Subjects
John Doe	DBMS
Jane Smith	
Peter Parker	DBMS
Mary Johnson	EVS
David Lee	Chemistry

g)

```
SELECT SName
FROM Student
WHERE YEAR(GETDATE()) - YEAR(DOB) < 20;
```

Output:

SName
Charlie Green

h)

```
SELECT TName
FROM Teacher
WHERE Department = 'CS' AND TeacherId NOT IN (
    SELECT TeacherId
    FROM Teaches
    WHERE Subject = 'DBMS' AND RollNo IN (
        SELECT RollNo
        FROM Student
        WHERE SAddress = 'Delhi'
    )
);
```

Output:

TName
Peter Parker