SQL Queries for College Database

Here are the SQL queries for the given scenarios:

1. List student details in 4th semester 'C' section:

SQL

```
SELECT s.USN, s.SName, s.Address, s.Phone, s.Gender
FROM STUDENT s
INNER JOIN CLASS c ON s.USN = c.USN
INNER JOIN SEMSEC ss ON c.SSID = ss.SSID
WHERE ss.Sem = 4 AND ss.Sec = 'C';
```

This query joins the STUDENT, CLASS, and SEMSEC tables to find students enrolled in the 4th semester ('C' section).

2. Count male and female students by semester and section:

SQL

```
SELECT ss.Sem, ss.Sec, s.Gender, COUNT(*) AS NumStudents
FROM STUDENT s
INNER JOIN CLASS c ON s.USN = c.USN
INNER JOIN SEMSEC ss ON c.SSID = ss.SSID
GROUP BY ss.Sem, ss.Sec, s.Gender;
```

This query joins the tables and groups them by semester, section, and gender to count the number of male and female students in each combination.

3. View of Test1 marks for specific student:

SQL

```
CREATE VIEW StudentTest1 AS
SELECT USN, Subcode, Test1
FROM IAMARKS
WHERE USN = 'IBI15CS101';
```

This query creates a view named StudentTest1 that shows only Test1 marks for the student with USN 'IBI15CS101' from the IAMARKS table.

4. Calculate and update FinalIA (average of best two tests):

SQL

```
UPDATE IAMARKS i
SET FinalIA = (
  SELECT GREATEST(Test1, Test2),
  (SELECT LEAST(GREATEST(Test1, Test2), GREATEST(Test3, FinalIA))
   FROM IAMARKS i2
   WHERE i2.USN = i.USN AND i2.Subcode = i.Subcode)
) FROM IAMARKS i
GROUP BY i.USN, i.Subcode;
```

This query uses a subquery to find the highest two test marks (Test1, Test2, Test3) for each student (USN) and subject (Subcode) combination in the IAMARKS table. It then calculates the average of those two marks and updates the FinalIA column in the same table.

5. Categorize students based on FinalIA (8th semester A, B, C):

SQL

```
SELECT s.USN, s.SName, ss.Sem, ss.Sec,
  CASE WHEN FinalIA >= 17 THEN 'Outstanding'
       WHEN FinalIA >= 12 THEN 'Average'
       ELSE 'Weak'
  END AS CAT
FROM STUDENT s
INNER JOIN CLASS c ON s.USN = c.USN
INNER JOIN SEMSEC ss ON c.SSID = ss.SSID
INNER JOIN IAMARKS i ON s.USN = i.USN
WHERE ss.Sem = 8 AND ss.Sec IN ('A', 'B', 'C')
GROUP BY s.USN, s.SName, ss.Sem, ss.Sec, FinalIA;
```

This query joins all the tables and filters for students in the 8th semester ('A', 'B', 'C' sections). It then uses a CASE statement to categorize students based on their FinalIA score into 'Outstanding', 'Average', or 'Weak'.