## Exercise 3.1: Creating Tables with Integrity Constraints

### Creating the Student_Info Table

```
CREATE TABLE Student_Info (
   Reg_Number VARCHAR(20) PRIMARY KEY,
   Student_Name VARCHAR(30) NOT NULL,
   Branch VARCHAR(30),
   Contact_Number VARCHAR(30),
   Date_of_Birth VARCHAR(30),
   Date_of_Joining DATE DEFAULT SYSDATE
);
```

### Creating the Subject_Master Table

```
CREATE TABLE Subject_Master (
   Subject_Code VARCHAR2(10) PRIMARY KEY,
   Subject_Name VARCHAR(20) NOT NULL,
   Weightage NUMBER(3) NOT NULL
);
```

### Creating the Student_Marks Table

```
CREATE TABLE Student_Marks (
   Reg_Number VARCHAR(20),
   Subject_Code VARCHAR2(10),
   Semester NUMBER(3) NOT NULL,
   Marks NUMBER(3) DEFAULT 0,
   PRIMARY KEY (Reg_Number, Subject_Code),
   FOREIGN KEY (Reg_Number) REFERENCES
Student_Info(Reg_Number),
   FOREIGN KEY (Subject_Code) REFERENCES
Subject_Master(Subject_Code)
);
```

### Creating the Student_Result Table

```
CREATE TABLE Student_Result (
   Reg_Number VARCHAR(20),
```

```
    Semester NUMBER(3) NOT NULL,
    GPA NUMBER(5,3) NOT NULL,
    Is_Eligible_Scholarship CHAR(3) DEFAULT 'Y',
    PRIMARY KEY (Reg_Number, Semester),
    FOREIGN KEY (Reg_Number) REFERENCES
Student_Info(Reg_Number)
);
```

**Exercise 3.2: Working with Constraints**

a) Constraint to Disallow Repeated Subject Names

```
ALTER TABLE Subject_Master
ADD CONSTRAINT unique_subject_name UNIQUE (Subject_Name);
```

b) Constraint to Disallow Two Students with the Same Contact Number

```
ALTER TABLE Student_Info
ADD CONSTRAINT unique_contact_number UNIQUE
(Contact_Number);
```

c) Constraint to Disallow Date of Birth after Date of Joining

```
ALTER TABLE Student_Info
ADD CONSTRAINT check_dob_before_doj CHECK
(STR_TO_DATE(Date_of_Birth, '%Y-%m-%d') <= Date_of_Joining);
```

Note: MySQL uses STR_TO_DATE function to convert strings to dates. Adjust the format specifier ('%Y-%m-%d') according to your actual date format if needed.

d) Constraint to Disallow Marks Greater than 100

```
ALTER TABLE Student_Marks
ADD CONSTRAINT check_marks_range CHECK (Marks <= 100);
```

**e) Constraint to Mandate GPA Values to be Less than or Equal to** 10

```
ALTER TABLE Student_Result
ADD CONSTRAINT check_gpa_range CHECK (GPA <= 10);
```

f) Constraint to Mandate Is_Eligible_Scholarship Values to be Either ‘Y’ or ‘N’

```
ALTER TABLE Student_Result
ADD CONSTRAINT check_eligibility_scholarship CHECK
(Is_Eligible_Scholarship IN ('Y', 'N'));
```