Section B: Problem Solving (5 Marks Each)

6. Write a Python class Car with attributes brand and model. Create two objects and display their details.

```python
class Car:

    def __init__(self,brand,model):

        self.brand=brand

        self.model=model

    def car1(self):

        print(f'car1 is: {c1.brand} its model is: {c1.model}')

    def car2(self):

        print(f'car2 is: {c2.brand} its model is: {c2.model}')

c1=Car('bmw','b1')

c2=Car('audi','a6')

c1.car1()

c2.car2()
```

7. Write a user-defined function to check whether a number is even or odd.

```python
def fun(n):

    if n%2==0:

        print('even')

    else:

        print('odd')

fun(5)
```

8. Write a Python program using a for loop to print the multiplication table of 5.

```python
n=int(input('enter a number:'))
```

```
for i in range(1,11):

    print(n,'X',i,'=',n*i)
```

9. Write a program to accept a number from the user and check whether it is positive, negative, or zero.

```
def fun(n):

    if n>0:

        print('positive')

    elif n<0:

        print('Negative')

    else:

        print('Zero')
fun(5)
```

10. Write a program using a while loop to calculate the sum of digits of a number entered by the user.

```
def fun(num):

    sum=0

    while num>0:

        digit=num%10

        sum+=digit

        num//=10

    print(sum)
fun(123)
```

Section C: Nested Loops & Decision Making (7 Marks Each)

11. Write a Python program using nested loops to print the following pattern:

*

```
* *

* * *

* * * *

* * * * *

for i in range(1,6):

    for j in range(1,i+1):

        print('*',end=' ')

    print()
```

12. Write a program to print all prime numbers between 1 and 50 using nested loops.

```
def fun(n):

    count=0

    for num in range(2,n+1):

        if num<2:

            break

        for i in range(2,num):

            if num%i==0:

                break

        else:

            count+=1

            print(num,count)

fun(50)
```

13. Create a Python program that asks the user for a number and prints whether it is:

Divisible by 3 and 5

- Divisible by only 3

- Divisible by only 5

- Not divisible by 3 or 5

```python
def fun(n):
    if n%3==0 and n%5==0:
        print('Divisible by 3 and 5')
    elif n%3==0:
        print('Divisible by only 3')
    elif n%5==0:
        print('Divisible by only 5')
    else:
        print('not divisible by 3 or 5')
fun(15)
```

Section D: Loop Control Statements (10 Marks Each)

14. Write a program that prints numbers from 1 to 20 but skips multiples of 3 using the continue statement.

```python
def fun():
    for i in range(1,21):
        if i%3==0:
            continue
        print(i)
fun()
```

15. Write a Python program using a loop that prints numbers from 1 to 10, but stops the loop when the number is 7 using the break statement.

```python
def fun():
```

```
for i in range(1,11):

    if i==7:

        break

    print(i)

fun()
```

16. Write a program using nested loops to print this pattern (use continue to skip even numbers):

1 3

1 3 5

1 3 5 7

1 3 5 7 9

```
for i in range(1,6):

  num=2

  for j in range(1,i+1):

    print(num,end=' ')

    num+=2

  print()
```

Section E: Long Answer (15 Marks Each)

17. Create a Python class Student with attributes name, roll_no, and marks. Add methods to:

Accept student details

Display student details

- Calculate grade (A if marks ≥ 90, B if marks ≥ 75, else C)

Create objects for 3 students and display their details with grades.

```python
class Student:

    def __init__(self,name,roll_no,marks):

        self.name=name

        self.roll_no=roll_no

        self.marks=marks

    def accept(self):

        print('accepting the student details')

    def display(self):

        print(f'name is: {self.name} roll no: {self.roll_no} i got : {self.marks}')


    def cal(self):

        if self.marks>=90:

            print('Grade : A')

        elif self.marks>=75:

            print('Grade : B')

        else:

            print('Grade : C')

s1=Student('priyanka',101,96)

s1.accept()

s1.display()

s1.cal()
```

18. Write a Python program using functions, loops, and decision making to:

- Accept a number from the user

Check whether it is prime or not

- If prime, print all prime numbers up to that number

```python
def fun(n):
    for num in range(2,n+1):
        if num<2:
            break
        for i in range(2,num):
            if num%i==0:
                break
        print(num)
fun(30)
```