Chapter 4

A. Multiple Choice Questions

1. D
2. C
3. C
4. A. False B. True
5. 5
6. A
7. A) True B) True C) False D) True
8. 19 is odd number
   19 is even number
9. Second Block Code(b) is good
10. Hiii

B. True or False

1. True
2. False
3. True
4. False
5. False
6. True
7. False
8. True
9. True
10. False

C.

1.

a.
```
if temp>50:
    print('hot')
else:
    print('Cold')
```

b.
```
if age>18:
    print('Fare = $800')
else:
    print('Fare = $200')
```

2.

a. if age>5 and age <10:

b. if age<3 and age>70:
```
        print('No Air Fare')
```

3. Boolean Operators – Boolean operators are also called as **"logical operators"**. There are three types of Boolean or logical operators. The and, or and not are three types of basic Boolean operators.

Making use of these three operators on an expression evaluates to any one of the Boolean values i.e. True or False.

The **and** Operator - It takes two operands and performs left to right evaluation to determine whether both the operands are True. Thus, and of Boolean operator is true if and only if both operands evaluates to true.

The **or** Operator – The or of two Boolean operands is true if at least one of the operands is true.

The **not** operator - It negates True to False and False to True

4. Changing control flow of a program depends on problem statement. If problem statement contains certain condition then definitely programmer has to change the control flow of a program.

5. Following are the different ways where the control flow of a program can be changed.

   a) if statement
   b) if-else statement
   c) if-elif-statement
   d) continue and break

6. Following are some of the Boolean expressions containing relational operators.

   Programmer can make use of following relational operators on a Boolean expressions

Relational Operator	Meaning
=	equal to
>	greater than
<	less than
>=	greater than or equal to
<=	less than or equal to

Example:

Example 1:

```
Age >= 18:
      print(' You can vote')
```

Example 2:

```
str1 = 'abc'
str2 = 'def'
```

```
                    if str1 >= str2:
                            print(' str1> than str2')
```

7. Syntax of if-else is as follows

```
            if expression:
                   statements
                   ……….
                   ……….
            else:
                  statements
                  ……….
                  ……….
```

8. We can use Nested if statements when we want to check for a secondary condition if the first condition executes as true. Syntax of Nested if statements is as follows.

```
if Boolean-expression1:
    if Boolean-expression2:
        statement1
    else :
        statement2
else :
    statement3
```

Example related to nested if statement is as follows

Program: Write a program to read score from the user and assign grade based on upon the score. Make use of following table to assign score.

Score	Grade
Score >= 95	A+
Score > = 85	A
Score > = 70	C
Score > = 40	D
Score <40	Fail

```
score = int(input('Enter the Score:'))
if score >= 40:
    if score >= 95:
       print("Grade: A+")

    elif score >=85:
       print("Grade: A")

    elif score >=70:
        print("Grade: C")

    elif score >= 40:
        print("Grade: D")
else:
    print("Sorry You have Failed in Examination!!")

Output:
Enter the Score:67
```

```
Grade: D
```

9. To improve the performance of simple if-else statements, Python provides a conditional expression. Thus general form of conditional expression is as follows

Expression$_1$ **if** condition **else** Expression$_2$

Expression$_1$ is the value of the conditional expression if the condition is true.
Condition is a normal Boolean expression that generally appears in front of an if statement.
Expression$_2$ is the value of the conditional expression if the condition is false.

10. Multiple if –elif statement

The syntax for ***if-elif-else*** is as follows

```
if Boolean-expression1:
        statement1
    elif Boolean-expression2 :
        statement2
    elif Boolean-expression3 :
        statement3
     -  - - - - - - - - - - - - - -
     -  - - - - - - - - - - - -- -
     elif Boolean-expression n :
         statement N
else :
         Statement(s)
```

In this kind of statements, number of conditions i.e. boolean expressions are checked from top to bottom. When the true condition is found, the statement associated with it is executed and the rest of conditional statements are skipped.

Programming Assignments

1. Write a program to prompt (input) year and check if it is a leap year.

```
year = int(input('Enter year:'))
if (year % 4 == 0) and (not(year % 100 == 0)) or (year % 400 == 0):
    print(' Year ',year,' is a Leap Year')
else:
     print(' Year ',year,' is not a Leap Year')
```

Output

```
Enter year:1944
Year  1944  is a Leap Year
```

2. Write a program to calculate an Internet browsing bill. Use the conditions specified as follows:

a. 1 Hour – 20

b. ½ Hour – 10

c. Unlimited hours in a day – 100

The owner should enter the number of hours spent on browsing.

```
n = eval(input('Enter the number of hours spend on Surfing and enter 0 for unlimited hours:'))
if n == 0.5:
    print(' Cost of Surfing is Rs ',20 * n)
elif (n >=0.5):
    print(' The cost of Surfing is Rs ',n * 20)
else:
    print( ' Cost of Surfing is Rs 100')
```

Output

```
Enter the number of hours spend on Surfing and enter 0 for unlimited hours:4.5
The cost of Surfing is Rs  90.0
```

3.

```
temp= input('Enter the temperature:(a) warm b) wold):')
hum = input('Enter  humidity: (a) humid b) dry):')
if temp == 'warm' and  hum == 'dry':
    print('Play Basketball')
else:
    if temp == 'warm' and hum == 'humid':
            print('Play Tennis')
    else:
        if temp == 'cold' and hum == 'dry':
            print('Play Cricket')
        else:
            print('Swim')
```

Output:

```
Enter the temperature:(a) warm b) wold):cold
Enter  humidity: (a) humid b) dry):humid
Swim
```

4. Write a program to calculate the square of only those numbers whose least significant digit is 5.

Example: Enter the number: 25
Square: 25*25 = 625

```
N = int(input('Enter the number:'))
if n % 10 == 5:
    print(' square of number is: ',n*n)
else:
```

```
    print(' Please Enter correct number having LSB 5')
Output
#Sample Output Case1
Enter the number:43
Please Enter correct number having LSB 5
#Sample Output Case 2
Enter the number:75
square of number is:  5625
```

5.

```
age = int(input('Enter the age:'))
if not (age <15) and not(age>18):
    print('You are Eligible to play in College Cricket:')
else:
    print(' Sorry You cant play')

Output
#Case 1
Enter the age:24
Sorry You cant play

#case 2
Enter the age:16
You are Eligible to play in College Cricket:
```