Q 1. Create two int type variables, apply addition, subtraction, division and multiplications and store the results in variables. Then print the data in the following format by calling the variables:

First variable is __ & second variable is __.

Addition: __ + __ = __

Subtraction: __ - __ = __

Multiplication: __ * __ = __

Division: __ / __ = __

Answer –

```
num1 = int(input("enter number 1 : "))

num2 = int(input("enter number 2 : "))

add = num1+num2

sub = num1 - num2

mul = num1*num2

div = num1/num2


print(f"First variable is {num1} & second variable is {num2}")

print(f"Addition: {num1} + {num2} = {add}")

print(f"Subtraction: {num1} - {num2} = {sub}")

print(f"Multiplication: {num1} * {num2} = {mul}")

print(f"Division: {num1} / {num2} = {div}")
```

Q 2. What is the difference between the following operators:

(i) '/' & '//'

(ii) '**' & '^'

Answer –

(i) '/' and '//' both divide the two numbers. The difference is that '/' gives the answer in decimal points and '//' round off to nearest integer value

(ii) '**' is exponential. It raises a number to a power. Following 3 is raised to power 2, which means it will result in number 9

       Result = 3**2 # output will be 9

  '^' is a bitwise xor operator. It compares each bit of number 1 with number2. The operation results in bit '1' if either of the bits is 1.

Example

      Num1 = 3   # in bit terms it is represented as 011
      Num2 = 4   # in bit terms it is represented as 100
      When we we do XOR operation on above bits we get 111, which is value 7 in decimals

      Result = 3^4

      Output = 7

Q 3. List the logical operators.

Answer –   There are three logical operators in python, as under.

AND operator - The AND operator returns *'True'* if both the operands are true else it returns false.

      num1=1
      num2=3
      if(num1<2 and num2>2):
          print(num1/num2)

OR operator - The OR operator returns *'True'* if either of the two operands is *true*.

Not operator - The not operator reverses the result. If the result is false, Not operator will result in true.

Q 4. Explain right shift operator and left shift operator with examples.

Answer –

Right Shift (>>) - This operator shifts the bits of the left operand to the right by the specified number of positions.

```
x = 10  # Binary: 1010

# Right shift by 2 positions

result = x >> 2  # Binary: 0010

print(result)  # Output: 2
```

Left shift (<<) - This operator shifts the bits of the left operand to the left by the specified number of positions. The rightmost bits are filled with zeros, and new zeros are added on the right side. Each shift to the left effectively multiplies the number by 2.

```
x = 5  # Binary: 0101

# Left shift by 2 positions

result = x << 2  # Binary: 010100

print(result)  # Output: 20
```

Q 5. Create a list containing int type data of length 15. Then write a code to check if 10 is present in the list or not.

Answer –

```
test_list ={1,2,3,4,5,6,7,8,9,10,11,12,13,14,15}

if(10 in test_list):

    print("10 is present in the list")
```