**Hong Kong Institute of Vocational Education**

**FS113002N Diploma of Foundation Studies – Information Technology**

**ITE3711 Programming Concept and Applications**

**Topic 1**

**Lab 1.3 – Operators**

Exercise 1

Write down the output of the program fragments below.

**Example:**

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
|  | print(5 + 5) | 10 |
|  | print(5 - 5)  print(5 \* 5) | 0 25 |

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (a) | print(3 - 2 + 1) | 2 |
| (b) | print(10 \* 2 - 3) | 17 |
| (c) | print(20 / 4 \* 2) | 10.0 |
| (d) | print(7 % 3) | 1 |
| (e) | print(2 \*\* 3) | 8 |
| (f) | print(6 + 3 - 2) | 7 |
| (g) | print(5 \* 4 + 2) | 22 |
| (h) | print(7 - 4 \* 2) | -1 |
| (i) | print(12 / 3 + 2 \* 4) | 12.0 |
| (j) | print(2 \*\* 3 + 1 \* 2 + 4) | 14 |
| (k) | print(5 % 2 + 3 \*\* 2) | 10 |
| (l) | print(10 \* 2 // 4 - 1) | 4 |

Exercise 1 (cont’)

Write down the output of the program fragments below.

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (m) | num1 = 76  num2 = 345  num3 = 85  print(num1 + num2)  print(num1 \* 2 - num3)  print(num2 % 2 + num2) | 421  67  346 |
| (n) | num1 = 7.0  num2 = 49  num3 = 7  print(num2 + num1)  print(num2 / num3)  print(num2 // num3) | 56.0  7.0  7 |
| (o) | num1 = 67  num2 = 98  num3 = 23  print((num1 + num2) \* num3)  print((num1 // num3) \*\* 2)  print((num2 % 2 + 5) \* num3) | 3795  4  115 |

Exercise 2

Write down the program code format of the following formulas.

**Example:**

|  |  |
| --- | --- |
| **Formula** | **Python program code format** |
|  | (a \*\* 2 + a \* b) \*\* 0.5 |

|  |  |
| --- | --- |
| **Formula** | **Python program code format** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Exercise 3

Write down the output of the program fragments below.

**Example:**

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (a) | x = 5  x += 1  print(x) | 6 |

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (a) | x = 5  x += 3  print(x) | 8 |
| (b) | x = 10  x -= 4  print(x) | 6 |
| (c) | x = 3  x \*= 4  print(x) | 12 |
| (d) | x = 20  x /= 5  print(x) | 4 |
| (e) | x = 35  x %= 6  print(x) |  |
| (f) | x = 65  x %= 9  x \*= 5  print(x) |  |

Exercise 4

Write down the output of the program fragments below.

**Example:**

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
|  | num1 = 5  num2 = 25  print(num1 > num2) | False |

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (a) | num1 = 5  num2 = 7  print(num1 > num2)  print(num1 < num2)  print(num1 >= num2)  print(num1 <= num2)  print(num1 == num2)  print(num1 != num2) | False  True  False  True  False  True |
| (b) | num1 = 6  num2 = 8  num3 = 48  print(num2 > num3)  print(num3 < num1)  print(num1 >= num2 - 2)  print(num3 <= num1 \* num2)  print(num1 \* num2 == num3)  print(num1 != num2) | False  False  True  True  True  True |
| (c) | msg1 = "Hello"  msg2 = "hello"  print(msg1 == msg2)  print(msg2 != msg1) | False  True |

Exercise 4 (cont’)

Write down the output of the program fragments below.

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (d) | num1 = 78  num2 = 45  msg1 = "X"  msg2 = "x"  print(num1 > num2 and 45 <= num2)  print(num1 >= 78 or num1 < num2)  print(num1 + num2 < 150 or msg1 == "X")  print(msg1 == "Y" or msg1 == "x")  print(not(msg1 == "X"))  print(num1 %2 == 0 and num1 != num2) |  |
| (e) | num1 = 10  num2 = 5  msg1 = "hello"  msg2 = "world"  print(num1 > num2 and len(msg1) < len(msg2))  print(num1 != 10 or num2 == 5)  print(len(msg1) + len(msg2) >= 10)  print(msg1 == "Hello" or msg2 == "WORLD")  print(not(msg1 == "hello"))  print(num1 % 2 == 0 or num2 % 2 == 0) |  |