Information and Technology – Competency 9

(Past paper questions - 2016)

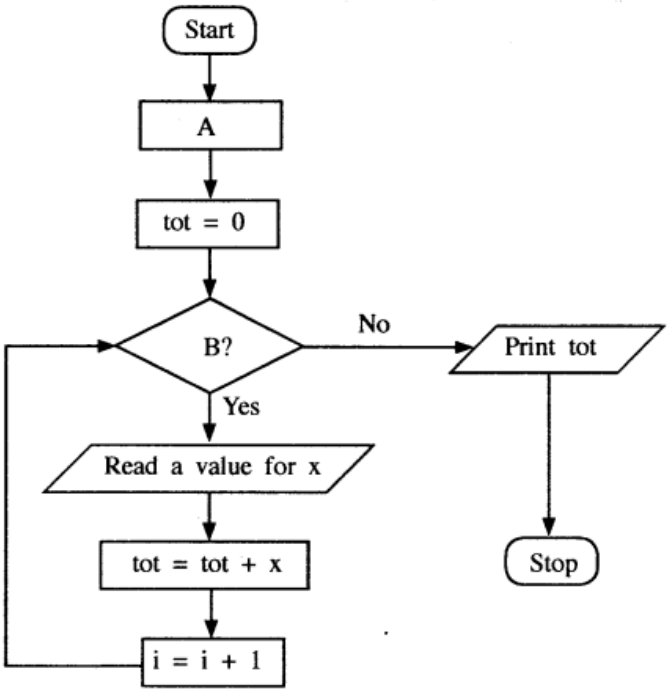
No - 7

1. Consider the following statements about flowcharts:
    1. A flowchart is a pictorial representation of an algorithm.
    2. A flowchart may have more than one 'stop' or 'end' termination symbols
    3. Algorithms can be represented only by using flowcharts.

Which of the above statements is/are correct?

1. A only 2) B only 3) C only 4) A and B only 5) B and C only

2. The algorithm represented by the following flowchart reads 5 numbers and prints the sum of them.



1. i = 0 and i <= 5
2. i = 1 and i = 5
3. i = 0 and i > 5
4. i = 1 and i <= 5
5. i = 1 and i >= 5

3. Which of the following Python programs computes the sum pf the 5 given integers?

(1)
```
i = 1
tot = 0
while i > 5:
  x = int(input())
  tot = tot + x
  i = i + 1
print(tot)
```

(2)
```
i = 1
tot = 0
while i <= 5:
  x = int(input())
  tot = tot + x
  i = i + 1
print(tot)
```

(3)
```
i = 1
tot = 0
while i == 5:
  x = int(input())
  tot = tot + x
  i = i + 1
print(tot)
```

(4)
```
i = 0
tot = 0
while i > 5:
  x = int(input())
  tot = tot + x
  i = i + 1
print(tot)
```

(5)
```
i = 0
tot = 0
while i <= 5:
  x = int(input())
  tot = tot + x
  i = i + 1
print(tot)
```

4. Consider the following Python statement:
   temp =[23, 45, 2, -2, 0][:2:]
   What would be the value of the variable temp after executing the above statement?
   1. 23,45 2) [23, 45] 3) 23, 2 4) [23, 2] 5) [23, 2, 0]

5. Which of the following Python code segments is syntactically incorrect?

(1)
```
if x > 0:
    y = 2
```

(2)
```
if x > 0:
    y = 2
else:
    y = 3
```

(3)
```
if x > 10:
    y = 1
elseif x > 5:
    y = 2
```

(4)
```
if x > 10:
    y = 1
elif x > 5:
    y = 2
else:
    y = 3
```

(5)
```
if x > 10:
    y = 1
else:
    if x > 5:
        y = 2
    else:
        y = 3
```

6. Consider the following Python program segment:
   d1 =”(1,2,3)”
   d2 = (1,2,3)
   d3 = [1,2,(1,2)]
   What would be the types of variables d1,d2 and d3 respectively after the execution of the program segment?
   1) tuple, tuple, tuple
   2) string, tuple, tuple
   3) char, tuple, list
   4) string, tuple, list
   5) tuple, tuple, list

7. Which of the following Python statements is syntactically incorrect?
   1) a, b =10, 15
   2) a =b =1,2
   3) a=1,2
   4) a,b=2,(3,5)
   5) a,b=2, 3,5

8. What will be the value of the variable x, after executing the following Python statement?
   x = 3-4*6/3+12/4*3
   1) -5.0 2) -4.0 3) -1.0 4) 4.0 5) 5.0

9. Which of the following Python functions is syntactically incorrect?

(1)
```
def fun(x,y):
    return x
```

(2)
```
def fun():
    . return 5
```

(3)
```
def fun(x,y):
    pass
```

(4)
```
def fun:
    return 5
```

(5)
```
def fun(x,y=5):
    return y,x
```

10. Consider the following Python program:

```
#Print the sum of integers from 1 to 5 (including 1 and 5)
total = 0
i = 1
while (i <= 5):
        total = total + i

i = i + 1
print (total)
```

I. What would be the output of the above program when executed? Justify your answer.

II. Modify and rewrite the above program, without increasing the number of statements, to compute the sum of integers from 1 to 10 (including 1 and 0).

11.

A canteen of a school sells 10 different types of foods. These food types are placed in a shelf. Students can select foods while walking alongside the shelf and keep them on a tray. These trays are available at the entrance of the canteen. A student, after selecting the food, should proceed to the cashier with the food tray for the payment.

You are asked to develop a computer program to calculate the payment due for a food tray. For this purpose, each food type is given a unique integer from 1 to 10.

The integer value assigned for each food type and its unit price is shown in the following table.

Food type	1	2	3	4	5	6	7	8	9	10
Unit price (Rs)	10.00	12.00	15.00	10.00	25.00	45.00	50.00	25.00	10.00	12.00

(a) State all the inputs required for the computer program and its expected output.

(b) Draw a flowchart to represent the algorithm required to compute the payment due for a food tray.

(c) Transform the above flowchart into a Python program.