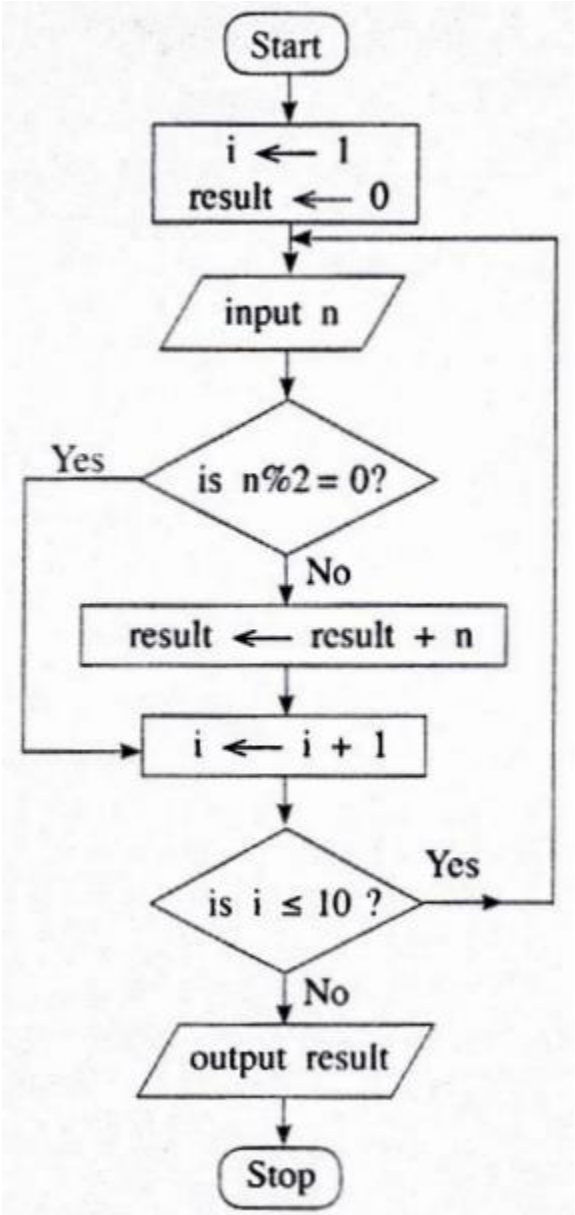
Information and Technology – Competency 9

(Past paper questions - 2018)

No - 05

Consider the following flowchart to answer the question 1 -3. (Note that **n%2** represent **n mod 2**)



1. Which of the following is/are correct regarding the algorithm expressed by the above flowchart?
   A- It takes 0 inputs.
   B- It computes the sum of the even numbers in the input.
   C- To take 100 inputs, only modifying "is i <= 10" will be sufficient.

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

2. If the following were fed as the input to the above algorithm, what will be the output?
   2, 8, 9, 3, 4, 10, 6, 5, 13, 19, 12, 7

1) 10 2) 30 3) 42 4) 49 5) 56

3. For any given input, outputs of which of the following Python programs will be the same as the output produced by the algorithm in the above flow chart?

I –
```
i = 1
result = 0
while (i <= 10):
    n = int(input())
    if (n % 2 != 0):
        result += n
    i = i+1
print result
```

II –
```
result = 0
for i in range(10):
    n = int(input())
    if (not(n % 2 == 0)):
        result = result + n
print result
```

III –
```
result = 0
i = 1
while True:
    n = int(input())
    if (not(n % 2 == 0)):
        result = result + n
    i = i + 1
    if (i > 10):
        break
print result
```

1) I only 2) II only 3) III only 4) I and II only 5) All I, II and III

4. What is the output of the following Python code segment if executed with 30 as input?

```
n = int(raw_input())
if (n < 40):
        result = 1
        if (n < 10):
                result = 2
        elif (n < 20):
                result = 3
        else:
                result = 4
else:
        result = 5
print result
```

1) 1 2) 2 3) 3 4) 4 5) 5

5. What is the output of the following Python code segment?

```
s = 0
for i in range(10):
        s = s + i
print s
```

1) 0 2) 10 3) 45 4) 55 5) 100

6. What is the output of the following Python code segment?

```
aList = [2,3,11,13,5,7]
s = 0
for i in range(len(aList)):
        if (aList[i] > 10):
                continue
        s = s + aList[i]
print s
```

1) 0 2) 5 3) 16 4) 17 5) 41

7. Consider the following Python code segment with a blank line. (The line numbers on the left are shown for guidance only. They are not part of the code).

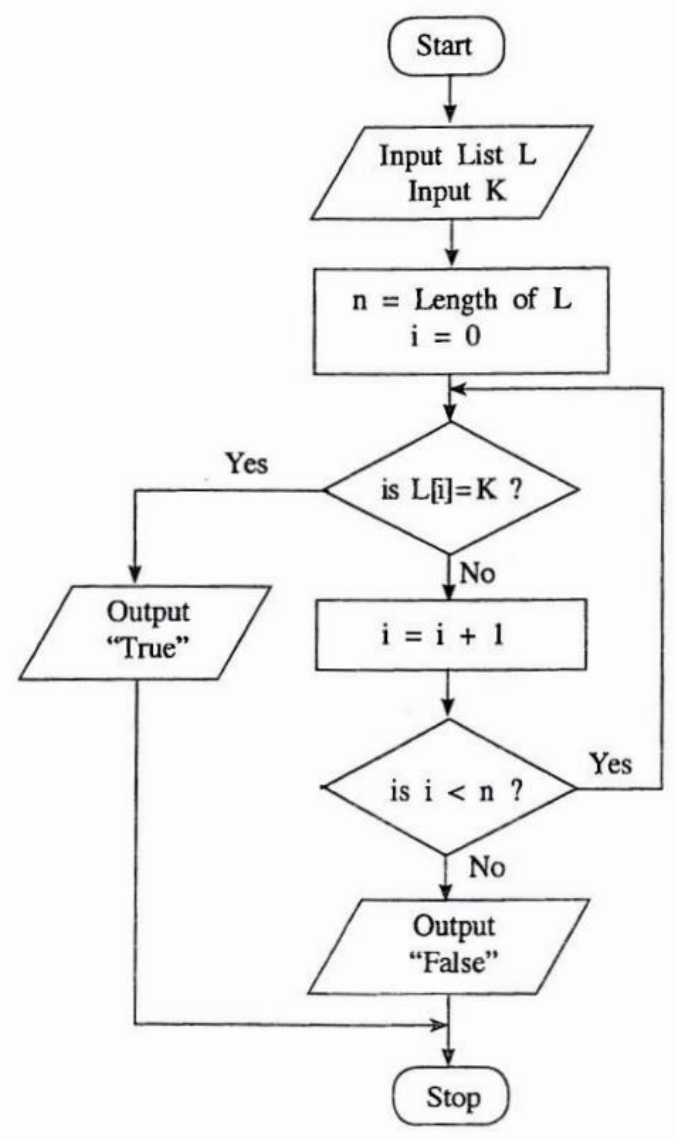
```
1    # Function definition starts
2    ......................
3                s = arg1 + arg2
4                return s
5    # Function definition ends
6    total = sum(10,20)
7    print total
```

The above code should consist of a programmer defined function named "sum". Which of the following should be entered in the blank on line 2, so that the function "sum" is correctly defined?

1) sum(arg1, arg2):
2) def sum(arg1, arg2):
3) function sum(arg1, arg2):
4) def sum(arg1, arg2.s):
5) def sum( ):

8. (a) Assume an input which contains a sequence of positive numbers. The sequence has at most 100 numbers. If the input sequence has n numbers where n<100, then the end of the sequence is marked by making $(n+1)^{th}$ number-1.
For e.g., the following input sequence has 8 positive numbers, where the 9^{th} input which is -1 marks the end.
23 12 54 76 89 22 44 65 -1
Draw a flowchart that represents an algorithm to output the largest number in a given sequence of n positive numbers as described above.

(b) Consider the flowchart given below. The algorithm in the flowchart takes two inputs, the first input L is a list of numbers, the second input K is a given number.



(i) What would be the output if the first input L was 23, 45, 32, 11, 67, 39, 92, 51, 74, 89 and the second input K was 38?
(ii) Briefly explain the aim of this algorithm.
(iii) Develop a Python program to implement the algorithm in the flowchart.