Q. No. 1

30

(a) What is the output of the following pseudo code:

5

```
x = 5;
y = 4;
z = 0;

while x > 0
     z = x + y
     x = x - 1
     y = y + 2
end while

print z
```

Dry run:

Output:

(b) What is the output of the following pseudo code:

5

```
x = 10;
y = 1;
z = 0;

while x > 0
    if x - y > 0
        z = z + 5
    else
        z = z - 5
    end if
    x = x - 2;
    y = y + 2;
end while

print z
```

Dry run:

Output:

(c) What is the output of the following pseudocode: 10

Assume that `Arr` is an array (list) that contains the following elements:

1	2	3	4	5	6	7	8	9	10
17	10	9	13	25	4	22	11	13	12

Notice that the index (offset) begin from position 1. More clearly, `Arr[1]` is 17, `Arr[9]` is 13, `Arr[10]` is 12, etc.

```
i = 1
j = 10
while i<=10
     temp = Arr[i]
     Arr[i] = Arr[j]
     Arr[j] = temp
     i = i+1
     j = j-1
end while

i=1
while i<=10
     print Arr[i]
end while
```
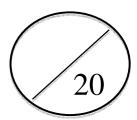
Output: 10

(d) What is the output of the following pseudocode:

```
i = 10
k = 0

while i>0
      j = i
      while j>0
            k = k+j
            j = j-2
      end while
      i = i - 1
end while

print k
```

Output:

20

Q. No. 2

a) Write an if statement that assigns 100 to x when y is equal to 0.

2

b) Write an if/else statement that assigns 0 to x when y is equal to 10. Otherwise it should assign 1 to x.

2

c) Write an if statement that assigns 1 to x if the variable *grade* is within the range 0 through 100.

3

d) Write an if statement that assigns 0 to x if the variable hours is outside the range 0 through 80.

3

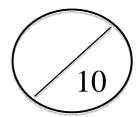e) Write a while loop that displays the following set of numbers: 0, 10, 20, 30, 40, 50 . . . 1000

5

f) Write a nested while loop that displays 10 rows of '#' characters. There should be 15 '#' characters in each row.

5

Q. No. 3 Write a program that lets the user enter 10 values into an array (list). The program should then display the largest and smallest values stored in the array (list).
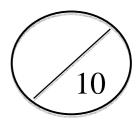
Q. No. 4 The arrays (lists) `numberArray1` and `numberArray2` have 100 elements. Write code that copies (assigns) the values in `numberArray1` to `numberArray2`.

10

Q. No. 5
The area of a rectangle is the rectangle's length times its width. Write a function that receives two arguments: `length` and `width` of the rectangle and returns the `area`.

10

Q. No. 6 Write a program that reads two numbers (x and y) as input and outputs the remainder when the first is divided by the second (i.e. x % y) using only addition and subtraction.

/20

Note: You are NOT allowed to use the %, mod, or other remainder operators.