Metropolitan University, Sylhet
Department of Computer Science and Engineering
Final Examination Summer - 2020
Program: CSE, **Batch**: 50 & 51
Course: CSE 121: Structured Programming

Time: 4 hours   Total Marks: 40

---

1.   a) When should we use 'do-while' loop?   5x2=10
      b) Write a statement using the conditional operator.
      c) Why do we use **include**?
      d) Differentiate between long and short int.
      e) Differentiate between String and Array.

2.   a) Write output for the following code. **Show all calculations**   5

```c
#include <stdio.h>
#define VAL 6

int main(){
    int i, arr[5];
    for(i=0; i<5; i++)
        arr[i] = VAL * i;

    for(i=0; i<5; i++)
        printf("arr[%d] = %d\n", i, arr[i]);

    for(i=1; i<5; i++) {
        ++arr[i];
        arr[i] += arr[i-1];
    }
    for(i=0; i<5; i++)
        printf("arr[%d] = %d\n", i, arr[i]);

    return 0;
}
```

3.   Write a program to print all the odd prime numbers between 1 and 100.   5

4.   Hasib likes fruits. So he frequently goes to fruit shops and buys his favourite fruits -   5
      mango, apple and bananas. As Hasib is weak in maths, he often fails to calculate the
      total cost of his shopping and pays some extra. As a good friend, hasib is now asking
      help from you. He wants you to write a program that takes the cost of one kg apple,

one kg banana and one kg mango. Also the amount of apple, banana and mangoes in kgs. Your program will tell him the total cost of his shopping. See the sample I/Os for reference -
First line of sample input has three numbers which are the cost of one kg apple, one kg banana and one kg mango. The second line of input has three numbers which are the amount of apple, banana and mangoes in kgs.
Print the output with two digits after the decimal point.

Sample Input
5.6 3.0 7
1 2 3

Sample Output
Cost = 32.60 tk

4.   Write a program that counts the numbers of vowels and consonants in a string. And   5
      prints the following outputs -
      i) if number of vowels and consonant both are even, print, "V even, C even"
      ii) if numbers of vowels is even and number of consonants are odd, print "V even, C odd"
      iii) if numbers of vowels is odd and number of consonants is even, print "V odd, C even"
      iv) if number of vowels and consonant both are odd, print, "V odd, C odd"

5.   Write a program that finds the second largest number in an array.   5
            Sample Input:
                  Array Size: 5
                  Enter the numbers: 2 8 6 3 9
            Sample Output:
                  Second Largest = 8

6.   Write a program that takes the number of rows and prints the following pattern -   5

      Sample Input
      5

      Sample Output
      A
      AB
      ABC
      ABCD
      ABCDE