United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Mid Term Exam:: Trimester: Fall 2022

Course Code: CSE 1111, Course Title: Structured Programming Language

Total Marks: **30** Duration: **1:45 hours**

There are FIVE questions. Answer all the questions. Marks are indicated in the right margin.

Q.1 a) **Rewrite** the following code after **correcting the errors**. **[2]**

```
#includes <studio.h>
int main() {
      int a, b, float sum;
      scanf(“%i”, &a);
      a , b=10;
      a+b =sum;
      Printf(“%d”, &sum);
}
```

b) **Identify** the **invalid variable names** from the following. **Mention the reasons** that make them invalid. **[2]**

```
sum_of_digit, switch, calculate sum, _value_, Sum, calculate-sum, 1st_sum
```

c) **Compute** the values of the variables **a, b, c,** and **d**. **[2]**

```
int a = 17%7*5;
float b = (int)(17.0/5);
float c= 17/5;
int d = (a>b) && c;
```

Q.2 a) **Find the output of** the following C code segment. **[3]**

```
#include <stdio.h>
int main() {
    int num=3, sum = 10, i =7, j = 2;

    switch(num) {
      case 1:
      case 2:
            sum += --j*2;
            i--;
      case 3:
            sum = ++i*j--;
            break;
      case 4:
            sum *= i++/j--;
            i=i%j;
      default: break;
    }
    printf("%d %d %d",sum,i,j);
    return 0;
}
```

b) **Re-write** the given C code segment in **Q.2(a)** using the **“if-else”** statement without changing the logical meaning and output. **[3]**

Q.3 a) Write a complete program to **print** the following series up to **n**th term. **Find** the **sum** of the series. **[3]**

Sample Input	**n = 6**
Sample Output	**0, 5, 18, 39, 68, 105, Sum = 235**

Q.3 b) **Manually trace** the following code. **Show** changes of **all the variables** (i, j, count) in each step. **[3]**

```
int i, j, n=4, count = 0;
for (i = 1; i <= n; ++i) {
      for (j = 1; j <= n - i; ++j) {
            if (count <= n - 1) {
                ++count;
            }
      }
      count = 0;
}
```

Q.4 a) **Manually trace** the given code segment. **Show** the changes of **all the variables** (i, j , size, arr elements) in each step. **[3]**

```
int arr[5]={10,20,10,10,100}, size=5;
 for(int i=0; i<size; i++){
       for(int j=i+1; j<size; j++){
             if(arr[i] == arr[j]){
                   arr[k] = arr[k+1];
                   size--;
                   j--;
             }
       }
 }
```

b) Write a program that reads **n** from user. Take **n inputs** into an array named **marks** of size 100**,** where **n<=100**. Find the **maximum of only the even numbers** in the array with its **index**. **[3]**

Sample Input	Sample Output
6 1 **10** **6** 51 **24** 13	Maximum of even numbers = 24, at index 4.

Q.5 a) **Draw a flowchart** for the code segment given below. **[3]**

```
int row = 10;
while (row >= 1) {
     int column = 1;
     while (column <= 10) {
          if(row%2)  printf("<");
          else  printf(">");
          ++column;
     }
     --row;
     puts("");
}
```

b) Write a C program to display the following '**Y**' pattern for **n**, where n is always **ODD**. **[3]**

Sample Input	**Sample Output**

For, n=3	* * *
	  *
	  *

For, n=5	* * * * *
	  * *
	  *
	  *
	  *