United International University (UIU)

Dept. of Computer Science& Engineering (CSE)

Final Term Exam::Trimester: Summer 2017

Course Code: CSI 121, Course Title: STRUCTURED PROGRAMMING LANGUAGE

Total Marks: **40** Duration: 2 hour

There are total 5 questions. Answer any 4.

[**NB:** The numbers on the right of the questions denote their marks.]

1. a) Show the manual tracing of the following code. **[5]**

.

```
#include <stdio.h>

void main()
{
	int array[3][3] = { {10,20,30},{20,10,30}};
	int i,j,a,m=2,n=2;

		for (i = 0; i < m; ++i)
		{
			a = array[i][i];
			array[i][i] = array[i][m - i - 1];
			array[i][m - i - 1] = a;
		}

		for (i = 0; i < m; ++i)
		{
			for (j = 0; j < n; ++j)
			{
				printf(" %d", array[i][j]);
			}
			printf("\n");
		}
	}
```

b) Write a program that will print a pattern based on the input integer n. Please see the sample input output. (Do not hardcode for sample scenarios) **[5]**

Examples:

Sample input	Sample output
n=3	1 12 123
n=5	1 12 123 1234 12345

2. a) Write a function in C that prints the even numbers there are between a particular interval. Your code **must** send two positive integers in the parameter of the function and **must** print the even numbers there are in between the interval. [5]

Sample input	Sample output
2 11	2,4,6,8,10
23 35	24,26,28,30,32,34

b) What will the following code print? [5]

```
#include <stdio.h>
int  values[4] = {1, 2, 3, 4, 5};
void multiplyBy2 (int n){
int i;
for ( i = 0; i < n; ++i )
     array[i] *= 2;
}
void f1(){
    int x=0, y=5;
    printf("x: %d and y: %d\n", ++x,y++);

}
void main (void){
    int i;
    multiplyBy2 (4);
    for ( i = 0; i < 5; ++i )
        printf ("%d\t", values[i]);
    printf ("\n");

    for (i=0; i<5; i++){
        f1();
    }
}
```

3. a) What is the output of the following program for the input strings below? [5]

i) "bcebc" ii) "bceb" iii) "a" iv) "dcabc"

```
#include <stdio.h>
#include <string.h>
void main(){
     char str[100];
      int b,c,d,length;
     printf("enter a string:\n");
     gets(str);
     length = strlen(str);
     c=length-1;
       for(b=0 ; b<c ; b++,c--){
            if(str[b]>str[c]){
               d = str[b];
               str[b] = str[c];
               str[c] = d; }
        }
      printf("the b value is : %d\n",b);
      printf("the c value is : %d\n",c);
      printf("the a value is : %s",str);
}
```

b) Consider the following table of values : [2.5 + 2.5]

	Sub-1		Sub-2	Sub-3	Sub-4	Sub-5	Sub-6	Sub-7
Stud.-1	10		20	30	5	6	15	21
Stud.-2	50		80	20	11	21	19	10
Stud.-3	10		40	50	20	11	80	90
Stud.-4	40		30	20	10	80	30	15

The above matrix represents the distribution of marks of 4 students consisting of 7 subjects. Using the above matrix, write a program to compute and print the answers to the following questions (a and b) .

a) Define a 2D array to store these marks and take input from keyboard.

b) Find out the average marks of 7 subjects obtained by each of the 4 students.

4 (a) Write down the output of the following C program for the following inputs. [2+2]

```
#include <stdio.h>
int main() {
    char str1[100], str2[100], str3[100];
    int cmp;
    gets(str1);
    gets(str2);
    strcpy(str3, str1);
    strcat(str3, str2);
    strcpy(str3, str2);
    puts(str3);
    return 0;
}
```

i. str1 = “center”, str2 = “centre”

iii. str1 = “together”, str2 = “together”

(b) Write a program that can find the length of a string without using strlen function. [3]

(c) Write a program that will take m*n integers into a m by n array and print them column-wise (from last column to first column). [3]

Sample Input :

1	2	3
4	5	6
7	8	9
1	4	6

Sample Output :

3 6 9 6 2 5 8 4 1 4 7 1

5. Write a program using Structure to work with the following information [2.5 X 4 = 10]

Name of a person(string),
City number (integer),
Salary (float)

I) Declare a structure variable to store information of 100 persons

II) Input the information from keyboard

III) Find the total salary amount given for any particular city (Input the city number from keyboard)

IV) Print the name of those persons who earns a salary more than 10000.