CHUKA UNIVERSITY
EXAMINATION FOR THE AWARD OF Bsc(Electrical and Electronic Engineering)

YEAR 1 SEMESTER 2
COSC 113: Introduction to Computer and Programming.

INSTRUCTIONS
1. Answer question 1 in section A and any other **TWO** from section B
2. Marks are awarded for clear and concise answers
3**.** Note that only Question **ONE** (Section A) and the first **TWO** attempted questions in section B will be marked.

SECTION A-COMPULSORY
Question One-30 Marks

(a)Differentiate between the following terms as used in computer programming.

(i)Reserved word and identifier **[4 Marks]**

(ii)Variable and constant **[4 Marks]**

(b)Write program statements to declare the following variables:
(i)A variable to store the result of a question whose expected answer is true or false**[2 Marks]**
(ii)A variable to store age in years of form 1 students **[2 Marks]**

(c)What data type would you use to store the following data:
(i) count the number of times a loop should repeat **[2 Marks]**
(ii)Name of a student **[2 Marks]**
(iii)volume of a cylinder **[2 Marks]**

(d)Discuss **TWO** decision structures used in C indicating their syntax **[4 Marks]**

(e)Which of the following statements contains an error **[2 Marks]**

```
1   int m = 5;
2   float n = 23.5;
3   bool a = false;
4   i n t p = n;
```

(f)What result is printed by the following block of code
(i)

```
int foo = 8;
float bar = 11;
bar = foo ;
printf ( ”The result  is “%f”, bar/3) ;
```

[2 Marks]

(ii)

```
int foo = 42;
int bar = 20;
bar = bar ∗ 2;
int baz = 3;
bar = baz + foo ;
printf (”The result is “%d”, bar ) ;
```

[2 Marks]

(iii)

```
int r = 9;
float s = 3.2 ;
double t = 3.0;
float u = s + r / t;
printf (” The result is “%f ”, u )
```

[2 Marks]

SECTION B-Answer any TWO questions from this section

Question TWO [20 Marks]

(a) What result is printed by the following block of code

(i)

```
 int a = 42;
 if ( a > 67)
 printf (“%d”, a − 2);
e l s e
printf( a /2) ;
```

[3 Marks]

(ii)

```
int m = 0;
int n = 1;
while (m < 10)
 {
n = n + m ;
m = m+5;
  }
printf (”The result is “%f”, n) ;
```

[3 Marks]

(b)Consider the program below and answer the questions that follow:

```
#include<stdio.h>
 int main()
{
 float a=0.7;
 if(a<0.7)
printf(“C++”)
```

```
else
printf("C")
return 0;
}
```

(i)What is the meaning of **#include<stdio.h>** statement **[2 Marks]**
(ii)What is the meaning of **int main ()** in the program **[2 Marks]**
(iii)What result is printed as output **[2 Marks]**
(b)While outlining what a loop is, explain the use of **THREE** loops in C programming language **[6 marks]**
(c)State **TWO** way of presenting an algorithm **[2 Marks]**

Question THREE [20 Marks]
(a)A solution is required that accepts radius of a circle as user input and calculates circumference and area.
(i) Identify the inputs and outputs required in order to solve the problem **[3 Marks]**
(ii)Identify the computations/processing required in order to solve the problem **[2 Marks]**
(iii)Draw a flowchart for solving the problem **[4 Marks]**
(iv)Implement the flowchart using C programming language **[4 Marks]**

(b)Write a programme in C that computes and displays the first ten terms of Fibonacci series**[7 Marks]**

Question FOUR [20 Marks]
(a)A program is required that prompts the cashier to key in the cost of each item bought by the customer and stores each item cost in an array. It then gives the total cost to be paid by every customer. If the customer has bought goods worth Ksh 500 and above it gives a total discount of Ksh 40. Assuming every customer has to buy FOUR items from a grocery whenever he shops.

(i)Identify the inputs and outputs required in order to solve the problem **[3 marks]**
(ii)Identify the computations/processing required in order to solve the problem **[2 Marks]**
(iii)Identify any constraints or conditions required in order to solve the problem [**2 Marks]**
(iv)Develop an algorithm to solve the problem **[4 Marks]**
(v)Write a program in C that implements the algorithm **[4 Marks]**

(b)Declare an integer array size 5 and write a program segment to read elements into it [**5 Marks]**

Question FIVE [20 Marks]
(a)A program is required to read three numbers from a user and compute their sum and average. Develop an algorithm in form of a flowchart to solve this problem **[4 marks]**

(b)Using an example in each case, explain TWO logic operators used in C programming [**4 marks]**
(c)Give FOUR examples of high level programming languages commonly in use today **[4 marks]**

(d)Explain TWO ways of representing comments in C programming. **[4 marks]**
(e) While stating the role of an algorithm in computer based systems design, give **THREE** of its desirable features **[4 Marks]**