KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS
MAIN CAMPUS

THIRD SEMESTER, 2016/2017 ACADEMIC YEAR

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

COMP 112: FUNDAMENTALS OF PROGRAMMING

STREAM: [Y1S1] **TIME: 2.00-4.00PM**

EXAMINATION SESSION: AUGUST **DATE: 26/7/2017**

INSTRUCTIONS

1. Section A: is compulsory, and any two questions from section B:
2. Do not write anything on this question paper.

QUESTION ONE……..…….. [30 marks]

a. Explain the differences between the following three categories of languages:

i) Machine language [2 marks]

ii) Assembly language [2 marks]

iii) High level languages [2 marks]

b. Explain **four** basic data types used in C language [2 marks]

c. i) What does a pseudocode mean? [2 marks]

ii) Develop a pseudocode based on the following flowchart given in **figure 1** below:

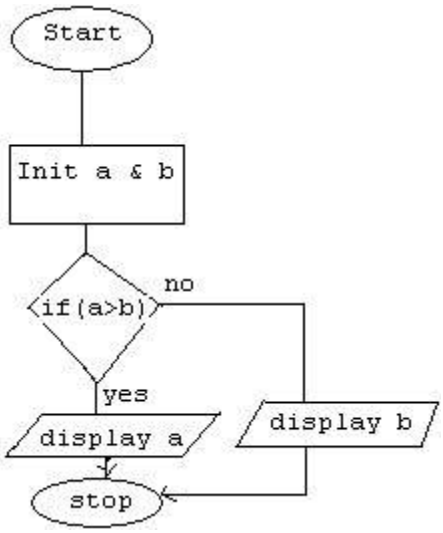

Figure 1: flowchart

ii) Based on flowchart in **figure 1** above, **write** an executable C program that would produce the output given two values entered by the user. [6 marks]

iii) Discuss **four** <u>limitations</u> of a pseudocode if it is used to represent an algorithm [4 marks]

d. Explain **four** good reasons as to why studying the concepts of Programming Languages is important. [4 marks]

e. If you were a ***computer*** programmer and looking for a language for your implementation, why is it important to consider the following terms as a criteria for choosing the right language? ***(i) Readability (ii) Overall simplicity (iii) Writability*** [6 marks]

QUESTION TWO…….. (20 marks)

a. Explain the following Operators and giving an example in each case as used in C:
   i) Logical [2 marks]
   ii) Relational [2 marks]
   iii) Increment and Decrement [2 marks]

b. If the following code is executed, what would be the output? [4 marks]

```
#include <stdio.h>
int main()
{
printf( "I am Philip!  Ok, noted.\n");
getchar();
return 0;
        }
```

c. Construct a nested ***if*** statement that would display the following output: [6 marks]

Yes, 14 is greater than 12
and A is equal to A
while 2 is no equal to 0

d. Identify the errors in the following structure of the **C** code, if any, fix them by re-writing the code, then explain why the corrections were necessary. [4 marks]

```
#include <stdio.h>

 int main()
{
printf( "Value of x is %d", x );
 int x;
return 0;
}
```

QUESTION THREE……[20 marks]

a. Show the output of the following program when executed: [2 marks]

```
#include <stdio.h>

int main()
{
int x;

  x = 0;
do {
printf( "Hello, George!\n" );
  } while ( x != 0 );
getchar();
}
```

b. Which of the following terms are keywords: [2 marks]

i) auto (ii) break (iii) value (iv) int

c. Use a ***for loop*** to write a program in C that would produce the following output, exactly as displayed: **2,4,6,8,10,12,** [6 marks]

d. Explain the differences between the following key terms as used in C: ***break*** and ***continue*** [2 marks]

e. Using a ***while loop*** and the keyword ***continue***, write a program in C language using to produce the output as: **1, 2, 3, 5, 6,** [6 marks]

f. Identify and explain **<u>two</u>** types of errors commonly encountered by C language programmers [2 marks]

QUESTION FOUR……[20 marks]

a. Write a code that would format and display the following declaration to **two** decimal places:

float num =20.083244; **[**2 marks]

b. Given the following program written in C, determine the output: [6 marks]

```
#include <stdio.h>
int main()
{
    int x;

   for ( x = 1; x <=20; x++ )
{      if(x % 2 == 0)
      {

printf( "%d,", x );
   }
}
  return 0; }
```

c. Write a program to compute and display the area of a rectangle, the user has to enter both length and the width of the rectangle. [6 marks]

d. What would be the output of the following C code? [6 marks]

```
int main()
        {  int a = 12,  b = 6,  c = 3;
       while(c > 0){
a = a - 1, b = b - 2, c--;
printf("variable a is %d, and variable b is %d\n",  a, b);
}
return 0;}
```

QUESTION 5……. (20 marks)

a. Explain the differences between ***Formal parameters*** and ***Actual parameters*** [4 marks]

b. Write a program whereby the ***main()*** function passes two integer numbers to a function Called ***multiply()*** whose job is to multiply the two integers and returns the calculated result to the ***main()*** function whose job is to display it on the screen. [6 marks]

c. i) Show how you would declare and initialize an integer array of four elements. [2 marks]

ii) Write a C code to display the output of the above mentioned elements in c (i) [4 marks]

d. Given below is a C code, explain its concept and specify its output. [4 marks]

```
#include<stdio.h>
 int multiply(int a, int b);
int main()
 {
  int a = 50;  int b = 11;
  int x = multiply(a, b);
   printf("The returned value is %d", x);
return 0;
}
int multiply(int x, int y)
{
int c = x * y;
return c;
}
```

KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND SEMESTER, 2018 /2019 ACADEMIC YEAR

EXAMINATION FOR THE BACHELOR OF BUSINESS MANAGEMENT INFORMATION TECHNOLOGY/BACHELOR OF INFORMATION TECHNOLOGY

COMP 112/COMP 111/INTE 113: FUNDAMENTALS OF PROGRAMING

STREAM: [Y1S2] **TIME: 2.00-4.00P M**

EXAMINATION SESSION: JAN-APRIL **DATE: 5/04/2019**

INSTRUCTIONS

(i) Answer Question ONE (compulsory) and ANY OTHER TWO questions
(ii) Do not write on the question paper
(iii)Show your working clearly

QUESTION ONE (30 MARKS)

a) Define an algorithm? **(2marks)**

b) Perform the following

i. Define a token as used in computer programming **(2marks)**

ii. Briefly explain two types of tokens giving examples in each case **(4marks)**

c) Most programs come with user documentation. List three advantages of proper documentation in a program. **(2marks)**

d) Draw a flowchart that will accept as input from the user, an answer to the following question: Is it raining? If it is raining, tell the user to get an umbrella and also bring a jacket, otherwise tell the user it is sunny. **(4marks)**

e) Write an algorithm that will compute the sum and average of **n** values and display the sum and average. **(4marks)**

f) Outline the four types of errors found in Any programming language **(4marks)**

g) Discuss the two major types of programming languages; low level languages and high level languages giving examples.

(4marks)

h) Explain the difference between testing and debugging in the context of programming

(4marks)

QUESTION TWO (20 MARKS)

a) Outline the three constructs used in MODULAR programming

(3marks)

b) Why is structured programming so enormous even today?

(4marks)

c) Draw a flowchart to compute the solution of x^2+5 for all values of x between 2 and 5.

(5marks)

d) Write an algorithm which a given number **A** *increased* 100 *times* if **A** is less than 100, otherwise **A** is *decreased* by the 100. Print this result

(4marks)

e) With the help of a simple example briefly discuss the conditional operator

(4marks)

QUESTION THREE (20 MARKS)

a) Draw flowcharts for the following programs:

i. Program to help you discuss for loop as used in programming languages.

(4marks)

ii. Program to accept the radius of a circle and calculate its area.

(4marks)

b) Draw a flowchart to display the sum of 20 natural numbers starting from 20.

(4marks)

c) Enumerate on the constructs of structured programming and outline why C programming is widely used today

(4marks)

d) Write an algorithm to display the largest of three numbers entered.

(4marks)

QUESTION FOUR (20MARKS)

a) Woodwork supermarket gives discount according to the combination of products you purchase as follows:

If you purchase goods worth Kshs. 4000 and above discount 10%, goods worth Kshs. 2500 and above discount 5% and otherwise 2%.

i. Write an algorithm to compute the discount a customer will receive based on the purchase she makes.

(3marks)

ii. Draw a flowchart for the above algorithm **(3marks)**

b) Write an algorithm that will accept two numbers and find their sum and difference. If the sum is more than sum than the difference, display the sum otherwise display the difference

(4marks)

f) Discuss the advantages of using a flow chart

(4marks)

g) Perform the following

i. Define object oriented programming (2marks)

ii. Explain briefly any two concepts of object oriented programming

(4marks)

QUESTION FIVE (20MARKS)

c) Define a program. **(2marks)**

d) Discuss any four guideline for drawing flowcharts **(4marks)**

e) Define a token and give an example. **(2marks)**

f) Discuss the if…else statement

(4marks)

e) Discuss the advantages of using a flow chart

(4marks)

f) State the difference between:

i. Testing and debugging **(2marks)**

ii. Syntax error and logic error **(2marks)**

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KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS
MAIN CAMPUS

SECOND SEMESTER, 2016/2017 ACADEMIC YEAR

EXAMINATION FOR BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COMP 112: FUNDAMENTALS OF PROGRAMMING USING C

STREAM: BSC CS Y1S1 **TIME:** 2.00-4.00 P.M

EXAMINATION SESSION: APRIL **DATE: 12/04/** 2017

INSTRUCTIONS

1. Section A: is compulsory, and attempt any two questions from section B:
2. Do not write anything on this question paper.

SECTION A:

QUESTION ONE (30 marks)

a. Flowchart is used as a programming tool for representing an Algorithm. Briefly explain **five** advantages of a flowchart (5 marks)

b. Explain why ***scanf()*** cannot be used to read a string such as: ***I come from Nairobi*** (4marks)

c. Explain why it is necessary to use comments in a programming language. (3 marks)

d. Demonstrate the use of a nested ***if*** statement to produce **exactly** the output as follows: (6 marks)

3 is less than 4
And A is equal to A
But 1 is not equal to 0

e. What would be the output of the following **C** code? (6 marks)

```
int main()
        {
          int a = 12,  b = 6,  c = 3;
        while(c > 0)
        {
           a = a - 1, b = b - 3, c--;
printf("variable a is %d, and variable b is %d\n",  a, b);
}
return 0;
}
```

f. Write a program in **C** whereby the ***main()*** function would call function known as ***function1 ()***whose job is to display exactly the output as shown below: (6 marks)

My name is Philip
How are you?

SECTION B:

Question 2 (20 marks)

a**.** Explain what a variable means with respect to C programming (2 marks)
b. With an example in each case, explain **four** basic data types used in C (2 marks)
c. Flowchart is a tool used to represent an Algorithm, briefly explain **three** advantages and **three**

limitations of aflowchart (6marks)

d. i) Develop a Pseudo code for the flowchart in **figure 1** below. (4 marks)

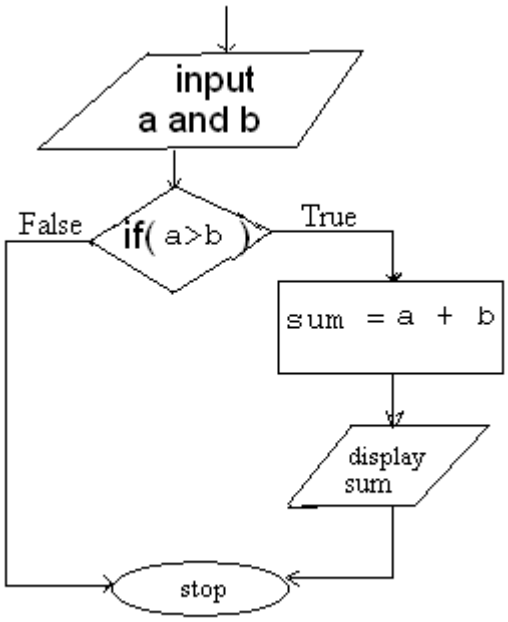

figure 1: If statement

ii) Having developed the pseudo code in c(i) above, translate the same into an executable code in C-language. Use integer values **only** to represent **a** and **b**. (4 marks)

iii) Explain **two** limitation of using a **Pseudo code** to represent an Algorithm (2 marks)

Question 3 (20 marks)

a. Explain the following logical operators which are usually used in C language:
   i) Logical (2 marks)
   ii) Relational (2 marks)
   iii) Increment and decrement (2 marks)

b. i) Identify and explain **two** common types of errors usually encountered , say by C

language programmers (2 marks)

ii) With respect to b(i) above, explain the causes of the **two** errors identified (2 marks)

c. Identify **four** symbols usually used in flowcharts (4 marks)

d. Discuss the differences between the following **<u>two</u>** categories of computer languages: (2 marks)

i) Machine language
ii) Assembly language

e. Write a code that would format and display the following declaration to **two** decimal places:
float num = 9.023456; (4 marks)

Question 4 (20 marks)

a. i) Identify the differences between a ***while*** loop and a ***do-while*** loop (2 marks)

ii) Use a ***while*** loop to display the following as the output: (8 marks)

value is 1

value is 2

value is 3

value is 4

value is 5

b. Write a program in **C** to **compute** and **display** the sum of the following two integer numbers: **11**and **40** (6 marks)

c. Given the following program written in C, determine the output: (4 marks)

```
#include<stdio.h>
int main()
{
    int x;
    for(x = 2; x <= 8; x++)
    {
```

```
    if(x % 2 ==0)
      {
        printf("%d\n", x);
      }
    }
     return 0;
}
```

Question 5 (20 marks)

a. Given the following triangle shown as figure 1, write a c code to calculate its area (6 marks)

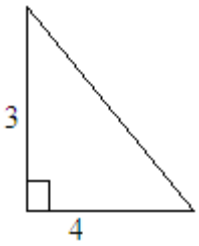

Figure 1: triangle

b. Explain the differences between an **identifier** and the **keyword** (2 marks)

c. Write a program whereby the ***main()*** function passes two integer numbers to a function called ***add(),*** whose job is to add the two given integer numbers and returns the result to the ***main()*** function to display that result on the screen. (8 marks)

d. Show the output of the following C code after execution (4 marks)

```
 int main()
       {
        int a = 0, c = 8;
      while(c > 0)
       {

   a = a+2;
printf("variable a is %d\n",  a);

            c = c-2;
           }
return 0;
}
```