



(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

**UNIVERSITY EXAMINATIONS
2016/2017 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR ONE SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF
BACHELORS OF SCIENCE
(INFORMATION TECHNOLOGY)**

COURSE CODE : BIT 113

**COURSE TITLE : FUNDAMENTALS OF PROGRAMMING
SUPPLEMENTARY EXAM**

DATE: 1909/2017

TIME: 8.00A.M. – 10.00A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE (COMPULSORY) [30 MARKS]

- a. Define the following terms. [3 Marks]
- Variables
 - Identifiers
 - Comments
- b. Explain three advantages of high level programming languages. [6 Marks]
- c. (i) What is a variable definition? [1 Mark]
(ii) By using valid example, write down the syntax of a variable definition in C. [2 Marks]
- d. Compare and contrast while loops and do .. while loops. Provide a valid syntax for each to support your answer. [4 Marks]
- e. Distinguish between procedural and non-procedural programming languages. [2 Marks]
- f. Explain the importance of using arrays in programming. [2 Marks]
- g. Write a C program to find the sum of six numbers using arrays. [6 Marks]
- h. Explain the functions of language translators. [4 Marks]

QUESTION TWO (20 MARKS)

- a. With the aid of appropriate syntax in each case, explain the differences between the following selection statements. [6 Marks]
- if .. and if..else..
 - nested if and switch
- b. Write a function that takes two integers and returns the highest. [4 Marks]
- c. To maintain strategic fit Safaricom Mobile phone provider is introducing a tariff called the *ndovu-tosha* tariff that will lower calling. Calls from Safaricom to Safaricom will be charged according to the time of the day as listed below:
- Between 8.01 to 12.00– Kshs. 2
 - Between 12.01 to 14.00– Kshs. 1.50
 - Between 14.01 to 18.00 – Kshs. 2.50
 - Between 18.01 to 23.00 – Kshs. 3
 - Between 23.01 to 8.00 – Kshs. 1

Internal calls to other networks will be charged at a fixed rate of Kshs 4 while international calls will be charged at a rate of Kshs. 15 from 8.00 to 18.00 and K shs. 25 for the rest of the day. All calls are charged per minute usage. Time is a 24 hour clock.

Mr. Edwin Oguno a prominent business man in Bungoma who makes both internal and international calls would like to make maximum use of this tariff. Write a C program that he use would display and the charges of his calls when he inputs the type, duration and the time of the day where appropriate. [10 Marks]

QUESTION THREE (20 MARKS)

- a. Distinguish between library and user-defined functions. [2 Marks]
- b. Explain any two advantages of user-defined functions. [4 Marks]
- c. Explain the difference between function definition and function declaration. Support your answer by writing down the syntax of both function definition and function declaration. [4 Marks]
- d. Write a C program that accepts 10 integers and stores them in an array. The program should then display the elements of the array in reverse order. [10 Marks]

QUESTION FOUR (20 MARKS)

- a. Explain the difference between a pseudocode and flowchart. [2 Marks]
- b. State any three advantages of using flowcharts as design tools. [3 Marks]
- c. Write a pseudocode, flowchart and a C program which finds the roots of a quadratic equation from the three coefficients (a, b, c) using the formula $\text{roots} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. [15 Marks]

QUESTION FIVE (20 MARKS)

- a. Identify any four programming paradigms. [4 Marks]
- b. Explain any three advantages of modular programming. [6 Marks]
- c. Write a C program to find sum of first 100 natural numbers. [10 Marks]
Hint: Positive integers are known as natural number i.e. 1, 2, 3....n.