Mount Kenya University

UNIVERSITY EXAMINATION 2014/2015

SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF INFORMATION TECHNOLOGY

BACHELOR OF EDUCATION (SCIENCE)
SCHOOL BASED

UNIT CODE: BIT2201 **UNIT TITLE: COMPUTER PROGRAMMING METHODOLOGY**

DATE: AUGUST 2015 **MAIN EXAM** **TIME: 2 HOURS**

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ANY OTHER TWO IN SECTION B.

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

a. Define; (8 Marks)
   i) Array
   ii) Constant
   iii) Pointer
   iv) Pseudocode

b. Identify the following types of error. State whether it's logical, runtime or syntax. (5 Marks)

   i) Use of undeclared variable
   ii) Out of array size
   iii) Missing semicolon
   iv) Square root of a negative number
   v) Misspelt keyword

c. Draw a flowchart to find whether a number is even or odd number. (5 Marks)

d. What is basic difference between (12 Marks)

i) Union and an structure
ii) User defined function and in-built/library functions
iii) Declaration and initialization

SECTION B

QUESTION TWO (20 Marks)

a. In Seven Seas Company an employee is paid as under:
Basic salary is less than KShs. 50,000, then HRA = 10% of basic salary and DA = 40% of basic salary. If the salary is either equal to or above KShs. 100,000, then HRA = KShs. 15,000
and DA = 55% of basic salary. If the employee's salary is input by the user write a program to find his gross salary. NB: HRA-House Rent Allowance, DA- Dearness Allowance (12 Marks)

b. Explain any 4 relational operators in C. (8 Marks)

QUESTION THREE (20 Marks)

a) When preparing problem solutions for the computer, it is not enough just to know the rules of a computer language. Problem-solving skills are essential to successful programming. In solving a problem, developing a program requires five steps. Discuss these steps (15 Marks)

b) Write a pseudo-code required to input three numbers from the keyboard and output the result. (5 Marks)

QUESTION FOUR (20Marks)

a) Write an algorithm to solve a quadratic equation $ax^2 + bx + c = 0$ (10 Marks)

b) Write a program to print roots of a quadratic equation. (10 Marks)

QUESTION FIVE (20 Marks)

a) Explain FIVE primary data types in C (10 Marks)

b) Compare 'while' and 'do while 'control statements. Write a program for each after comparison note. (10 Marks)