



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

P.O. Box 62157
00200 Nairobi - KENYA
Telephone: 891601-6
Fax: 254-20-891084
E-mail: academics@cuea.edu

MAIN EXAMINATION

AUGUST - DECEMBER 2015 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

REGULAR PROGRAMME

CMT 103: PROGRAMMING METHODOLOGIES THEORY

Date: DECEMBER 2015

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and ANY other TWO Questions

- Q1. a) Explain in point form why you would recommend every student at a university to study and take programming seriously. **(3 marks)**
- b) Define the following terms
- i Syntax error
 - ii Variable
 - iii Debugging
 - iv Pointer
 - v Array
 - vi Storage class
 - vii Global variable **(7 marks)**
- c) Explain the importance of decision structures in programming. **(4 marks)**
- d) We need to output the integers 1 to 10. Write simple code snippets illustrate use of any THREE looping structures to achieve the above. **(6 marks)**
- e) What is the significance of # include < studio.h > in a program. **(2 marks)**

- f) Write a program that illustrate how you can use the print () and scanf () functions to accept from the keyboard integer, float, character and double data types. **(8 marks)**
- Q2. a) Draw flow chart to illustrate the steps by step process of writing a program inc. **(4 marks)**
- b) List any FOUR common programming syntax errors. **(4 marks)**
- c) Write a program that illustrates how you can use any FOUR <math.h> functions. **(8 marks)**
- d) Write a function that receives three double variables and the point out of the sum and the average. **(4 marks)**
- Q3. Fill in the table below assessing that a = 15, b = 7, c = 18, d = 3
- | Operation | Solution | |
|-----------------------------|----------|------------------|
| a++ | | (1 mark) |
| a>> = 3 | | (1 mark) |
| Z = ((b< = c //(c> = a)) | | (2 marks) |
| Z = (c>>2) | | (2 marks) |
| Z = ! ((b< = c //(c>a)) | | (2 marks) |
| Z = ((c <<2)>>3) | | (3 marks) |
| Z = floor (sqrt (pow(b,d))) | | (3 marks) |
| Z = coil (sqrt (pow (d,b))) | | (3marks) |
| a% = b | | (1 mark) |
- Q4. a) Explain the difference the following in C programming
- & & and || Operators
 - ? : and the sizeof () function
- (4 marks)**
- b) Given that A = 0011 and B = 00001101 is obtain the value of the following
- A & B
 - A | B
 - A ^ B
 - ^A
- (4 marks)**
- c) What is an array and how is it useful in programming. **(4 marks)**
- d) You are given the array below

double balance [5] = { 1000 0, 2.0, 3.4, 7.0, 50.0

Write a program that will return the sum and the average of the array elements. **(8 marks)**

- Q5. a) Distinguish between the following
- i Break and continue statement
 - ii Global and local variable
 - iii Static and automatic variable
 - iv An array and a structure record **(8 marks)**
- b) What is a register storage class. Write an example code to create a storage class variable. **(4 marks)**
- c) Examine the strat record below. List all the possible uses of the record
- cher [20] name;
 - cher [2] gender
 - int age
 - int number
 - int cet 1
 - int cet 2
 - int examp **(8 marks)**

END