TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE & BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTech. IT S12)

EIT 4102: FUNDAMENTALS OF PROGRAMMING

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: JULY 2013
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*
This paper consist of **FIVE** questions
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Explain the following terms:
   (i) Pointer
   (ii) Union
   (iii) Data structure
   (iv) Scope and life of variable   **(8 marks)**

b) Develop a program that input the numbers and evaluate the maximum and minimum number among the three.   **(6 marks)**

c) Logical operator are integral part of programming, using relevant example describe use of logical operators in programming.   **(6 marks)**

d) Develop a program of water board that charges the following rates of domestic users to discourage large consumption of water:

For the first 200 cubic units – 50 per cubit unit
Beyond 400 cubic units – 60 per cubic unit
If the total cost is more than ksh. 500.00 then an additional surcharge of 15% is added on the difference. **(10 marks)**

Question Two

a) Differentiate between a list and an array. **(4 marks)**

b) Develop a program using arrays to calculate salary of ten employees where (salary is Rate x Hours worked), employees earning less than 10000 will be tax 5% else 10%. **(12 marks)**

c) List and explain any **FOUR** qualities of a good program. **(4 marks)**

Question Three

a) (i) Differentiate between:

(ii) Function call and function prototype. **(8 marks)**

b) Differentiate the term "function" as used in programming and briefly discuss different types of functions. **(4 marks)**

c) Using a function and a case selection statements write a program to calculate the area of a circle and rectangle. **(8 marks)**

Question Four

a) Design a flow chart that reads three numbers and prints the value of the largest number.
(6 marks)
b) Differentiate between local variable and global variable by giving, suitable C++ code.
(6 marks)
c) Write a program that ask for user input from 10 to 20 then calculate the average. **(8 marks)**

Question Five

a) Define the following terms:
   (i) Array
   (ii) Structure
   (iii) Pointers **(6 marks)**

b) Write a segment of code that declares:
   (i) A structure named patient with the following numbers.
   - Student name
   - Admission number
   - Age
   - Course
   - Admission date. **(4 marks)**
   (ii) An array called PATIENTS of 100 patients.

c) Differentiate between structured programming and unstructured programming. **(4 marks)**

d) Write a program that ask for user input from 5 to 9 then calculate the average. **(6 marks)**