TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATIONS FOR DEGREE IN:
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

SMA 2175/ICS 2175: COMPUTER PROGRAMMING I

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
        - *Answer Booklet*
This paper consists of **FIVE** questions.
Attempt 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) Discuss SEVEN features of C that would make a programmer choose it over any other
   programming language **(14 marks)**

b) Explain the use of break and continue keywords in a switch case selection control structure
   (6 marks)

c) Using a while loop, write a program to print all numbers that are divisible by 5 in the range 20 –
   200 **(5 marks)**

d) Convert the program in 1C above to a for loop control structure **(5 marks)**

Question Two

a) Explain the following categories of operators as used in C:
    (i) ++ and – -
    (ii) Conditional (? :)
    (iii) Logical
    (iv) Relational **(10 marks)**

b) Using arithmetic operators, write a C program that allows users to enter two values and an operator. The program should perform the operation and depending on the result, respond accordingly i.e. if total is greater than 10-should tell user if total is less than 10 – should tell user.
(10 marks)

Question Three

a) Write a program that allows a user to type in a string of characters then returns the number of blank spaces in that sentence or string. **(10 marks)**

b) In a data management program, there are certain actions that can be performed e.g.:
    (i) Create a file
    (ii) Add entry
    (iii) Delete entry
    (iv) Edit file
    (v) Search file

Using a switch case, write a program that allows a user to choose the action he wishes to be performed i.e. between 1 and 5 then the program executes that block of action **(10 marks)**

Question Four

a) Define: **(5 marks)**
    (i) Algorithm
    (ii) Flowchart

b) Describe the FOUR qualities a sequence must possess for it to qualify as an algorithm **(4 marks)**

c) Explain the advantages of flowcharts **(3 marks)**

d) (i) After an exam, 50 mark sheets have been given to you. Write an algorithm that ensures that all these mark sheets are checked and students who have passed with 1st division printed
(5 marks)
    (ii) Draw a flowchart for d(i) above **(3 marks)**

Question Five

a) Describe the following categories of control structures as used in C:
    (i) Sequential
    (ii) Selection
    (iii) Looping or iteration **(10 marks)**

b) Draw the corresponding flow charts for the selection and looping control structures **(8 marks)**

c) Outline the differences between a DO-WHILE and a WHILE LOOP structure **(2 marks)**