TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN ELECTRICAL & ELECTRONIC ENGINEERING (BSEE)

SMA 2175: COMPUTER PROGRAMMING I

END OF SEMESTER EXAMINATION
SERIES: JULY 2014
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory)

a) Define the following programming concepts:
   (i) Pseudo code **(2 marks)**
   (ii) Abstraction **(2 marks)**
   (iii) Algorithm **(2 marks)**

b) Using appropriate examples, briefly discuss any FOUR rules that apply in naming a variable. **(4 marks)**

c) Differentiate between the following:
   (i) Compiler and interpreter **(4 marks)**
   (ii) Syntax errors and logical errors **(4 marks)**
   (iii) Low level and high level language **(4 marks)**
   (iv) Top-down design and bottom-up design and implementation **(4 marks)**

d) (i) What is modular concept in programming **(2 marks)**
(ii) Mention any TWO benefits of modular programming **(2 marks)**

Question Two

a) A program is required for reading in a student's name and the scores obtained in two subjects. The output of the program will consist of the student's name, the two scores, the average of the two scores and a comment. The comment is based on the average as follows:

Average	Comment
≥ 70	Good
< 70	Poor

Write a program to solve the problem using a high level language **(7 marks)**

b) Define a variable as used in C programming language **(2 marks)**

c) List and explain any THREE standard types for variables used in C programming **(6 marks)**

d) Give THREE advantages of using comments in a program **(3 marks)**

e) List any TWO advantages of using a low level language **(2 marks)**

Question Three

a) (i) What do we mean by scope of a variable **(2 marks)**

(ii) Differentiate between Global and local scope of variables giving an example of each. **(6 marks)**

b) Explain with examples the syntax and working of following C constructs, use a flow chart to demonstrate the deference **(6 marks)**
(i) Do…while
(ii) Repeat until

c) Using a high level language, write codes that prints the natural numbers from Five (5) DOWN To One (1) **(6marks)**

Question Four

a) Design a flowchart can be used to print the odd numbers between 0 and 100. **(8 marks)**

b) Implement the flowchart in question (a) above using a high level language **(8 marks)**

c) List any THREE debugging aids in programming **(3 marks)**

Question Five

The algorithm given below determines the highest common factor (hcf) of two given positive integers m and n.

r = m MOD n

WHILE (r NOT EQUAL TO 0) Do

m = n

n = r

r = m MOD n

END WHILE

PRINT “Highest common factor =” n

a) Define the term Dry running **(2 marks)**

b) DRY RUN this algorithm using m = 242 n = 154. **(5 marks)**

c) Using a procedural language of your choice, translate the algorithm into a program which asks for m and n as input values. The program should also count and print how many iterations were required to obtain the hcf. Use meaningful variable names. **(7 marks)**

d) Explain the following phrase “C is called a compiled languages” **(2 marks)**

e) List any TWO characteristics/properties of a good program. **(2 marks)**

f) What is the output after the following piece of code have been executed. **(2 marks)**

```
Print f(“The”);
Print (“Technical University” /n);
Printf (“of Mombasa”) ;
```