TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING
(BSCE 11A)

ICS 2275: COMPUTER PROGRAMMING II

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2013
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 **TWO** printed pages

Question One (Compulsory)

a) Provide definitions of the following terms/phrases:
　(i) System program
　(ii) Application program
　(iii) Algorithm　　　　　　　　　　　　　　　　　　　　　　　**(4 ½ marks)**

b) Show how the PARAMETER keyboard can be used to declare FOUR different data types in FORTRAN. 　　　　　　　　　　　　　　　　　　　　**(4 ½ marks)**

c) Write a Fortran 90 program that prints three integer values a, b and c 　　**(3 marks)**

d) Describe all the steps of problem solving that can do with or without the use of computers.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(5 marks)

e) Formulate an algorithm to determine the greater two numbers 　　　**(4 marks)**

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f) Explain the algorithm in part (e) above using a flowchart. **(4 marks)**

g) Write a Fortran 90 program to implement the algorithm in (e) above. **(5 marks)**

Question Two

a) List FOUR application of comments in programming. **(3 marks)**

b) Give the basic structure of a FORTRAN 90 program. **(5 marks)**

c) Write a FORTRAN program that outputs the following column of numbers **(5 marks)**

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1    1
2    8
3    27
4    256
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(6 marks)

d) Write a FORTRAN program that prompts the user for the elements of two dimensional vectors and subtracts the vectors. **(6 marks)**

Question Three

a) List THREE categories of programming languages. Give ONE application for each. **(3 marks)**

b) Create a FORTRAN array that can calculate the average of ten numbers **(5 marks)**

c) Write a FORTRAN program that prompts a student for his surname, age and class. The program should display the entries made and then record them into a data file. **(6 marks)**

d) Describe FOUR softwares that the form the program development environment. **(6 marks)**

Question Four

a) Define the term variable scope **(2 marks)**

b) Outline with examples the difference between local variables and global variables **(3 marks)**

c) Describe FIVE steps of the system development life cycle **(5 marks)**

d) Write a FORTRAN program that use a function to solve the equation $P = x^2 + y^2$ when $x = 1.5$ and $y = 2.0$.

Question Five

a) What is stepwise refinement **(2 marks)**

b) Describe the process of stepwise refinement **(4 marks)**

c) List FOUR advantages of stepwise refinement **(4 marks)**

d) Write a FORTRAN program that prompts a student for his surname, age and class. The program displays the entries and then records them on a data file. **(5 marks)**

e) Write a program called interest of 90 that calculates the value of $1000 investment after five years for interest rates of 2%, 4%, 6% and 8% and writes the interest rates and results neatly on the screen. **(5 marks)**