TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

SMA 2276: COMPUTER PROGRAMMING - FORTRAN

END OF SEMESTER EXAMINATION
SERIES: APRIL 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 (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) What is the first line of every FORTRAN program?   **(1 mark)**

b) What are the FIVE arithmetic operators of FORTRAN?   **(5 marks)**

c) Give FOUR examples of intrinsic functions.   **(4 marks)**

d) State TWO types of errors in FORTRAN.   **(2 marks)**

e) Rewrite the code below to use the DO While statement: **(5 marks)**
DO I = 1, n = 1
SUM = SUM + 1
END DO

f) What data types should be used to represent the following items: **(3 marks)**
   (i) Number of children at school
   (ii) Letter grade on an exam
   (iii) Average number of school days absent each year.

g) Draw a graphical represent of what an array looks like. **(5 marks)**

h) Write a declaration of a variable to serve each purpose. **(4 marks)**
   (i) Hold the name of a person
   (ii) Hold the number of cows slaughtered in 2013
   (iii) Hold the maximum weight a car can carry
   (iv) Hold whether the aforementioned proposed weight is too large for car.

i) What is a programming language? **(1 mark)**

Question Two

a) Write a FORTRAN program that prompts the user for length and width and prints the area.
(10 marks)

b) Create a FORTRAN program that determines positive and negative numbers when a number is entered by a user. **(10 marks)**

Question Three

a) Write a select case structure, which does different operations when an integer variable is negative, it is zero, or it is one of the prime numbers (3, 5, 7, 1, 13). In other cases, nothing happens or is done. **(10 marks)**

b) Declare an integer array iarray which contains 3 rows and 4 columns. Initialize the first row with integer values 1 to 4 (from left to right), the second row with integers from 5 to 8, and fill the last row with -2. Then print the array row by row so that each output line contains the elements of one row at a time. **(10 marks)**

Question Four

a) What are the iteration counts of the following DO loops, the values of loop variable i inside the loop, and the value of the loop variable after the do construct? **(10 marks)**

DO i = 1, 5 DO i = 5, 0, - 1 DO i = 10, 1, -2 DO i = 0, 307 DO i = 3, 2, 1

b) Write a program to demonstrate the behavior of the loops above. **(10 marks)**

Question Five

a) Write a main program and internal function that returns the sum of two real numbers supplied as arguments. **(10 marks)**

b) Write a FORTRAN program to find the greatest integer among three given integers entered by the user. **(10 marks)**