

**CSC&CSM – Algorithm and
Programming**

T004

Thursday, 30/10/2014

08:30 - 11:30 AM

WORKFORCE DEVELOPMENT AUTHORITY



P.O. BOX 2707 Kigali, Rwanda Tel: (+250) 255113365

**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2014
TECHNICAL AND PROFESSIONAL TRADES**

EXAM TITLE : Algorithm and Programming

OPTIONS :

- Computer Science (CSC)
- Computer Science and Management (CSM)

DURATION : 3hours

INSTRUCTIONS :

The paper consists of **three (3) Sections** :

Section I: Eleven (11) questions, all **Compulsory**. **55marks**

Section II: Five (5) questions, **Choose any Three (3)**. **30marks**

Section III: Three (3) questions, **Choose any One (1)**. **15marks**

SECTION I. FOURTEEN (14) COMPULSORY QUESTIONS

01. What do data types indicate in the algorithm? **2marks**
02. Define the following terms : **4marks**
- A Compiler
 - A Debugger
03. What are the processes of writing a successful program? **5marks**
04. Make a flowchart to input temperature, if temperature is less than 32 then print "below freezing" otherwise print "above freezing"? **5marks**
05. What is the difference between DBMS and RDBMS? **4marks**
06. What are the Advantages of a Relational Database? **3marks**
07. Write an algorithm which swaps the values of two numbers. **2marks**
08. Define computer algorithm? **3marks**
09. What's the difference between passing parameters by reference and passing by value? **4marks**
10. What's the difference between $x++$ and $++x$? Which is expensive among them? **5marks**
11. Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another.
(Use While statement). **5marks**
12. What is the initialization of variables? **3marks**
13. Visual Basic uses several types of procedures (sub, event-handling, function, property, operator and generic). Explain them. **6marks**
14. Outline four (4) keys elements that make up a Visual Basic project. **4marks**

SECTION II. ATTEMPT ANY THREE (3) QUESTIONS

15. Write a C++ program that asks the user to type the value of N and computes N!. **10marks**
16. Write a C program that asks the user to type 10 integers and writes the sum of these integers. **10marks**
17. Mention the types of errors that can occur in any program, with an example of each type of error. **10marks**
18. a) Outline five (5) last steps in the programming process. **5marks**
b) In not more than ten lines, give a brief history of Visual Basic. **5marks**
19. a) This code is using the If statement, write down the corresponding code by using Select Case statement. **5marks**

If Age = 5 Then

Category = "Five Year Old"

Elseif Age >= 13 and Age <= 19 Then

Category = "Teenager"

Elseif (Age >= 20 and Age <= 35) Or Age = 50 Or (Age >= 60 and Age <= 65)

Then

Category = "Special Adult"

Elseif Age > 65 Then

Category = "Senior Citizen"

Else

Category = "Everyone Else"

End If

- b) Write a C program to reverse any given integer number. (Use FOR statement). **5marks**

SECTION III. ATTEMPT ANY ONE (1) QUESTION

- 20.** Write an algorithm program to calculate the roots of a quadratic equation of the form : $ax^2 + bx + c = 0$ **15marks**
- 21.** What is the difference between Typed and UnTyped DataSets in ADO.NET? **15marks**
- 22.** Write Euclid's Flow chart for the greatest common divisor (gcd) of two numbers A,B. **15marks**