THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

136/1

COMPUTER SCIENCE 1
(For Both Schools and Private Candidates)

Time: 3 Hours **Thursday, 21st February 2013 a.m.**

Instructions

1. This paper consists of **thirteen (13)** questions from sections A and B.
2. Attempt **all** questions in section A and any **two (2)** questions from section B.
3. Cellular phones are **not** allowed in the examination room.
4. Write your **Examination Number** on every page of your answer booklet.

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SECTION A (60 marks)

Answer **all** questions in this section.

1. (a) Differentiate Computer hardware from Computer software; give two examples for each component of computer system. **(3 marks)**
   (b) By giving examples, describe the concept of computer memory. **(3 marks)**

2. (a) State two reasons why a computer system failure might occur? **(1 mark)**
   (b) Mention two ways of recovering a file that has been lost or corrupted. **(1 mark)**
   (c) (i) State four reasons, why do windows programs stop responding? **(2 marks)**
   (ii) What should be done to solve the problem in part 2(c) (i) above? **(2 marks)**

3. The cost of an international call from Tanzania to Uganda is calculated in Tshs as follows: Connection fee 199/=; 200/= per minute is charged for the first three minutes; and 45/= for each additional minute. Design an algorithm that asks the user to enter the number of minutes the call lasted. The algorithm then uses the number of minutes to calculate the amount due. **(6 marks)**

4. (a) Explain the importance of using a compiler rather than an interpreter to execute a piece of high level language code. **(2 marks)**
   (b) What will be printed by the following program if the input is 20 and 15?

```
#include <iostream>
using namespace std;
const int NUM = 10;
const double x = 20.5;

Int main ()
{
    int a, b;
    double z;
    char grade;

    a=25;
    cout<< " a="<< a << endl;
    cout << "enter two integers :";
    cin>> a >>b;
    cout<< endl;
    cout<< "The numbers you entered are"<< a <<"and" << b << endl;
     z= x + 2 *a – b;
    cout << "z" << z << endl;
    grade = 'A';
    cout<< your grade is "<< grade << endl;
    a = 2* NUM + z;
    Cout << "the value of a ="<< a << endl;
    System ("PAUSE");
    Return 0;
    }
```

(4 marks)

5. A company has introduced a new computer system in its headquarters building and regional offices. Each of the offices has a network of computers. The individual networks are joined together to allow communication within the building and between the headquarters and regional offices. Explain the purpose of the following network components and how they can be used in the company's offices.
   (a) Bridges
   (b) Routers
   (c) Modems

(6 marks)

6. A bookshop contains a number of books. Each book is about a single subject. There may be more than one book for each subject. A book may have more than one author and each author may have written more than one book.

   Draw an entity relationship (E-R) diagram to represent this data model in third normal form and label the relationships. **(6 marks)**

7. (a) What is the purpose of the following Visual Basic file types?
      (i) .vb
      (ii) .frm

   (2 marks)
   (b) Explain the purpose of Name and Caption properties of menu items as used in Visual Basic project. **(2 marks)**
   (c) Differentiate an option button from a check box control as used in Visual Basic project. **(2 marks)**

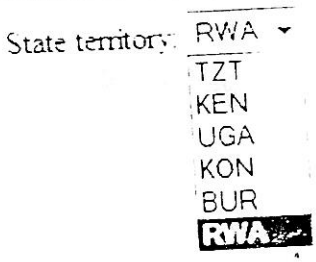
8. The gross salary of employees in Musoma fisheries company is based on basic salary and additional benefit as follows:
   (a) Employees who have worked for the company for more than 10 years receive an additional payment of 20% of their basic salary.
   (b) Monthly salary bonus based on monthly sales of fish is as follows:

Monthly Sales	Bonus Rate (%)
Above 500000	15
Between 250000 and 500000	10
Below 250000	5

   Draw flowchart for a program that would be used to calculate the gross salary and then output each employees' basic salary, gross salary and all benefits.

(6 marks)

9. (a) Write HTML codes to display the information as shown below: **(4 marks)**



(b) Explain how **.jpg** can increase the speed of page loading of web pages? **(2 marks)**

10. (a) Use Boolean laws of algebra to simplify the following Boolean expression: **(2 marks)**

$Z = (A + \overline{B} + \overline{C})(A + \overline{B}C)$

(b) Draw a logic gate circuit from the Boolean expression function given below: **(4 marks)**

$A\overline{B} + \overline{C}(A+B)$

SECTION B (40 marks)

Answer **two (2)** questions from this section.

11. Describe six characteristics of comprehensive system documentation. **(20 marks)**

12. Describe five components that must come together to produce a Computer-Based Information system. **(20 marks)**

13. Explain two positive and three negative impact of Information Technology (IT) on environmental sustainability. **(20 marks)**