REB

Rwanda Education Board

ADVANCED LEVEL NATIONAL EXAMINATIONS, 2019

SUBJECT: COMPUTER SCIENCE

COMBINATIONS:

- **MATHS-COMPUTER SCIENCE-ECONOMICS (MCE)**
- **MATHS-PHYSICS-COMPUTER SCIENCE (MPC)**

DURATION: 3HOURS

INSTRUCTIONS:

1) Write your names and index number on the answer booklet as written on your registration form and **DO NOT** write your names and index number on additional answer sheets of paper if provided.

2) Do not open this question paper until you are told to do so.

3) This paper consists of three sections: **A, B** and **C.**
   SECTION A: Attempt **ALL** questions.   **(55 marks)**
   SECTION B: Attempt any **THREE** questions.   **(30 marks)**
   SECTION C: Attempt any **ONE** question.   **(15 marks)**

4) Use only a **blue** or **black** pen.

SECTION A: ATTEMPT ALL QUESTIONS. (55 marks)

1) Give the codes for movenext, moveprevious methods in the VB. **(2 marks)**

2) Explain the peer to peer network. **(3 marks)**

3) What are the principle problems to be handled by the operating system's memory management? **(3 marks)**

4) What are the work (operation) performed by the following audio port? **(4 marks)**
   Line In
   Microphone
   Line Out
   Gameport/MIDI

5) Rewrite the following code using switch statement: **(5 marks)**

```
If (k==1)
Day="Monday";
Elseif (k==2)
Day=" Tuesday";
elseif (k==3)
Day="Wednesday";
else
Day="-"
```

6) What is the main purpose of Photoshop? **(3 marks)**

7) Describe the four (4) roles of CPU **(4 marks)**

8) Why is Multimedia important in education? **(4 marks)**

9) Write an algorithm that asks the user to enter the number and it displays the square of that number. **(4 marks)**

10) Write the output of the following program and explain your answer. **(4 marks)**

```
int i;

float f = 3.14;

i = (int) f;

cout<<i;
```

11) a) What is a function ?   **(2 marks)**

   b) Write the syntax showing how the function is declared.   **(4 marks)**

12) What is the difference between CLI vs GUI?   **(3 marks)**

13) Describe the Characteristics of Constructors.   **(4 marks)**

14) Describe the major components of a database management
    system.   **(4 marks)**

15) What is the importance of Encapsulation?   **(2 marks)**

SECTION B: ATTEMPT ONLY THREE QUESTIONS. (30 marks)

16) Write HTML code to print the following output: **(10 marks)**

Weekly days

Saturday

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

17) Write a C++ Program using array to find the average marks
    obtained by 5 students.   **(10 marks)**

18) Write the Java Program to swap two Numbers entered
    from the keyboard.   **(10 marks)**

19) Write codes of a VB 6.0 program which displays the sum
    and average of numbers ranging from 0 to 10 use
    do...loop until   **(10 marks)**

20) a) Determine the order in which the elements would be accessed during an in-order, pre-order and post-order traversal.   **(10 marks)**
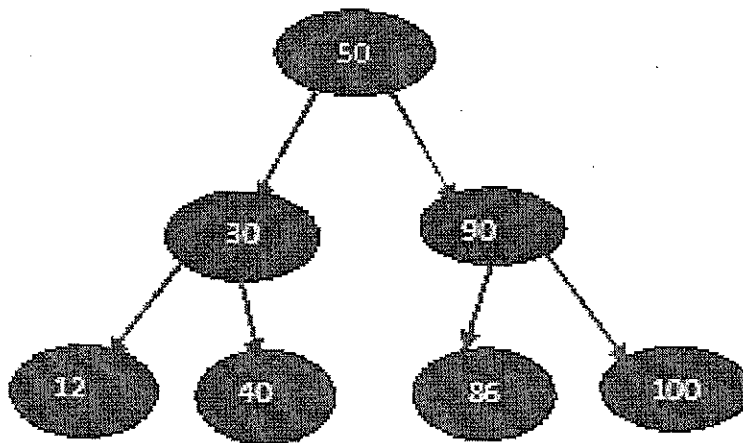
b) Determine the Path between 50 and 86.

SECTION C: ATTEMPT ONLY ONE QUESTION (15marks)

21) Consider the following instances of the Student, Enrolment and Course relations from the University relational model.

Student

Reg No	Name	Reg year	CounsellorNo
s01	Kaberuka	1993	4523
s02	Smith	1998	3412
s05	Smitoth	1997	4523
s07	Smiteth	1996	4538
s09	Nsabimana	1995	4523

Enrolment

Reg No	CourseCode	TutorNo
s01	c4	4523
s05	c2	3412
s05	c7	3412
s07	c4	4538
s09	c4	4523
s09	c2	4538
s09	c7	4523

Course

CourseCode	Title	Credit
c2	C++ Programming	100
c4	Databases	100
c7	Logic	50

Using the University relational model, give relational algebra queries to discover the following:

a) Find the reg No name registered in year 1993,1995,1997or 1998.

(2 marks)

b) Using SQL statement, display the names and Reg No of all students. **(2 marks)**

c) Display the names of all students registered since 1996. **(2 marks)**

d) Find the names of all students taking course 'c7'. **(2 marks)**

e) Specify Students whose Reg Year are less 1996 or greater than 1997 **(2 marks)**

f) Display Reg No of all students with the names of either 'Smith' or' Smitoth' **(2 marks)**

g) List the Reg No and names of Students with Reg year in the range 1995 to 1997 inclusive. **(3 marks)**

22) Explain the following network topologies:

        Bus topology   **(3 marks)**

        Ring topology   **(3 marks)**

        Star topology   **(3 marks)**

        Mesh topology   **(3 marks)**

        Extended star topology   **(3 marks)**

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