**Computer Science**

**015**

**07 Nov.2011 8.30am -11.30 am**

**REPUBLIC OF RWANDA**

RWANDA EDUCATION BOARD (REB)

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# ADAVANCED LEVEL NATIONAL EXAMINATIONS 2011

## SUBJECT: COMPUTER SCIENCE

**COMBINATIONS : MATHS-COMPUTER SCIENCE-ECONOMICS: MCE**
**MATHS-PHYSICS-COMPUTER SCIENCE: MPC**

## DURATION : 3 HOURS

## INSTRUCTIONS :

This paper consists of **three** sections: **A**, **B** and **C**.

**Section A**: Attempt **all** questions. **(55 marks)**

**Section B**: Attempt **three** questions. **(30 marks)**

**Section C**: Attempt **any one** question. **(15 marks)**

**SECTION A: Attempt all questions from this section.** ***(55 marks)***

01. Distinguish the different families of computers. ***(4 marks)***

02. State **five** differences between DOS and Linux. ***(5 marks)***

03. List **four** different types of Web Browsers. ***(4 marks)***

04. Convert $1011.101_2$ to decimal. ***(4 marks)***

05. Convert 183 to binary. ***(4 marks)***

06. Explain the DOS commands below: ***(6 marks)***

**FDISK:**
**FORMAT:**
**ATTRIB:**
**SYS:**
**CHKDSK:**
**TREE:**

07. What is an algorithm and how are algorithms essential? ***(5 marks)***

08. What does e-commerce mean? ***(3 marks)***

09. What is a Browser? ***(3 marks)***

10. Explain the advantages of using database management system than a file system of an end user? ***(6 marks)***

11. What is computer programming? ***(2 marks)***

12. What are the uses of a computer? ***(3 marks)***

13. Define the term Client-server? ***(2 marks)***

14. Define "front-ends" and explain why they are called so. ***(3 marks)***

15. Which is the correct hierarchy of data from the smallest to the largest is : ***(1 mark)***
    (a) bits-->characters-->fields-->records-->files
    (b) characters-->records-->fields-->files-->database
    (c) database-->files-->fields-->records-->characters
    (d) fields-->files-->records-->characters-->database

**SECTION B: Attempt any three questions.** ***(30 marks)***

16. Rewrite the following code fragment so that it uses a "do...while..." loop to accomplish the same task. ***(10 marks)***

```
int n;
cout << "Enter a non-negative integer: ";
cin >> n;
while (n < 0)
{
        cout << "The integer you entered is negative." << endl;
        cout << "Enter a non-negative integer: ";
        cin >> n;
}
```

17. With short explanation give **three** advantages and **two** disadvantages of the Internet ***(10 marks)***

18. Explain objects, classes and clients? How do clients and components communicate? ***(10 marks)***

19. Give the meaning of the following queries (one line of explanation is required).

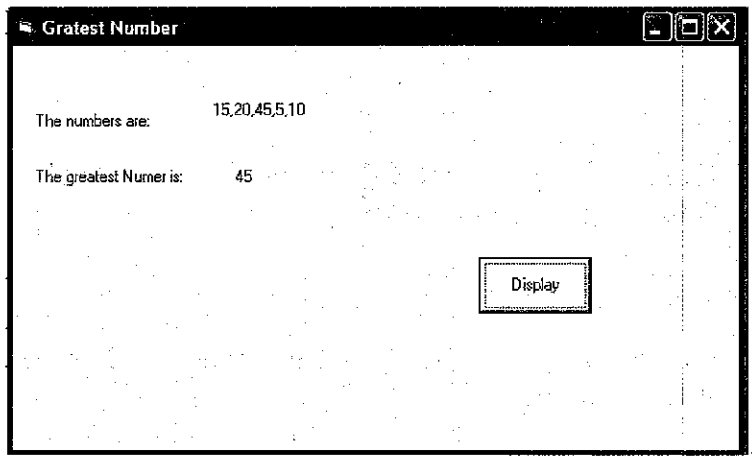
(a)
```
select * from avion where capacite < 350
        union
select * from avion
where localisation = 'Nairobi';
```
***(5 marks)***

(b)
```
select * from vol where ville_dep = 'Nairobi'
        intersect
select * from vol where ville_arr = 'Kigali'
        intersect
select * from vol where h_dep > 6 PM;
```
***(5 marks)***

20. Why is a hard disk technically 80 GB but the operating system treats it as 72GB? ***(10 marks)***

**SECTION C: Attempt any one question from this section.** ***(15 marks)***

21. 1. Write in Visual Basic a program to find the greatest of five numbers as shown below: ***(15 marks)***




22. A "1.44 MB" floppy disk has 80 cylinders (numbered 0 to 79), 2 heads (numbered 0 to 1) and 18 sectors (numbered 1 to 18).
Calculate, its capacity in sectors. ***(15 marks)***

23. Draw a Flow chart of an algorithm (Euclid's algorithm) for calculating the greatest common divisor (g.c.d) of two numbers **a** and **b** in locations named **A** and **B**. The algorithm proceeds by successive subtractions in two loops: IF the test **B** ≤ **A** yields "yes" (or true) (more accurately the number **b** in location **B** is less than or equal to the number **a** in location **A**) THEN the algorithm specifies **B** ← **B** - **A** (meaning the number **b** - **a** replaces the old **b**). Similarly IF **A** > **B** THEN **A** ← **A** - **B**. The process terminates when (the content of) **B** is **0**, yielding the g.c.d in **A**. ***(15 marks)***