

# COMPUTER SCIENCE

## 016

04/11/2014 2PM- 5PM



## ADVANCED LEVEL NATIONAL EXAMINATIONS, 2014

**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 has **THREE** sections **A** , **B** and **C**.

**SECTION A** : This section is compulsory. (55 marks)

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

**SECTION C** : Attempt **Only one** question. (15 marks)

4. Use only blue or black pen and pencil.

**SECTION A: ATTEMPT ALL QUESTIONS. (55 marks)**

1. Give 3 examples of an audio port that connects audio devices to the computer. (3marks)
2. List the 3 motherboard form factors. (3marks)
3. Tick in the cell where the device matches with the device type as shown below. (4 marks)

N°	DEVICES	INPUT DEVICES	OUTPUT DEVICES	STORAGE DEVICES
1	<b>Touchpads</b>			
2	<b>Light Pen</b>			
3	<b>Scanner</b>			
4	<b>Electronic Whiteboard</b>			
5	<b>RAID</b>			
6	<b>Speaker(s)</b>			
7	<b>Monitor</b>			
8	<b>PC Card</b>			

4. Write an algorithm that asks the user to enter two numbers and it displays the product of those numbers if it is nul, negative or positive. (6marks)
5. What is a loop? (2marks)
6. Write an algorithm which uses **do ... while** loop and displays numbers from 1 to 5. (4marks)
7. Distinguish seek time from data rate. (3marks)
8. Study the program below and answer the questions that follow.

```
#include <stdio.h>

int g = 20;

int main ()
{int g = 10;

printf ("value of g = %d\n", g); return 0; }
```

- (a) What is the output ? (2marks)
- (b) Explain why that output. (3marks)
9. (a) What is data structure? (2marks)
- (b) Show with examples how the data structures are declared. (3marks)
10. Which of the following is not derived data type in c? (2marks)
- (a) Function (b) Pointer (c) Enumeration
- (d) Array (e) All are data type
11. Which of the following is an integral data type? (2marks)
- (a) Void (b) Char (c) Float (d) Double
- (e) None of these
12. Explain the importance of : (3marks)
- (a) plug and play system (b) Shell

13. What is a Protocol? **(2marks)**
14. Describe 4 advantages of using relations database system in tables. **(4marks)**
15. How is the memory in multi-process system managed? **(2marks)**
16. Describe the Trash can icon in the Linux . **(3marks)**
17. Multiply  $(1000.10)^2$  by  $(10.1)^2$  . **(2marks)**

**SECTION B: ATTEMPT ANY THREE QUESTIONS. (30 marks)**

18. Swapping means exchanging the values of one variable with another variable.  
Write a C function that swaps two numbers and display the values of those numbers before and after the swap. **(10marks)**
19. (a) Create a table of your choice with at least 4 different attributes in SQL. **(2marks)**  
(b) Given an "Employee" table below:

Name	Phone	Address	Salary	Evaluation
Kanamugire	08564433	Kacyiru	185000	0.75
Rurangwa	51231578	Nyamata	123000	0.90
Bahizi	03314563	Rwamagana	230000	0.80
Giraneza	08567838	Remera	197000	0.85

Write SQL statements for :

- (i) Inserting a new employee into the table. **(2marks)**
- (ii) Updating the table to give a salary increase of 20% to those employees whose evaluation is above or equal to 0.80. **(2marks)**
- (ii) Destroying table name " "Employee" ". **(2marks)**
- (iv) List the names, salary and address of employees whose evaluation are less than 0.8 or greater than 0.85. **(2marks)**
20. (a) Define a bit. **(2marks)**  
(b) Find the binary equivalent of  $(353.45)_{10}$ . **(2marks)**  
(c) Convert  $(7834.523)_{10}$  to octal system. **(2marks)**  
(d) Convert  $(56734.5275)_{10}$  into hexadecimal. **(2marks)**  
(e) Represent "-18" in signed magnitude form. **(2marks)**
21. Write a C++ program that decreases the numbers from 10 to 0 number and when it reaches to number 4 it skips that iteration, using loop. **(10marks)**
22. (a) What are the uses of RDMS in a database? **(8marks)**  
(b) What is a projection in SQL ? **(2marks)**

**SECTION C: ATTEMPT ANY ONE QUESTION. (15 marks)**

23. What are the functions of the following codes?

**(15 marks)**

- |            |             |               |             |
|------------|-------------|---------------|-------------|
| (a) ls     | (b) cd      | (c) cp        | (d) rm      |
| (e) pwd    | (f) cat     | (g) Ip config | (h) ping    |
| (i) chkdsk | (j) comp    | (k) erase     | (l) deltree |
| (m) dir    | (n) restore | (o) undelete  |             |

24. (a) Enumerate the procedures followed to create a new project in VISUAL BASICS.

**(6marks)**

(b) Write a VB Program

**(9marks)**

- If a user checks the first option (Option1), the program should display the addition of the numbers entered in Text1 and Text2 in the Text3 if a user clicks to a button compute.
- If a user checks the second option (Option2), the program should display the multiplication of the numbers entered in Text1 and Text2 in the Text3 if a user clicks to a compute button.
- If a user checks the third option (Option3), the program should display the subtraction of the number entered in Text1 by Text2 in Text3 if a user clicks to a compute button.
- If a user checks the fourth option (Option4), the program should display the division of the number entered in Text1 by Text2 in Text3 if a user clicks to a compute button.
- The program should display nothing in Text1, Text2 and Text3 if a user clicks to a Clear button.
- Remember the program should be closed.

For example : Assume that a user checked the following program

The screenshot shows a Visual Basic application window titled "EXAM". Inside the window, there are three text boxes arranged vertically, labeled "NUMBER1", "NUMBER 2", and "ANSWER". Below these text boxes, there are four radio buttons for selecting an operation: "ADD", "MULTIPLICATION", "SUBTRACTION", and "DIVISION". At the bottom of the window, there are three buttons: "COMPUTE", "CLEAN", and "EXIT". The "COMPUTE" button is positioned below the "ADD" radio button, the "CLEAN" button is below the "MULTIPLICATION" radio button, and the "EXIT" button is below the "DIVISION" radio button. The "SUBTRACTION" radio button does not have a button directly below it.