

**NYAMAGABE DISTRICT**

**ADVANCED LEVEL EXAMINATION FOR SENIOR SIX**

**SUBJECT: COMPUTER SCIENCE**

**COMBINATIONS: MATHS-COMPUTER SCIENCE-ECONOMICS (MCE)**

**MATHEMATICS-PHYSICS-COMPUTER SCIENCE (MPC)**

**DURATION: 3HOURS**

**INSTRUCTIONS:**

1. Write your names and index number on the answer sheet.
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. **(15marks)**

4. Use only **blue** or **black** pen and pencil.

**SECTION A:** This section is Compulsory.

**(55 marks)**

- 1) What are the uses of RDBMS in database? **(5 marks)**
- 2) Why we use friend functions in C++? **(3 marks)**
- 3) What is meant by case sensitive? Is Java case sensitive? **(3 marks)**
- 4) Justify the reason why Smartphone need an operating system. **(3 marks)**
- 5) What are the four functions of operating system? **(4marks)**
- 6) Discuss a situation where file is considered as Executable file **(3 marks)**
- 7) Describe 4 advantages of using relations database system in tables. **(4 marks)**
- 8) Define the term artificial intelligence. **(2marks)**
- 9) Highlight some of the achievements of the fifth computer generation. **(3marks)**
- 10) Work out the decimal equivalents of the following binary numbers
  - (a) 0.110010 **(2marks)**
  - (b) 11.101 **(2marks)**
- 11) (a) Define what IP address is. **(2marks)**
  - (b) Explain why Switch is much preferred than a HUB **(2 marks)**

**12)** Observe the figure below and answer the followed questions

**(5marks)**



1. Discuss what would happen if a drink was spilled into the keyboard of a laptop.
2. How can you prevent this laptop to be damaged?
3. What can you do if the laptop and water are in contact?
4. What can you consider while choosing cleaning materials and products?
5. How can you keep waste products after cleaning a laptop?

**13)** In a bank, any customer can create and use an identity (e.g., a user name and password) to log into that bank's online service but the bank's policy must ensure that the user can only access to his/her individual ac-count online once his/her identity is verified.

a. Identify which type of security is used in this bank?

**(2mark)**

b. Explain why is it important?

**(3marks)**

**13)** Compare and contrast the IPV4 and IPV6

**(3marks)**

**14)** Using while loop; write a C++ program that would be used to display 50 first positive integers in descending order.

**(4marks)**

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

**15) (a)** Explain what is Open System Interconnect (OSI) model in networking. **(3marks)**

**(b)** Explain the layers of OSI model. **(7marks)**

**16)** Write a C++ program that calculate and displays alternative roots of quadratic equation.

**(10marks)**

**17)(a)** What is a projection in SQL? **( 3marks )**

**(b)** Explain SQL constraints. **(7marks)**

**18)** Write a VB application that prints the numbers divisible by 5 or 3 in the range from 1 to 20.

**(10 marks)**

**19)** Given the table “Employee” below:

Name	Phone	Address	Salary	Evaluation
Kanamugire	078564330	Kacyiru	120000	0.90
Rurangwa	0723984765	Nyamata	176000	0.85
Bahizi	0734590879	Huye	145000	0.70
Giraneza	0788457682	Rusizi	125000	0.80
Sine	0728790342	Rwamagana	209000	0.85
Zaninka	0722346790	Gisagara	149000	0.95

Write SQL commands for:

a. Creating this relation. **(2mark)**

b. Inserting a new employee into the table. **(2mark)**

c. Update the table to give a salary increase of 20% to those employees whose evaluation is above or equal to 0.80 **(2mark)**

d. Display those employees whose salary is more than 200 000. **(2mark)**

e. Change Phone attribute into Phone\_number **(2mark)**

**SECTION C:** Attempt **Only one** question.

**(15marks)**

**20)** The government of Rwanda is helping students wishing transfer from SCHOOL A to SCHOOL B. The students must send their request to REB website using the form below. Write HTML code that displays this form. **(15marks)**

**BOARDING SCHOOL REQUEST FORM**

STUDENT ID:	<input type="text"/>
FIRST NAME:	<input type="text"/>
LAST NAME:	<input type="text"/>
AGE:	<input type="text"/>
SEX:	<input type="text" value="v"/>
PROVINCE:	<input type="text"/>
DISTRICT:	<input type="text"/>
SECTOR:	<input type="text"/>
MARKS:	<input type="text"/>
SCHOOL A:	<input type="text"/>
SCHOOL B:	<input type="text"/>
CLASS:	<input type="text" value="v"/>
PHOTO:	<input type="text" value="Browse..."/>
<input type="button" value="Send"/>	

**21)** Write a VB program that allows a user to enter two floating point number from the keyboard and it requests a user to enter his/her preference in order to perform one operation from (addition, subtraction, multiplication and division) operation's menu. The program will display the result of an operation.

Interface of your program should be similar to the following:

**(15marks)**

Form1

Enter first number:

Enter second number:

## OPERATION MENU

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- 1. Addition
- 2. Substraction
- 3. Multiplication
- 4. Division

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Enter your preference:

**Calculate** **Clear** **End**

The result of chosen operation is: