COMPUTER SCIENCE

016

31/07/2023   8:30 AM- 11:30 AM

NESA | NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

ADVANCED LEVEL NATIONAL EXAMINATIONS, 2022-2023

SUBJECT: COMPUTER SCIENCE

COMBINATIONS:

> - MATHEMATICS-COMPUTER SCIENCE-ECONOMICS **(MCE)**
>
> - MATHEMATICS-PHYSICS-COMPUTER SCIENCE **(MPC)**

DURATION: 3 HOURS

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 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) What are the four classifications of computers based on their size? **(4 marks)**
2) Differentiate between hardware and software failure. **(4 marks)**

3) Write pseudocode to check whether a given number is positive, negative or zero. **(6 marks)**
4) Explain the role of computer graphic in Education and training. **(4 marks)**
5) Explain disk formatting in terms of computer. **(4 marks)**
6) Is C++ case sensitive? What is meant by the term "case sensitive"? **(4 marks)**
7) Outline any two advantages and disadvantages of FDDI within a Local Area Network. **(4 marks)**
8) A-member function of a class can be defined inside the class or outside of class. Provide the syntax which demonstrates how to define the member function outside of class? **(5 marks)**

9) After studying Java, you are requested to make a proposal of Enterprise web Application for your school, explain the process to create that website and test. **(5 marks)**

10) What is the difference between assignment operator and equality operator? **(4 marks)**
11) Java is a "platform-independent language." What does this mean?
(3 marks)

12) Can a class extend itself? Explain your answer. **(3 marks)**
13) Describe the characteristics of Secondary Memory. **(5 marks)**

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

14) Write C++ programs to interchange the values of two variables without using a third variable. **(10 marks)**
15) Compare a peer to peer network and a client server network. **(10 marks)**
16) Write a vb program to display the following patterns on the label control placed on the form (both vb6.0 and vb.net are allowed, use one you want) **(10 marks)**

```
*
**
***
****
*****
```

17) Develop the program below using bufferedReader method.   **(10 marks)**

```
package javaapplication17;
import java.util.Scanner;
public class JavaApplication17 {

    public static void main(String[] args) {
int k,ss,m,largest;
Scanner s=new Scanner(System.in);
System.out.println("Enter age of student K: ");
 k=s.nextInt();
System.out.println("Enter age of student SS: ");
ss=s.nextInt();
System.out.println("Enter age of Student M: ");
m=s.nextInt();
if (k<ss && k<m)
{ System.out.println("youngest is K with : "+k +"age(s)"); }
else if (ss<k && ss<m)
{ System.out.println("youngest is SS with: "+ss +"age(s)"); }
 else if  (m<k && m<ss)
{ System.out.println("youngest is M with: "+m +"age(s)"); }
else
 System.out.println(" both or 2 among K, SS and M are in the same
age" );

    }
}
```

18) A database of an employee is identified by EmpId, FirstName,
    Surname, Address and Birthdate while a project is identified
    by its ProjectId and ProjectName. Draw a diagram
    representing the Entity Relationship.   **(10 marks)**

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

19) (a)Create a table of your choice with at least 4 different attributes
in SQL.   **(15 marks)**
(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. Insert the new employee into the table.
ii.Update the table to give a salary increase of 20% to those employees
whose evaluation is above or equal to 0.80.
iii. Destroying table name "Empoyee."
iv. List the names, salary and address of employees whose evaluation
are less than 0.8 or greater than 0.85. (0.8 and 0.85 are not
included)

20) Using a pointer, write a C++ program that will display an area
and volume of a sphere (area=$4\pi r^2$,   volume=$\frac{4}{3}\pi r^3$).   **(15 marks)**

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