

**KAMONYI DISTRICT
HOLYDAYS WORK, 2024-2025
LEVEL: SENIOR SIX
SUBJECT: COMPUTER SCIENCE (100 MARKS)**

COMBINATION: MATHS-COMPUTER SCIENCE-ECONOMICS: MCE

INSTRUCTIONS:

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

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

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

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

SECTION A: ATTEMPT ALL QUESTIONS (55 MARKS)

1. Why is computer security important? (2 Marks)

- a) Because it's mandated by law
- b) To protect systems and data from unauthorized access and damage
- c) To increase the speed of computer operations
- d) None of the above

2. Which of the following is NOT a common type of computer threat? (2Marks)

- a) Virus
- b) Worm
- c) Spyware
- d) Firewall

3. Which command is used to display a physical address of the computer machine?(2 Marks)

4. List any 5 main functions of the protocols. (5 Marks)

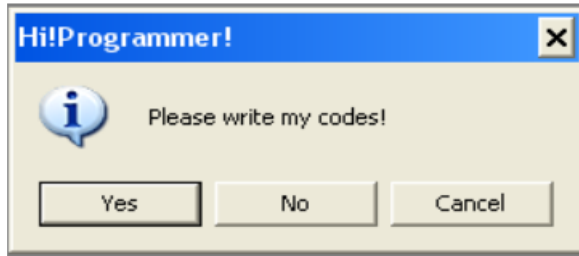
5. Which of the following are TCL commands? (2 Marks)

- a) UPDATE and TRUNCATE
- b) SELECT and INSERT
- c) GRANT and REVOKE
- d) ROLLBACK and SAVEPOINT

6. Outline any two advantages and disadvantages of FDDI within a Local Area Network.(4Marks)

7. Explain the integrity constraints used during table creation (5Marks)

8. write codes that give the following results: (5 Marks)



9. Is it possible to have a deadlock involving only one process? Explain your answer **(4 Marks)**

10. by the help of table, categorize the following file types in extension file: **(3Marks)**

1. Audio file formats,
2. Compressed file
3. Word processor and text file formats
4. Video file format
5. Spreadsheet file formats
6. Executable file

11. How does the concept of logical addressing differ from physical addressing in memory Management? **(4 Marks)**

- a) Logical addressing deals with data organization, while physical addressing focuses on memory hardware.
- b) Logical addressing refers to memory locations visible to the programmer, while physical Addressing refers to actual memory locations.
- c) Logical addressing is used in virtual memory systems, while physical addressing is used in Physical memory.
- d) Logical addressing uses hexadecimal notation, while physical addressing uses binary Notation.

12. What are the classes implementing List and Set interface? **(3 Marks)**

13. What is the output of this program? **(5 Marks)**

```
Package vector1;
import java.util.*;
public class vector {
    public static void main(String[] args) {
        java.util.Vector obj = new java.util.Vector(4, 2);
        System.out.println("initial size is : "+obj.size());
        obj.addElement(new Integer(3));
        obj.addElement(new Integer(2));
        obj.addElement(new Integer(5));
        System.out.println("initial capacity is : "+obj.capacity());
        obj.addElement(new Double(15.4));
        obj.addElement(new Double(20.67));
        System.out.println("new capacity after 2 additions : "+obj.capacity());
        System.out.println(" vector elements are : "+obj);
        obj.removeAll(obj);
        System.out.println(obj.isEmpty());
    }
}
```

}

14. Having below, already an initialized array called X: (5 Marks)

X	4	20	40	60	25	30	44	80
index	0	1	2	3	4	5	6	7

15. a) Is it possible to create a folder using application software? Justify your answer? (2Marks)

b) Is it possible to create a file using an operating system? Justify your answer? (2Marks)

SECTION B: CHOOSE 3 QUESTIONS ONLY (30 MARKS)

16. A) Identify four areas where SQL can be applied? (4 Marks)

B) Organize the difference between Theta Join and Equi Join? (3 Marks)

C) DUSHIME wants to connect MS Access database to his VB form, but unfortunately he does not see ADO data control on visual basic toolbox what are the steps can you tell him to follow so that he can be able to view ADO on visual basic toolbox? (3 Marks)

17. Write a VB program which allow a user to Input 10 elements of an array and then displays even and odd numbers separately. (10 Marks)

18. The following table shows the details of employees in human resources unity, table named Employee

Employee ID	First name	Last name	Salary	Gender
1	Harerimana	innocent	500000	gabo
2	Karemera	Rachidy	600000	gabo
3	Umuhoza	Mariam	550000	gore
4	kayisinga	Hamed	300000	jabo
5	Mukamana	jenniffer	320000	gore
6	Kamanayo	Odile	200000	gore
7	Umutoni	Manila	100000	gore

Answer the following questions from table Employee:

a) Write the query to get only “first name” column from employee table. (1Mark)

b) Write a query to get First name in upper case as “First name”. (1Mark)

c) Write the query to combine first name and last name and display it as “Name” (also include whitespace between and last name). (2Marks)

d) Select Employee detail whose name is “Manila” (1Mark)

e) Get all employees from Employee table whose first name contain K. (1Mark)

f) Get all employees from employee table whose “gender” ends with ‘re’. (1Mark)

g) Get highest salary and rename maximum from employee table (1Mark)

h) Show Employee details whose salary is less than or equal to 550000;

consider gore only and show the salary in ascending order. **(2Marks)**

19. Suppose you are asked an advice for school network connection where they will be able to use the internet with the following devices: all smart Phones and tablets a laptop computer in a school, 40 desktops that doesn't have wireless interface card, connecting staffs home building that is in a distance of 2 kilometers of the internet source.

- Name a device that will be used to receive internet in for a school network
- Name a device and medium connection details used to connect Smart phones, tablets and a laptop
- Which device will be used to connect the same network to far building?
- What will the network identities?
- Name a device and medium connection details used to connect the above desktops to of school internet. **(10 Marks)**

20. Write a Java program that do the following: **(10 Marks)**

- Create linkedList from linked list with assigned to the variable district.
- Add the following district in the List (Gakenke, Rubavu, Gasabo, Nyagatare, Nyabihu)
- Add Bugesera District to the front of list and Karongi to the 4th position
- Replace Gasabo District with Nyarugenge
- Retrieving the Second District using Index
- Show the Size and Remove the last district in the List

SECTION C: ATTEMPT ONLY ONE QUESTION (15 MARKS)

21. Consider the following set of processes, with the length of the CPU-burst time given in Milliseconds **(15 Marks)**

PROCESS	BURST TIME	PRIORITY
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.

- Draw four *Gantt charts* illustrating the execution of these processes using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1) scheduling.
- What is the *turnaround time* of each process for each of the scheduling algorithms in part a?
- What is the *waiting time* of each process for each of the scheduling algorithms in part a?
- Which of the schedules in part a results in the *minimal average waiting time* (over all processes)?

22. Given the following tables of database (15 Mark)

Customers Table:

CustomerID	Name	Email	Phone
1	John Smith	john@example.com	123-456-7890
2	Alice Jones	alice@example.com	456-789-0123
3	Bob Johnson	bob@example.com	789-012-3456
4	Mary Brown	mary@example.com	234-567-8901
5	Sarah Davis	sarah@example.com	567-890-1234
6	David Wilson	david@example.com	890-123-4567

Orders Table:

OrderID	CustomerID	Product	Quantity	OrderDate
1	1	Laptop	1	2023-01-15
2	2	Smartphone	2	2023-02-20
3	3	Tablet	1	2023-03-25
4	4	Headphones	1	2023-04-10
5	5	Camera	1	2023-05-15
6	6	Speaker	2	2023-06-20

Formulate ten SQL queries based to: (15 marks)

- Retrieve all customers and their orders /2marks
- Retrieve customers who have ordered a product with 'phone' in its name /2marks
- Count the total number of orders /1mark
- List customers who have not placed any orders /2marks
- Retrieve orders made after a the date of '2023-06-01' /1mark
- Retrieve orders with quantities greater than 1 /1marks
- Update the email address of a customer with ID=3 to be 'new_email@example.com' / 1mark
- Delete orders older than a date '2023-04-10' /1mark
- Calculate the total number of orders for each customer /2marks
- Alter the orders table to add a new column for shipping Address /2marks

GOOD LUCK!!!