

**THE JOINT EXAMINATIONS FOR CATHOLIC SCHOOLS (JECAS)**

**FORM SIX PRE – NATIONAL EXAMINATION - 2024**

**COMPUTER SCIENCE 1**

**136/1**

**Time: 3:00 Hours**

**Date: Thursday, 14<sup>th</sup> March 2024 p.m.**

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**Instructions**

1. This paper consists of section **A** and **B** with a total of **ten (10)** question.
2. Answer **all** questions from section **A** and **two (2)** questions from section **B**.
3. Section **A** carries **seventy (70)** marks and section B carry **thirty (30)** marks
4. All writing must be in **blue** or **black** ink **except** drawing which must be in pencil.
5. Cellular phones and any unauthorized materials are not allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s) provided.

**SECTION A: (70 Marks)**  
**Answer all questions in this section**

1. (a) Identify two resources managed by an operating system. (03 Marks)
- (b) Explain three importance of data backup (03 Marks)
- (c) Describe four functions of control unit (CU) in the central processing unit (CPU) (04 Marks)
2. (a) (i) Perform the following subtraction operation using 2's complement. (02 Marks)
- a) 5 - 6
- b) 12 - 25
- (ii) Simplify the Boolean expression  $\overline{ABC} + \overline{BC}$  using DeMorgan's theorem and Boolean algebra law. (1.5 Marks)
- (b) Mention and explain five control used in visual basic programming. (2.5 Marks)
- (c) Use while loop Write VB program that return a sum of integers raised to a given power.  
example if user enter 234 and power of 2 the result will be 29. (04 Marks)
3. (a) With examples, give the meaning of the following terms as applied in the C++ program (02 Marks)
- i. Reserved word
  - ii. keyword word
  - iii. constants
  - iv. identifiers
- (b) The CRDB ATM allows a customer to withdraw a maximum of Tshs 2, 000,000/= per day. If a customer withdraws more than Tshs 450,000/= the service charge is 8% of the amount over 450,000/=. If the customer does not have sufficient money in the account, the ATM informs the customer about the insufficient fund and gives the option to withdraw the money for a services charge of Tshs 1300/=. if there is no balance in the account or if the account balance is negative, the customer will not be allowed to withdraw any money from the ATM if the amount to be withdrawn exceeds Tsh 2,000,000/=. the ATM informs the customer about the maximum amount that can be withdrawn. Write an algorithm(flowchart) that allows the customer to enter the amount to be withdrawn, the algorithm should check the total amount in the account, dispense the money to the customer, and debit the customer account by the amount withdrawn and the service and the services charges if any. (04 Marks)
- (c) Write a corresponding C++ program to implement the algorithm obtained in (b) above (04 Marks)

4. (a) Write three basic HTML tags which are used together with <table> tags when creating tables. (03 Marks)
- (b) With examples explain three ways used to embed JavaScript in html codes. (03 Marks)
- (c) Write HTML code embedded with JavaScript codes that will display the webpage below. (04 Marks)

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## When Things Fall Apart

When things fall apart and we're on the verge of we know not what, the test of each of us is to stay on that brink and not concretize.  
**The spiritual journey is not about heaven** and finally getting to a place that's really swell.

Life hack: Don't lose faith when you see others receive answers to their prayers

[View Me](#)

Use the following Page Descriptions:

- ☐ Page background colour should be blue
- ☐ heading should have level 1 effect
- ☐ text colour of the last sentence should be yellow
- ☐ When a user clicks "View me" button a statement life hack..... should be replaced with "if you fell down yesterday stand up today and if you haven't received you own blessings, don't despair. Say to yourself 'My time is coming'"

5. (a) With the aid of diagram, describe four basic types of physical topology network topology and explain two advantages and two disadvantage for each. (06 Marks)

- (b) Give four difference between client –server and Peer to peer architecture. (04 Marks)

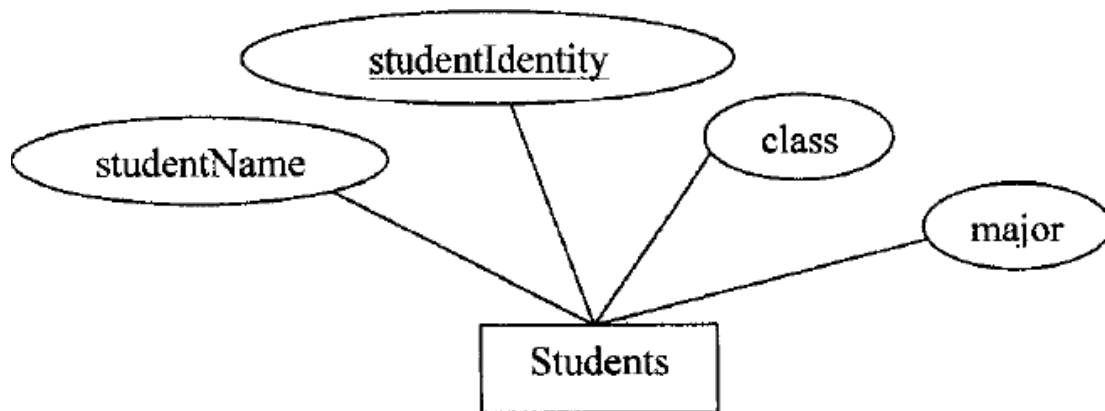
6. (a) Explain the different between stacks and queues, give one real example on each. (03 Marks)

- (b) Veda Company wants to decide on a data structure to implement the program. Explain how you would help them to choose the best data structure. (Give three points) (03 Marks)

- (c) Pointers are used to pass argument by reference in function to increase efficiency. Write a C++ program to pass arguments by reference using function. Example when user enter a=3, b=4 the output will be a=4 and b=3. (04 Marks)

7. (a) What do you understand the meaning of information system(IS) (02 Marks)

- (b) Today's information systems come in various shapes, size and functions and cover a variety of scopes, while some information systems are unique and others vary somewhat from one organization to another. Explain four types of information systems. (04 Marks)
- (c) Use the following entity set with its attributes to answer the questions



- Represent entity set into its equivalent relation table, (01 Mark)
- Write SQL query to create students database table, (01 Mark)
- Write SQL insert data into students table values (12, John, Grade II, Science) (01 Mark)
- Write SQL query required to retrieve data from students table. (01Mark)

### SECTION B: (30 Marks)

#### Answer only two (2) questions in this section

- Imagine you are the part of the IT department at Ngorongoro University, where technological advancements are a key focus. With the Ngorongoro IT department gearing up for an upgrade of its computer lab, you have been tasked with ensuring that the disposal of the old computers and monitors aligns with the university's sustainability goals. As a member of the IT team, how can you approach the disposal of the old computers and monitors in a manner that minimizes our environmental footprint and reflects our commitment to sustainability within the IT department? (15 Marks)
- Describe briefly the four positive and four negative impacts of ICT in our life with the reference to communication, industrial production, health and cultural changes. (15 Marks)
- (a) Describe two types of attack in computer security.

- (b) Consider any four emerging technologies; discuss their impact on people in Tanzania now

and in the future  
Marks)

(15