THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

DIPLOMA IN SECONDARY EDUCATION EXAMINATION

738 INFORMATION AND COMMUNICATION TECHNOLOGY

Time: 3 Hours **ANSWERS** **Year: 2019**

Instructions

1. This paper consists of section A, B and C.

2. Answer all questions in section A, two questions from section B and two questions from section C.

1. Why electronic mail are mostly preferred than traditional mail in sending a message? Explain by giving four reasons.

Electronic mail is faster than traditional mail, as messages are delivered almost instantly regardless of distance. This allows for quick communication without delays.

Email is more cost-effective since it does not require postage fees, paper, or envelopes. Users only need internet access, making it a cheaper alternative for sending messages.

Electronic mail allows for the attachment of multimedia files such as documents, images, and videos. This enhances communication by enabling users to share important files conveniently.

Email provides better organization and storage since messages can be saved, categorized, and searched easily. Unlike traditional mail, which requires physical storage, emails are stored digitally for easy retrieval.

2. Using two points, distinguish internal storage of a computer from external storage devices.

Internal storage refers to data storage components built into the computer, such as hard drives and solid-state drives. It is directly connected to the motherboard and used to store the operating system and essential files.

External storage devices are separate from the computer and can be connected through USB ports or wireless connections. Examples include external hard drives, USB flash drives, and memory cards, which provide additional storage space.

3. Describe four applications of Information and Communication Technology in the education sector.

ICT is used in online learning platforms where students access educational materials remotely. This enhances learning by providing flexibility and accessibility to various resources.

Interactive learning through smartboards and multimedia presentations improves engagement in classrooms. Visual and audio aids help students understand complex topics more effectively.

ICT supports research activities by allowing students and teachers to access vast amounts of information through the internet. Digital libraries and academic databases provide valuable resources for study and research.

School management systems use ICT for student record management, timetable scheduling, and communication between teachers and parents. This improves efficiency in educational administration.

4. Briefly describe the importance of each of the following in the computer system.

a) Computer hardware

Computer hardware is essential for the operation of a computer as it includes physical components such as the processor, memory, and storage. These components enable the computer to function and execute tasks.

Hardware determines the performance and speed of a computer, with high-quality components leading to better processing power and efficiency. This affects how quickly tasks are completed.

b) Computer software

Computer software provides instructions that allow the hardware to perform specific tasks. It includes operating systems and applications that enable users to carry out various activities.

Software enhances user experience by offering functionalities such as word processing, gaming, and internet browsing. Without software, hardware alone cannot perform meaningful tasks.

5. Differentiate electronic database from the traditional database.

An electronic database is a digital system for storing and managing data, making retrieval and updates faster. Traditional databases rely on paper-based records, which require manual handling and are time-consuming to search.

Electronic databases support automation, allowing users to process large amounts of data efficiently. Traditional databases lack automation, requiring human intervention for tasks like sorting and filtering information.

6. How can students cause damage in a computer laboratory? Briefly explain four ways.

Improper handling of computer peripherals, such as pulling cables forcefully, can cause physical damage to equipment. This may result in malfunctioning keyboards, mice, and monitors.

Installing unauthorized software can introduce viruses and malware, leading to system failures and security threats. Infected computers may lose important data or become unusable.

Eating and drinking in the laboratory can lead to spills that damage computer components. Liquids can short-circuit internal circuits, causing permanent hardware failure.

Changing system settings without knowledge can disrupt the functionality of computers. Misconfigurations may cause software errors, preventing proper operation.

7. Computers can cause health problems to users. Explain four health problems and their prevention methods.

Eye strain occurs due to prolonged screen exposure, leading to discomfort and blurred vision. This can be prevented by adjusting screen brightness, taking breaks, and using blue light filters.

Back pain results from poor sitting posture while using a computer. Proper ergonomic chairs and maintaining an upright posture help prevent spinal issues.

Carpal tunnel syndrome develops due to repetitive typing movements, causing wrist pain and numbness. Using ergonomic keyboards and taking regular breaks can reduce the risk.

Mental fatigue arises from long hours of computer use, leading to stress and reduced concentration. Setting screen time limits and engaging in physical activities help maintain mental well-being.

8. What are the advantages of using each of the following types of computer network architecture?

a) Peer-to-peer

Peer-to-peer networks are cost-effective since they do not require expensive servers. Computers connect directly to share resources, reducing infrastructure costs.

This network type allows easy file sharing among users without the need for a central server. This simplifies data transfer and collaboration among connected devices.

b) Client-server

Client-server networks provide centralized data management, ensuring better security and control over information. The server manages access permissions, reducing unauthorized access.

These networks offer high performance and efficiency since dedicated servers handle processing tasks. This improves reliability and system responsiveness.

9. Write the HTML codes to create a webpage showing the following information.

Page title: Website Design.
Heading 1: Ministry of Education Science and Technology.
One paragraph carrying the following information: "The Ministry of Education, Science and Technology head office has shifted from Dar es Salaam to Dodoma".

```
<!DOCTYPE html>
<html>
<head>
```

```
    <title>Website Design</title>
</head>
<body>
    <h1>Ministry of Education Science and Technology</h1>
    <p>The Ministry of Education, Science and Technology head office has shifted from Dar es Salaam to Dodoma.</p>
</body>
</html>
```

10. Differentiate the following activities done in an application software.

a) Selecting a text and cutting a text

Selecting a text means highlighting a portion of text without removing it from its original position. This is done to apply formatting, copy, or move the text elsewhere.

Cutting a text removes the selected portion from its original location and places it in the clipboard. This allows users to paste it into another section of the document.

b) Copying a text and pasting a text

Copying a text creates a duplicate of the selected content without removing it from its original position. This allows users to place the same text in multiple locations.

Pasting a text inserts the copied or cut text into a new location. The text remains stored in the clipboard until another copying or cutting action is performed.

11. With examples, examine five areas where ICT is applied.

ICT is applied in healthcare for electronic medical records and telemedicine services. For example, doctors use online systems to store patient histories and consult remotely, improving efficiency and access to healthcare.

ICT is used in education for online learning and research. For instance, students access digital libraries and e-learning platforms, allowing them to study remotely and access a vast range of learning materials.

ICT is applied in banking through mobile banking and automated teller machines. Customers can transfer funds, pay bills, and withdraw cash conveniently using digital banking platforms, reducing the need for physical branch visits.

ICT is used in transportation for traffic management and online ticketing systems. For example, GPS navigation helps drivers optimize routes, and online ticket booking platforms make travel arrangements more convenient.

ICT is applied in agriculture through precision farming, where farmers use drones and sensors to monitor crop health and optimize irrigation. This enhances productivity and ensures better resource management.

12. Use five reasons to justify the notion that the usage of computers in offices is better than using other means of writing, processing, and keeping information.

Computers improve speed and efficiency in processing tasks such as document creation, calculations, and data analysis. This reduces the time spent on manual work, allowing employees to focus on more critical tasks.

Computers offer better data storage and retrieval, allowing offices to store large amounts of information digitally. This eliminates the need for physical file storage and makes it easier to access and manage records.

Computers enhance accuracy by minimizing human errors in calculations, data entry, and report generation. Automated processes reduce the risk of mistakes and improve the reliability of office operations.

Computers facilitate easy editing and formatting of documents, making corrections and modifications quick without rewriting entire documents. This improves productivity and ensures documents remain professional and error-free.

Computers support communication through emails and online collaboration tools. This improves coordination between employees and clients, making business operations smoother and more efficient.

13. In developing a program, programming language is to be used. However, there are some factors to consider in selecting a programming language to use in preparing a certain program. Justify this statement by giving five points.

The suitability of a programming language depends on the nature of the application being developed. Some languages are better suited for web development, while others are ideal for system programming or artificial intelligence applications.

The availability of libraries and frameworks influences the choice of a programming language. Languages with extensive support simplify development by providing pre-written functions that save time and effort.

The learning curve and ease of use are important factors to consider. Some languages, such as Python, are beginner-friendly, while others, like C++, require more advanced knowledge and experience.

The performance and execution speed of the language matter, especially for applications requiring high-speed processing. For instance, C is preferred for system-level programming due to its efficiency, while Python is used for data science due to its simplicity.

The compatibility with hardware and operating systems should be considered. Ensuring that the chosen language works effectively on the target platform prevents issues related to deployment and functionality.

14. Analyze five computer laboratory safety regulations.

Proper cable management should be maintained to prevent tripping hazards and electrical accidents. Cables should be arranged neatly and secured to avoid entanglement and potential damage.

Food and drinks should not be allowed in the computer laboratory to prevent spills that could damage electronic components. Liquids can cause short circuits, leading to malfunctioning computers and electrical hazards.

Users should avoid touching electrical components with wet hands to prevent electric shocks. Moisture conducts electricity, increasing the risk of injury or equipment damage.

Computers should be shut down properly after use to avoid data loss and prolong hardware lifespan. Forceful shutdowns can lead to corrupted files and system failures.

Regular antivirus updates should be performed to protect computers from malware and cyber threats. Unprotected systems are vulnerable to viruses that can compromise data security and disrupt operations.

15. Explain three advantages and two disadvantages of using essay test items in an examination.

Essay test items allow students to express their understanding in detail, providing deeper insights into their knowledge. This helps assess their critical thinking and analytical skills beyond simple memorization.

Essays enable students to organize their thoughts logically and present structured responses. This helps improve their writing skills and ability to articulate ideas clearly.

Essay tests encourage creativity and originality, allowing students to provide unique perspectives and arguments. This makes the assessment more comprehensive compared to multiple-choice questions.

One disadvantage of essay tests is the time-consuming nature of grading. Teachers must read and evaluate each response carefully, which can be challenging in large classes.

Another disadvantage is the possibility of subjective grading, as different teachers may interpret and score answers differently. This can lead to inconsistencies in assessment and potential bias.

16. Describe five equipment used for ICS data backups.

External hard drives are used for backing up large amounts of data. They provide high storage capacity and can be easily transported for offline backups.

Network Attached Storage (NAS) devices allow multiple users to back up data to a centralized location over a network. These devices ensure continuous data accessibility and security.

Cloud storage services, such as Google Drive and Dropbox, enable users to store backups remotely. These services provide scalability and protection against hardware failures.

Tape drives are used for archival data storage, especially in organizations handling vast amounts of information. They offer durability and are cost-effective for long-term backups.

Uninterruptible Power Supply (UPS) systems protect data during power outages by providing temporary electricity. This prevents data loss and ensures proper shutdown of systems.