THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL

GRADE A TEACHERS' CERTIFICATE EXAMINATION

635 INFORMATION AND COMMUNICATION TECHNOLOGY

Time: 3 Hours. **ANSWER** **Year: 1999**

Instructions

1. This paper consists of sections **A**, **B** and **C.**
2. Answer **all** questions in sections A and **two (2)** questions from each sections B and C.
3. Mobile phones and unauthorized materials are **not allowed** in the examination room.
4. Write your **Examination Number** on every page of your answer **booklet(s).**

SECTION A (40 Marks)

Answer all questions from this section.

1. State four ways in which ICT can be used to improve classroom management.

ICT can be used to record and track students' attendance electronically. Teachers can use digital registers or school management systems to easily mark attendance and generate reports, reducing time spent on manual paper registers and ensuring accuracy.

ICT helps in managing classroom schedules and timetables effectively. Software and online platforms can be used to plan lessons, allocate periods, and avoid timetable clashes, which makes classroom operations more organized.

ICT allows teachers to share announcements and classroom instructions digitally. Through platforms such as WhatsApp groups, Google Classroom, or school portals, teachers can communicate with students efficiently, ensuring that learners receive timely updates and instructions.

ICT supports better storage and retrieval of students' academic records. Grades, assignments, and progress reports can be stored in electronic systems where they are safe, easily retrievable, and can be analyzed to improve teaching strategies.

2. Mention four examples of operating systems used in computers.

One example of an operating system is **Windows**. It is developed by Microsoft and is widely used in personal computers, offices, and schools due to its user-friendly interface and compatibility with a wide range of software applications.

Another operating system is **macOS**. This is developed by Apple and is mainly used in Apple computers. It is known for its stability, strong security features, and integration with other Apple devices, which makes it popular among professional users.

A third example is **Linux**. This is an open-source operating system that comes in many distributions such as Ubuntu, Fedora, and Debian. It is highly customizable, secure, and preferred in programming and server environments.

The fourth example is **Android**. It is mainly designed for smartphones and tablets but is also adapted for some computers. It is open-source, widely used worldwide, and supports millions of applications.

3. List four advantages of using electronic databases over manual filing systems.

Electronic databases allow **faster retrieval of information**. Unlike manual filing systems that require physical searching, databases use search functions that can produce results within seconds.

Electronic databases provide **better security of information**. Access can be controlled through passwords and encryption, which reduces risks of unauthorized access compared to physical files.

They also **save physical storage space**. Instead of keeping large cabinets filled with paper files, thousands of documents can be stored digitally on a computer or server.

Electronic databases improve **data accuracy and consistency**. When data is updated in one part of the system, it reflects across all records, reducing errors that are common in manual systems.

4. Explain four signs that show a computer is infected with malware.

A common sign of malware infection is **slow computer performance**. Programs and files take longer to open, and the system freezes or lags frequently.

Another sign is the **appearance of unusual pop-up messages or advertisements**. These pop-ups often appear even when the user is not browsing the internet, which indicates the presence of malicious software.

A third sign is **unexpected system crashes and reboots**. The computer may shut down or restart without warning due to the harmful effect of malware on the operating system.

The fourth sign is **unfamiliar programs or files appearing**. Malware may install unknown software or duplicate files without the user's permission, which is a clear indication of infection.

5. Give four differences between RAM and ROM.

RAM (Random Access Memory) is **volatile memory**, meaning data is lost when the computer is turned off, while ROM (Read-Only Memory) is **non-volatile**, and retains data even when power is off.

RAM is used for **temporary storage of data and programs currently in use**, allowing the computer to run processes quickly, while ROM stores **permanent instructions such as the BIOS**, which helps the computer boot.

RAM can be **read and written to** by the user and applications, making it flexible for ongoing operations, while ROM is usually **read-only** and cannot easily be modified.

RAM is generally **larger in size and capacity** compared to ROM, which is smaller because it only holds essential startup instructions.

6. Outline four benefits of using a word processor in preparing teaching materials.

A word processor allows **easy editing and correction of mistakes**. Teachers can quickly delete, insert, or rearrange text without having to rewrite the entire material.

It provides **formatting tools** such as bold, italics, and underlining, which help teachers highlight key concepts and organize their materials professionally.

Word processors can **store and reuse documents**, making it easy for teachers to save lesson notes and reuse them in future classes with minimal modifications.

They also enable the **insertion of graphics, tables, and diagrams**, which makes the teaching materials more engaging and easier for students to understand.

7. State four limitations of using oral communication in teaching and learning.

Oral communication is **easily forgotten**, as students may fail to remember everything said unless they take notes or the information is recorded.

It is **not suitable for students with hearing impairments**, as they may be excluded from important instructions or discussions.

Oral communication **does not provide a permanent record**, making it difficult to refer back to instructions later if they are not written down.

It can also **lead to misinterpretation**, especially if the speaker's tone, speed, or clarity is poor, causing confusion among learners.

8. Mention four ways ICT contributes to improving health services.

ICT contributes by enabling **electronic health records**. Patient data can be stored digitally, making it easier to track medical history and share information between hospitals.

It supports **telemedicine**, which allows doctors to consult and treat patients remotely using video calls and other digital platforms.

ICT is also used in **medical research and diagnosis**. Computers help in analyzing large amounts of data and using diagnostic tools to detect diseases more accurately.

ICT improves **health education and awareness**. Through websites, mobile applications, and social media, people can access reliable health information and preventive measures.

9. Give four advantages of using wireless communication in schools.

Wireless communication allows **flexibility of movement**. Teachers and students can access the internet and share resources without being restricted by cables.

It enables **quick installation and setup**, as there is no need to lay down physical wires, which saves time and cost.

Wireless communication supports **connectivity across large areas**, making it possible to cover multiple classrooms or the entire school campus.

It encourages **collaborative learning**, since multiple students can connect their devices to the same network and share resources easily.

10. List four possible causes of slow internet connection in a computer laboratory.

One cause of slow internet is **network congestion**. When many users are online at the same time, the available bandwidth is divided among them, leading to slower speeds.

Another cause is the **use of outdated hardware**, such as old routers or network cards, which cannot handle high-speed connections effectively.

Slow internet may also result from **malware infections**. Viruses and spyware consume bandwidth by sending unauthorized data in the background.

The final cause is **poor service from the internet provider**. Low-quality infrastructure or technical faults in the ISP's system can cause slow connectivity in the laboratory.

SECTION B (30 Marks)

Answer any two questions from this section.

11. Discuss five challenges that teachers face when integrating ICT into the teaching and learning process.

One major challenge is the **lack of adequate infrastructure**. Many schools, especially in rural areas, do not have enough computers, reliable internet connections, or electricity. This makes it difficult for teachers to integrate ICT into their lessons effectively.

Another challenge is **insufficient training of teachers**. Some teachers lack the necessary skills and confidence to use ICT tools. Without proper professional development, they may avoid using digital tools in class or use them ineffectively.

A third challenge is the **high cost of ICT equipment and maintenance**. Computers, projectors, and software require significant investment, and many schools struggle with limited budgets. Additionally, maintenance costs for repairing or replacing broken devices are often unaffordable.

Teachers also face **resistance to change** from both colleagues and students. Some educators prefer traditional teaching methods and may feel threatened by technology, while some students may misuse ICT for entertainment instead of learning.

Finally, there is the problem of **inadequate technical support**. Even when ICT tools are available, the absence of technicians to troubleshoot issues leads to frequent disruptions. Teachers may lose valuable lesson time when equipment fails and there is no immediate help.

12. Explain five advantages of using spreadsheets in preparing students' examination results.

Spreadsheets **simplify calculations**. Teachers can use built-in formulas to calculate totals, averages, and percentages quickly, reducing the chance of human error.

They also enable **systematic organization of data**. Students' names, marks, and grades can be arranged neatly in rows and columns, making it easy to read and interpret.

Spreadsheets allow for **automatic updates**. When a single mark is changed, the entire calculation is updated instantly without redoing the work manually.

They support **data visualization**. Teachers can use charts and graphs to show performance trends, making it easier to compare students or analyze class performance at a glance.

Spreadsheets are also **time-saving and reusable**. Once a template is created, it can be used year after year with only minor modifications, which reduces preparation time.

13. Describe five measures that can be taken to protect sensitive school data from hackers.

The first measure is to **use strong passwords**. Teachers and administrators should create complex passwords that include numbers, letters, and symbols, and they should update them regularly.

Another measure is **installing antivirus and firewall software**. These provide protection against malware, viruses, and unauthorized access that hackers might use to infiltrate the system.

Schools should also **regularly back up important data**. By keeping copies of files in external drives or cloud storage, schools can recover data in case of a cyber-attack.

Restricting user access is another important measure. Sensitive information should only be accessible to authorized personnel, reducing the risk of data leaks.

Lastly, **regular training and awareness programs** for staff and students can prevent careless actions such as clicking on phishing links or downloading harmful files, which hackers often exploit.

14. Analyse five contributions of ICT in promoting socio-economic development in rural communities.

ICT contributes to **better access to education** in rural areas. Through online resources, e-learning platforms, and educational broadcasts, students and teachers can access learning materials that would otherwise be unavailable.

It improves **healthcare delivery**. Rural communities benefit from telemedicine, where doctors can consult patients remotely, and health campaigns can be broadcast through mobile phones and radios.

ICT promotes **agricultural development**. Farmers can access weather forecasts, market prices, and modern farming techniques through mobile apps, helping them to make informed decisions and improve yields.

Another contribution is the **growth of business opportunities**. Mobile money and e-commerce platforms allow rural entrepreneurs to buy and sell goods, receive payments, and expand their markets beyond their local areas.

Lastly, ICT enhances **community participation and governance**. Citizens can receive information about government programs and services, voice their concerns through mobile platforms, and stay connected with national developments.

SECTION C (30 Marks)

Answer any two questions from this section.

15. Critically evaluate how dependency on ICT tools by teachers can both enhance and hinder effective teaching. Provide five arguments to support your analysis.

Dependency on ICT enhances teaching by **making lessons more engaging**. Multimedia presentations, videos, and simulations capture students' attention better than plain chalk-and-board methods.

It also improves **access to vast teaching resources**. Teachers can download lesson notes, past papers, and digital books online, which enriches the teaching process.

However, dependency on ICT can hinder teaching when **technical problems occur**. If the internet or projector fails during a lesson, the teacher may not be able to continue effectively.

Another drawback is that ICT dependency may lead to **reduced teacher creativity**. Teachers may rely too much on pre-prepared digital content instead of developing innovative teaching strategies themselves.

Finally, over-reliance can cause **digital distractions**. Students may use devices for social media or games instead of learning, reducing classroom discipline and focus.

16. With examples, justify five ways in which poor ICT infrastructure limits the effectiveness of digital learning in developing countries.

Poor ICT infrastructure leads to **limited access to the internet**. Without stable connections, students cannot participate in online classes or access e-learning platforms effectively.

Another limitation is **insufficient electricity supply**. Frequent power cuts in developing countries disrupt online lessons and make it difficult to use computers consistently.

Poor infrastructure also results in **outdated hardware and software**. Schools often use old computers with low processing speeds, which slows down learning and makes modern applications unusable.

There is also **inequality in access**. Students in urban areas may benefit from ICT, while those in rural areas are left behind, widening the educational gap.

Lastly, poor ICT infrastructure leads to **inadequate teacher support**. Teachers cannot be trained effectively online, and technical breakdowns go unresolved, making digital learning less reliable.

17. Explain five drawbacks of over-reliance on social media as a primary means of communication in schools and society.

Over-reliance on social media can lead to **misinformation and rumors** spreading quickly. False information may confuse students, teachers, and the community at large.

It can also cause **distraction among students**. Instead of focusing on academic content, students may spend more time chatting, browsing, or watching entertainment on social media.

Another drawback is **cyberbullying**. Social media provides platforms where students can bully or harass others, which negatively affects mental health and school performance.

Over-reliance reduces **face-to-face communication skills**. Students may become less capable of expressing themselves confidently in real-life situations.

Finally, social media raises **privacy and security concerns**. Personal data shared online can be misused, putting both students and teachers at risk.

18. Assess the importance of information in decision-making processes by community leaders, giving five points with practical illustrations.

Information helps leaders in **planning community projects**. For example, accurate data on population size allows leaders to allocate resources for schools, water, and healthcare effectively.

It enables **quick response to emergencies**. During floods or droughts, timely weather information allows leaders to mobilize aid and warn residents in advance.

Information supports **policy formulation**. Leaders can use survey reports and statistics to develop policies that directly address community needs such as farming support or job creation.

It improves **transparency and accountability**. When leaders have reliable financial records, they can make fair budget decisions and report clearly to the community.

Lastly, information enhances **conflict resolution**. Leaders with accurate background information can mediate disputes, such as land conflicts, by making fair and evidence-based decisions.