THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
DIPLOMA IN SECONDARY EDUCATTION EXAMINATION

738 INFORMATION AND COMMUNINCATION TECHNOLOGY

Time: 3 Hours **ANSWERS** **Year: 2023**

Instructions.

1. This paper consists of sections A and B with a total of **Fourteen (14)** questions.
2. Answer **all** questions from section A and **four (4)** questions from section B.
3. Section A carries **forty (40)** marks and section B Carries **sixty (60)** marks.
4. Cellular phones are **note** allowed in the examination room.
5. Write your **examination Number** on every page of your answer booklet(s).

SECTION A (40 Marks)

Answer all questions from this section. Each question carries 4 marks.

1. Identify four features which make Microsoft Publisher unique when compared to other computer applications.

One feature that makes Microsoft Publisher unique is its focus on desktop publishing. Unlike word processors or spreadsheets, Publisher is specifically designed for creating publications such as brochures, newsletters, posters, and business cards with professional layout options.

Another unique feature is its wide selection of ready-made templates. Publisher offers users a variety of professionally designed templates for different types of publications, allowing users to quickly start projects without having to build layouts from scratch.

Publisher also stands out for its drag-and-drop design environment. This allows users to easily insert and arrange text boxes, images, shapes, and other design elements on a page, offering more flexibility and control over the appearance of a document compared to traditional word processing applications.

Lastly, Publisher integrates specialized tools for image editing and formatting within the program itself. Users can adjust brightness, contrast, crop images, and wrap text around pictures without needing to use an external image editor, which enhances the efficiency of designing visual documents.

2. Describe two usefulness of bus and star topologies in establishing a Local Area Network (LAN) to facilitate communication and sharing of resources.

The bus topology is useful because it is simple and cost-effective to set up. Since all devices in a bus network are connected through a single central cable, fewer cables are required, reducing installation expenses and making it easier to expand the network by connecting new devices along the main cable.

Another usefulness of the star topology is its reliability in network management. In this arrangement, each device connects individually to a central hub or switch. If one device or its connection fails, it does not affect the rest of the network. This makes troubleshooting simpler and prevents network-wide failures.

3. Give four reasons as to why there is a need to use interactive multimedia in the teaching and learning process.

Interactive multimedia is needed in teaching and learning because it increases student engagement. By combining text, images, audio, video, and interactive activities, it captures students' attention and keeps them interested in lessons.

It also supports diverse learning styles among students. Some learners understand better through visual materials, while others benefit from listening or interacting with content. Interactive multimedia addresses these varied preferences by offering multiple ways of presenting information.

Another reason is that it enhances understanding of complex concepts. Interactive animations and simulations can simplify difficult ideas by providing step-by-step demonstrations, making them easier for students to grasp.

Lastly, interactive multimedia promotes active learning. Instead of passively receiving information, students participate through quizzes, educational games, or simulations, which improves retention and develops problem-solving and critical-thinking skills.

4. Explain four stages that computers undergo during booting process.

The first stage in the booting process is the power-on self-test (POST). During this stage, the computer checks the basic hardware components like memory, keyboard, and storage devices to ensure they are functioning properly before the system starts.

The second stage is the loading of the basic input/output system (BIOS) or Unified Extensible Firmware Interface (UEFI). This low-level software controls the interaction between the computer's hardware and operating system and initiates the sequence of loading the operating system.

After the BIOS stage, the system proceeds to locate and load the bootloader. The bootloader is a small program stored in a specified location on the storage drive, and it is responsible for finding the operating system and loading it into the computer’s memory.

The final stage is the loading and initialization of the operating system. The operating system's core files and essential drivers are loaded into memory, and then control is transferred to the operating system, which finishes setting up the user environment and displays the desktop or login screen.

5. Elaborate impacts of spending many hours in using mobile phones, computers, watching television and listening to the radio.

Spending excessive time on digital devices can negatively affect physical health. Continuous screen exposure can cause eye strain, headaches, and back problems due to poor posture, while lack of physical activity can lead to obesity and related health complications.

It can also impact mental health and social well-being. Constant engagement with digital content may lead to stress, anxiety, and feelings of isolation, as it reduces face-to-face interactions with family, friends, and the community.

Prolonged exposure to digital devices affects academic and work productivity. Excessive entertainment media use can distract individuals from important responsibilities, reducing time spent on studying, reading, or completing work tasks effectively.

Additionally, continuous digital media consumption influences behavior and lifestyle. It can disrupt sleep patterns due to late-night screen use and exposure to harmful or misleading content, especially for young people, which may shape attitudes and decisions negatively.

6. Explain four benefits of using audio-visual materials in teaching and learning process.

Audio-visual materials improve understanding by presenting information in both spoken and visual forms. This dual presentation reinforces memory and makes abstract ideas more tangible, enhancing comprehension, especially in subjects like science and geography.

They also create a more interesting and stimulating classroom environment. When learners are exposed to videos, charts, and sounds, their attention increases, reducing boredom and increasing motivation to participate actively in lessons.

Another benefit is that audio-visual aids cater to different learning abilities. Learners who struggle with reading texts alone can benefit from visual images, demonstrations, and sounds, making learning accessible to a wider range of students.

Audio-visual materials also simplify the teaching of practical skills. Through videos, simulations, or demonstrations, learners can observe real-life processes and procedures they might not be able to experience directly, making lessons more practical and meaningful.

7. Write four threats that may occur if the computer is connected to a network.

One threat is the risk of malware and viruses, which can infect a computer through shared files or internet downloads, causing damage to software and data or disrupting the system's normal operation.

Another threat is unauthorized access or hacking. If a network is not well secured, attackers can gain control over the system, steal sensitive information, or manipulate data for malicious purposes.

There's also the risk of data theft through spyware. This type of software secretly collects personal or confidential information and transmits it to unauthorized individuals without the user's consent.

Lastly, denial-of-service (DoS) attacks pose a serious threat. These attacks overwhelm a network with excessive traffic, making services or websites unavailable to users, disrupting communication, and potentially causing data loss or system crashes.

8. Write four types of database system that teachers can practice in their IPADs.

Teachers can use a relational database system on their iPads, which organizes data into tables linked by relationships, making it easier to manage and retrieve related data for student records or resource inventories.

Another type is the object-oriented database system. This system stores data in the form of objects, similar to object-oriented programming, and is useful for managing complex data structures like multimedia files or lesson plans.

A hierarchical database system is also an option, where data is organized in a tree-like structure with parent-child relationships. This type can help teachers manage syllabus outlines or institutional structures systematically.

Lastly, a network database system can be practiced, where data is stored in records and connected through multiple pathways, allowing flexible navigation. Teachers might use this system for handling interconnected class schedules, activities, or reporting data.

9. Write four distinctive features between data and information.

Data refers to raw, unprocessed facts or figures that lack meaning on their own. It can be numbers, words, or symbols collected through observation, measurement, or entry but has no context or relevance until processed.

Information, in contrast, is processed and organized data presented in a way that is meaningful and useful to the receiver. Information allows decision-making and understanding by giving context to data.

Another distinction is that data is usually unorganized and unstructured. It needs to go through analysis, sorting, or classification to become meaningful, whereas information is organized, structured, and ready for interpretation.

Finally, data can exist in any form, including hard copies, computer files, or verbal statements, while information is typically presented in reports, summaries, or conclusions that are intended to be communicated and used.

10. Explain how data flows to produce a document by using a diagram.

The process of data flow to produce a document begins with data input. At this stage, raw facts and figures are collected and entered into the computer system through input devices like a keyboard, mouse, or scanner.

The second stage is data processing. Here, the computer organizes, calculates, and processes the raw data using software applications such as word processors or spreadsheets to convert it into meaningful information.

After processing, the next stage is data storage. The processed information is temporarily or permanently stored in memory or on storage devices for future reference, editing, or distribution.

The final stage is data output. In this stage, the processed and formatted information is displayed, printed, or shared as a final document that can be read, interpreted, or used for decision-making.

Input → Processing → Storage → Output

SECTION B (60 Marks)

Answer all questions from this section. Each question carries 15 marks.

11. Explain five merits of using electronic file over physical file system in data storage.

One merit of using an electronic file system is that it saves physical space. Unlike physical files, which require cabinets, shelves, and rooms for storage, electronic files are stored on computer systems, servers, or cloud storage services, freeing up office space and reducing clutter.

Another advantage is the ease of data retrieval. Electronic file systems allow users to quickly search and access files using keywords or file names, whereas searching through physical files can be time-consuming and labor-intensive, especially in large organizations.

Electronic files also enhance data security. Unlike physical files that can be easily accessed, stolen, or damaged, electronic files can be protected with passwords, encryption, and access controls, ensuring that sensitive information is only accessible to authorized personnel.

Additionally, electronic files are easier to share and distribute. Through networks, emails, and cloud services, digital documents can be sent instantly to multiple recipients in different locations, while physical files require physical transportation, which is slower and costlier.

Finally, electronic files support efficient data backup and recovery. In case of accidental loss or system failure, electronic data can be restored from backup copies, whereas physical files destroyed by fire, water, or theft are often lost permanently with no possibility of recovery.

12. Elaborate five employment opportunities which learning of Information and Communication Technology (ICT) offers to teachers.

Learning ICT equips teachers with the skills to work as computer instructors. Many educational institutions require professionals who can teach basic computer applications, programming, and internet literacy, creating job openings for teachers with ICT competence.

Teachers with ICT skills can also work as instructional designers. In this role, they develop digital learning resources, online courses, and multimedia content for schools, training centers, and e-learning platforms, contributing to the growth of digital education.

Another employment opportunity is in educational software consultancy. Teachers can advise schools and institutions on selecting, installing, and managing educational software systems, helping to improve classroom teaching and administrative processes.

ICT knowledge enables teachers to become online tutors or virtual educators. With the growth of distance education and online learning platforms, teachers can deliver courses, conduct assessments, and mentor students remotely, broadening their career prospects beyond traditional classrooms.

Additionally, teachers can find employment in school ICT departments as system administrators or ICT support officers. They assist in managing school networks, maintaining computer labs, providing technical support, and ensuring smooth operation of digital teaching and learning environments.

13. Analyze five features that will attract a secretary to use a new multimedia device for typing activities.

A secretary will be attracted to a multimedia device that offers a user-friendly interface. Devices with intuitive menus, simple controls, and accessible shortcuts make typing tasks quicker and reduce the learning curve, enabling efficient document creation.

The availability of voice recognition software is another appealing feature. This technology allows secretaries to convert spoken words into text, minimizing the need for continuous manual typing and speeding up the process of preparing reports, letters, and minutes.

A multimedia device with multi-language support is also attractive. Secretaries working in multicultural environments or international organizations require devices capable of handling different languages and character sets for producing diverse documents.

Another desirable feature is connectivity to printers, scanners, and cloud services. A device that allows secretaries to print documents directly, scan attachments, and upload files to cloud storage or email platforms enhances office productivity and document management.

Lastly, the inclusion of multimedia editing tools is important. Devices that enable secretaries to insert images, audio clips, tables, and graphics into documents without switching between multiple programs improve the quality and appearance of typed documents.

14. Validate the fields where database management system is applied.

Database management systems are widely applied in the education sector. Schools, colleges, and universities use them to manage student records, staff information, class schedules, and examination results, making it easier to retrieve, update, and protect educational data.

In the healthcare field, database systems store patient information, appointment schedules, medical records, laboratory results, and billing data. Hospitals and clinics use these systems to ensure quick access to patient history and to improve the efficiency of healthcare services.

Database systems are also crucial in banking and financial institutions. Banks rely on them to manage customer accounts, transaction records, loan details, and financial statements. This enhances data security and enables fast processing of financial services.

The business and retail sector benefits from database systems for managing inventory, customer records, sales transactions, and employee data. These systems streamline business operations, support decision-making, and improve customer service by providing accurate data reports.

Government institutions use database management systems to organize public records, national statistics, tax records, and administrative data. This ensures transparent and efficient governance by enabling easy access to critical information needed for public administration.