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SMZ

ZANZIBAR EXAMINATION COUNCIL

FORM THREE ENTRANCE EXAMINATION, 2005

063 INFORMATION AND COMPUTER STUDIES

Time: 2:30 Hours. ANSWER

INSTRUCTIONS TO CANDIDATES

1. This paper consists of Three (3) sections A, B and C.
2. Answer **ALL** questions from Section A and B and **ONLY ONE** questions from section C
3. Write your examination number on each page.
4. Write all answers on the space provided.
5. Use a blue or black pen in writing. Drawings must be in pencil.
6. Cellular phones and unauthorized materials are not allowed in the examination room.

	THIS PART FOR EXAMINER'S ONLY	
Question number	**MARKS**	**SIGNATURE**
1.		
2.		
3.		
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12.		
TOTAL		

Section A: (15 Marks)

Attempt ALL questions from this section.

1. Choose the letter of the correct answer and write it in the table provided.

i) Which one of the following is an input device?

A. Printer

B. Speaker

C. Webcam

D. Plotter

The correct answer is **C. Webcam**.

A webcam is used to capture images and video from the outside environment and feed them into the computer, making it an input device. Printers and plotters are output devices, while a speaker also produces output, not input.

ii) The part of the computer responsible for executing instructions is the:

A. RAM

B. ALU

C. Hard disk

D. Monitor

The correct answer is **B. ALU**.

The Arithmetic Logic Unit (ALU) executes instructions by performing mathematical calculations and logical operations. RAM is temporary memory storage, a hard disk is for permanent storage, and the monitor is an output device.

iii) The process of arranging data in a specific order (e.g., alphabetically or numerically) is known as:

A. Sorting

B. Filtering

C. Searching

D. Merging

The correct answer is **A. Sorting**.
Sorting is the process of organizing data systematically, such as from A to Z or from smallest to largest. Filtering involves displaying specific data based on conditions, searching is locating specific data, while merging combines data from different sources.

iv) Which of the following refers to the physical components of a computer system?
A. Software
B. Hardware
C. Data
D. Information

The correct answer is **B. Hardware**.
Hardware includes all the tangible parts of a computer, such as the keyboard, monitor, and CPU. Software refers to programs, data are raw facts, and information is processed data.

v) The main storage area that the CPU accesses directly is:
A. Secondary memory
B. Cache memory
C. Flash drive
D. Primary memory

The correct answer is **D. Primary memory**.
Primary memory (RAM) is the main storage area that the CPU uses directly to hold data and instructions temporarily while processing. Secondary memory, cache memory, and flash drives are important, but they do not serve as the main working memory for the CPU.

vi) A software that is designed to help the user perform a specific task is called:
A. System software
B. Operating system
C. Application software
D. Utility software

The correct answer is **C. Application software**.
Application software allows users to accomplish specific tasks, such as word processing or spreadsheets.

System software controls hardware, an operating system manages system operations, and utility software supports maintenance.

vii) What is a collection of computers and other devices connected to share data and resources?

A. A server

B. A network

C. A client

D. An internet

The correct answer is **B. A network**.

A network links multiple computers and devices so they can share resources like files and printers. A server provides services, a client is a computer that accesses resources, and the internet is a global network but not the definition of a local collection.

viii) The term booting a computer refers to:

A. Shutting down the computer

B. Starting up the computer

C. Installing new software

D. Saving a document

The correct answer is **B. Starting up the computer**.

Booting is the process of loading the operating system and initializing hardware when a computer is switched on. It is not shutting down, installing, or saving.

ix) Which of the following is not a common type of computer port?

A. USB port

B. HDMI port

C. Parallel port

D. CPU port

The correct answer is **D. CPU port**.

There is no such thing as a CPU port. USB, HDMI, and Parallel ports are actual ports used to connect external devices to a computer.

x) The term multitasking in computing refers to:

A. Using multiple monitors

B. Running multiple programs at the same time
C. Connecting to multiple networks
D. Having multiple users on one computer

The correct answer is **B. Running multiple programs at the same time**.
Multitasking allows a computer to execute several applications simultaneously, for example, browsing the internet while playing music. It does not mean multiple monitors, networks, or users.

2. Match the terms in Column A with their descriptions in Column B. Write the letter of the correct response in the table below.

COLUMN A
i. Microprocessor
ii. Output device
iii. Firewall
iv. URL
v. Word processor

COLUMN B
A. A program used to create text-based documents.
B. A security system that protects a network from unauthorized access.
C. The brain of the computer that performs calculations.
D. A device that displays or presents information from the computer.
E. A network of computers within a single building.
F. An address used to locate a resource on the internet.
G. The main circuit board.

Answers:
i. Microprocessor → C. The brain of the computer that performs calculations.
The microprocessor acts as the central chip that handles instructions and calculations within the computer.

ii. Output device → D. A device that displays or presents information from the computer.
Examples of output devices include monitors, speakers, and printers, which present processed data to users.

iii. Firewall → B. A security system that protects a network from unauthorized access.
Firewalls prevent intrusions and control traffic between trusted and untrusted networks.

iv. URL → F. An address used to locate a resource on the internet.
A Uniform Resource Locator specifies the location of a web resource, such as a website.

v. Word processor → A. A program used to create text-based documents.
Examples include Microsoft Word, which allows users to type, edit, and format text.

3. a) Distinguish between the **hard copy** and **soft copy** of a document.
   Hard copy is a physical printed version of a document, produced on paper or other tangible media. It can be held, handed to someone, and does not require a computer or display device to be read.
   Soft copy is an electronic version of a document that exists on a storage device or is displayed on a screen. It requires a computer, tablet, or phone to view and can be edited easily without reprinting.

b) Name two (2) devices used to produce a hard copy and two (2) devices that produce a soft copy.
Devices that produce a hard copy: Printer, Plotter. A printer transfers digital text or images onto paper, while a plotter draws high-precision diagrams on large-format paper, both resulting in tangible output.
Devices that produce a soft copy: Monitor, Speaker. A monitor displays text and images electronically on a screen, and a speaker outputs audio digitally, both delivering non-physical (soft) output.

c) What is the main purpose of a **keyboard**?
The main purpose of a keyboard is to allow a user to enter text, numbers, and commands into a computer. It provides direct input for editing documents, entering data, navigating applications, and issuing keyboard shortcuts to control software.

4. a) What is an **Operating System**?
   An operating system is system software that manages computer hardware and provides services for application software. It controls resources like CPU, memory, storage, and input/output devices, and it offers a platform for programs to run.

b) Mention any four (4) functions of an operating system.
Process management, which schedules and controls execution of running programs and handles multitasking.
Memory management, which allocates and deallocates RAM for processes and keeps track of memory usage.

File system management, which organizes files on storage devices, providing directories, access permissions, and file operations.
Device management, which manages communication with peripheral devices through drivers and handles input/output requests.

c) Explain the difference between **single-user** and **multi-user** operating systems.
A single-user operating system is designed for use by one person at a time; it focuses on providing the resources and interface for a single interactive user session, typical in personal computers.
A multi-user operating system allows multiple users to access the computer resources simultaneously or concurrently, managing user accounts, permissions, and resource sharing as found on servers and mainframes.

5. a) Differentiate between **magnetic storage** and **optical storage**.
   Magnetic storage uses magnetic media to record data by magnetizing tiny regions, examples include hard disk drives and magnetic tapes; it typically offers large capacity and fast write/read speeds but can be sensitive to magnetic fields.
   Optical storage uses lasers to read and write data on discs by altering the surface reflectivity, examples include CD, DVD, and Blu-ray; optical media are often portable and inexpensive, but have slower access times compared to magnetic drives.

b) Give two (2) examples of each type of storage media mentioned in 5 (a).
Magnetic storage examples: Hard disk drive (HDD), Magnetic tape. Hard disks use spinning platters with magnetic coatings, tapes are used for archival backups.
Optical storage examples: CD (Compact Disc), DVD (Digital Versatile Disc). CDs and DVDs store data as pits and lands read by laser.

c) Why is a **flash drive** considered a popular storage device?
A flash drive is popular because it is small and portable, allowing easy physical transport of data. It offers fast access speeds, requires no moving parts which increases durability, plugs into standard USB ports for wide compatibility, and is convenient for quick backups and file transfers.

6. a) Explain what **computer maintenance** is.
   Computer maintenance is the set of activities carried out to keep a computer system running efficiently and reliably; it includes both hardware care (cleaning, checking connections) and software upkeep (updates, virus scans, backups) to prevent failures and extend the system's useful life.

b) State any three (3) reasons why computer maintenance is important.

To prevent hardware failure by removing dust and ensuring cooling, which reduces overheating and component damage.

To protect data and system integrity by applying software updates, security patches, and antivirus scans that reduce vulnerability to malware.

To improve performance and reliability by cleaning up disk space, defragmenting (where applicable), and removing unnecessary programs so the system runs smoothly.

c) Briefly describe the process of performing a **disk cleanup**.

Disk cleanup involves removing temporary files, system cache, and files in the recycle bin that are no longer needed; this is done by running a disk cleanup utility or manually deleting such files. Next, unnecessary applications can be uninstalled, and large unused files moved to external storage. The result is freed disk space and improved system performance.

7. a) Define the following terms:

   i. Digital divide

   Digital divide refers to the gap between individuals or communities that have access to modern information and communication technologies, such as the internet and computers, and those that do not, leading to unequal opportunities for education, employment, and information.

ii. E-waste

E-waste means electronic waste, which includes discarded electronic devices and components like computers, phones, and batteries; it poses environmental and health risks if not properly recycled due to hazardous materials.

b) Briefly explain how computers can be used in the following areas:

i. Education

Computers support education through e-learning platforms, digital libraries, multimedia lessons, and tools for teachers to prepare materials and assess students; they enable remote learning and access to a vast range of resources.

ii. Healthcare

In healthcare, computers are used for patient record management, diagnostic tools, medical imaging analysis, telemedicine consultations, and managing appointments and inventories, improving efficiency and quality of care.

c) Outline any three (3) negative impacts of computers on society.

Job displacement, where automation and computerization can reduce demand for certain manual or repetitive jobs.

Privacy concerns, as personal data can be collected, shared, or breached, exposing sensitive information.

Health issues from prolonged computer use, such as eye strain, poor posture leading to musculoskeletal problems, and sedentary lifestyle effects.

8. a) What is **data integrity**?

   Data integrity refers to the accuracy, consistency, and reliability of data throughout its lifecycle; it ensures data remains unaltered and trustworthy from creation, through storage and transmission, to retrieval.

b) Explain two (2) ways to ensure data integrity.

Use checksums or hash functions to verify that data has not been corrupted or altered during transfer or storage; mismatched hashes indicate tampering or corruption.

Implement access controls and audit trails so only authorized users can modify data and all changes are logged, which helps detect unauthorized or accidental alterations.

c) Briefly describe the concept of **data redundancy**.

Data redundancy is the intentional or accidental duplication of data across multiple storage locations; it can provide fault tolerance and backup capability, but excessive redundancy wastes storage and can cause inconsistency if updates are not synchronized.

9. a) What is a **network topology**?

   A network topology is the arrangement or layout of nodes and links in a computer network, describing how devices are interconnected physically or logically, for example bus, star, ring, or mesh.

b) Draw and label a diagram of a **Bus topology**.

A bus topology consists of a single central cable (the bus) to which all network devices are connected.

Devices attach to the bus via connectors; data sent by a device travels along the bus and can be received by all other devices, with only the intended recipient accepting and processing the frame.

c) State one (1) advantage and one (1) disadvantage of a bus topology.

Advantage: It is simple and inexpensive to set up because it requires less cabling than other topologies.

Disadvantage: It has limited scalability and a single point of failure—the entire network can be affected if the main bus cable is damaged.

10. a) Explain the term **internet safety**.

Internet safety is the practice of protecting oneself and personal information while using the internet; it involves safe behaviors, security measures, and awareness to reduce risks such as identity theft, cyberbullying, malware, and exposure to inappropriate content.

b) Mention any four (4) common threats to internet safety.

Phishing attacks that attempt to trick users into revealing personal information through fake emails or websites.

Malware, including viruses, trojans, and ransomware that can damage systems or steal data.

Identity theft, where attackers steal personal details to impersonate victims for fraud.

Cyberbullying or harassment, where individuals are targeted with abusive messages or content online.

c) Give two (2) tips for protecting yourself from online threats.

Use strong, unique passwords and enable two-factor authentication where available to reduce the risk of unauthorized access.

Keep software and operating systems up to date, and use reputable antivirus or security tools, to mitigate vulnerabilities and detect malicious activity.

Section C: (10 Marks)

Attempt ONLY ONE (1) question from this section.

11. a) What is **MS Word**?

MS Word is a word processing application developed by Microsoft, used to create, edit, format, and print text documents such as letters, reports, and assignments.

b) Describe the following features of MS Word:

i. Spell checker

The spell checker scans the document for misspelled words and suggests corrections; it helps users produce error-free text by highlighting likely mistakes and offering replacements.

ii. Thesaurus

The thesaurus provides synonyms and antonyms for selected words, assisting users to improve word choice and avoid repetition in their writing.

iii. Find and Replace

Find and Replace allows users to search the document for a specific word or phrase and optionally replace it with another, useful for quick edits and consistency across large documents.

c) Briefly explain the purpose of **margins** and **page orientation** in a document.

Margins define the blank space around the edges of the page to improve readability and provide room for binding or notes; they control how much content fits horizontally and vertically.

Page orientation sets whether the page is portrait (taller than wide) or landscape (wider than tall), and it affects layout choices, making some content like wide tables easier to present.

12. a) What is a **spreadsheet cell**?

A spreadsheet cell is the basic unit in a spreadsheet where a single piece of data or a formula is entered; it is identified by a column letter and row number, for example A1.

b) Differentiate between a **row** and a **column** in a spreadsheet.

A row runs horizontally and is identified by a number, containing multiple cells across different columns on the same horizontal line.

A column runs vertically and is identified by a letter (or letters), containing multiple cells down the same vertical line.

c) Provide the correct spreadsheet formula to:

i. Find the average of cells A1, A2, and A3.

=AVERAGE(A1,A2,A3)

ii. Sum the values in cells B5 through B10.

=SUM(B5:B10)

iii. Find the minimum value in cells C1, C2, C3, and C4.

=MIN(C1,C2,C3,C4)