THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

036/1 INFORMATION AND COMPUTER STUDIES 1

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2014**

Instructions

1. This paper consists of sections A, B and C with a total of twelve questions

2. Answer all the questions in section A and B and one question in section C.

1. For each of the following items (i) – (x), choose the most correct answer among the alternatives provided and write its letter beside the item number.

(i) Data can be arranged in ascending or descending order by using the sort command from:
A. Table menu
B. Data menu
C. Tools menu
D. Sort menu
E. Format menu
Answer: B. Data menu
Reason: The data menu in applications like Excel provides sorting options for arranging data in ascending or descending order.

(ii) A file created using plain texts using NotePad or DOS editor will have a file extension ending with:
A. .Doc
B. .Dat
C. .Html
D. .Exe
E. .Txt
Answer: E. .Txt
Reason: Files created in plain text editors like Notepad are saved with the .txt extension by default.

(iii) System programs which provide a useful service to the user of the computer by providing facilities for performing common tasks are known as:
A. User programs
B. Utility programs
C. Software programs
D. Simple programs
E. Computer programs
Answer: B. Utility programs
Reason: Utility programs provide essential tools for system maintenance and performing routine tasks like file management and virus scanning.

(iv) Databases with fields or records arranged in groups resembling a family tree are called:
A. Hierarchical
B. Distributed
C. Non-hierarchical
D. Relational
E. Non-relational
Answer: A. Hierarchical
Reason: Hierarchical databases use a tree-like structure to organize data in parent-child relationships.

(v) The computer generation which is characterized by electronic devices called integrated circuits (ICs) is known as:
A. Fifth generation
B. Second generation
C. Fourth generation
D. First generation
E. Third generation
Answer: E. Third generation
Reason: The third generation of computers used ICs, which replaced transistors and improved speed and efficiency.

(vi) The physical hardware parts of a computer are often referred to as:
A. Insiders
B. Devices
C. Hardware
D. Software
E. Generators
Answer: C. Hardware
Reason: Hardware refers to the tangible components of a computer, such as the CPU, monitor, and keyboard.

(vii) A mouse that uses radio or infrared waves to transmit data is called:
A. A trackball mouse
B. A ball mouse
C. A wireless mouse
D. A mechanical mouse
E. A Bluetooth mouse
Answer: C. A wireless mouse
Reason: A wireless mouse uses radio frequency or infrared technology to communicate with the computer without cables.

(viii) First generation computers were very large physically and used thousands of electronic gadgets called:
A. Transistors
B. Silicon chips
C. Thermionic valves
D. Integrated circuits
E. Diodes
Answer: C. Thermionic valves
Reason: First-generation computers relied on vacuum tubes (thermionic valves) for processing and storage.

(ix) The device that performs the function of signal modulation and demodulation is called a:
A. Demodulator
B. Modulator
C. Router

D. Modem
E. Decoder
Answer: D. Modem
Reason: A modem modulates digital signals into analog for transmission and demodulates received analog signals back into digital form.

(x) The fastest, most powerful, and most expensive category of computers is the:
A. Laptop
B. Mainframe
C. Minicomputer
D. Microcomputer
E. Supercomputer
Answer: E. Supercomputer
Reason: Supercomputers are designed for high-speed processing and solving complex problems, making them the fastest and most powerful computers.

2. Match the meanings in List A with their corresponding terminologies in List B by writing the letter of the correct option beside the item number.

List A:
(i) The process of converting data signals by superimposing them on an analogue carrier for transmission via a telephone line.
(ii) The process used at the receiver to recover the original signal coming from the sender end in modulated form.
(iii) The technique of combining several analog signals/messages or digital message streams into one signal for transmission as a single message.
(iv) The maximum amount of data that a transmission medium can carry at any given time.
(v) A digital signal that is generated and applied to the transmission medium directly without modulation.
(vi) Transmission of data over an analog medium by using frequency differences to represent different data signals.
(vii) Data communication that occurs only in one direction of the communication medium.
(viii) Data communication that allows a two-way flow of data but one direction at a time.
(ix) Data communication that allows simultaneous flow of data in both directions of the medium.
(x) The weakening of a data signal over a communication medium with increasing distance.

List B:
A. Baseband transmission
B. Broadband transmission
C. Demultiplexing
D. Half duplex transmission
E. Full duplex transmission
F. Multiplexing

G. Signal modulation
H. Signal demodulation
I. Signal interference
J. Signal retransmission
K. Duplex transmission
L. Simplex transmission
M. Network transmission

Solution:
(i) G
(ii) H
(iii) F
(iv) A
(v) B
(vi) G
(vii) L
(viii) D
(ix) E
(x) I

3. In the following items, write (T) for True statement and (F) for False statement.

(i) An action query is the most common type of query used for searching and analyzing data in one or more tables. F
(ii) A spreadsheet has three main components, namely worksheets, databases, and cells. F
(iii) A peer-to-peer network does not depend on a central server. T
(iv) Online storage means that stored data is directly accessible for processing. T
(v) Auto content wizard includes animations, transitions, and builds. F
(vi) Optical Character Recognition converts scanned images into text that can be edited. T
(vii) Inkjet printer is an example of an impact printer. F
(viii) Data is entered into the computer by using keying devices only. F
(ix) The operating system allocates RAM among programs that are running. T
(x) Network users can open shared files but they cannot change those files. T

4. (a) Briefly explain three slide viewing options in PowerPoint.

- Normal View: This is the default view for creating and editing slides. It displays thumbnails of all slides in a pane alongside the main slide for editing.
- Slide Sorter View: This view shows all slides as thumbnails, allowing easy rearrangement and organization of slides.
- Slide Show View: Displays slides in full-screen mode, exactly as they will appear during a presentation.

(b) Mention four ways which can be used in creating a new presentation in PowerPoint.

- Using a Blank Presentation: Start with an empty presentation and add slides, text, and designs.
- Using Templates: Select pre-designed templates that include slide layouts, themes, and formatting.
- Importing from Other Applications: Import content from Word or Excel into PowerPoint slides.
- Copying and Modifying Existing Presentations: Use an existing presentation and modify it to suit new content.

5. The figure below shows data entered into a spreadsheet application.

(a) What is the cell reference of the active cell?
Answer: The active cell reference is the one with a highlighted border. If unspecified, assume a hypothetical active cell, e.g., C3.

(b) Which cell will become the active cell if the Home button on the keyboard is pressed?
Answer: Cell A1
Reason: Pressing the Home button moves the active cell to the first cell in the row, and pressing Ctrl + Home moves to A1.

(c) Write the formula used in cell B7 to calculate the total for February.
Answer: =SUM(B2:B6)
Reason: This formula calculates the sum of the values in cells B2 through B6.

(d) Apart from performing calculations, state any other two functions of a spreadsheet.

- Data Analysis: Spreadsheets provide tools such as charts and pivot tables for analyzing data.
- Database Management: Spreadsheets allow sorting, filtering, and storing data for record-keeping purposes.

6. (a) The snapshot below shows the features of an electronic word processor. Label all features indicated by arrows.

- A: Title Bar - Displays the title of the document or application.
- B: Menu Bar - Contains menus for different commands and functions such as File, Edit, View, etc.
- C: Toolbar - Provides quick access to commonly used commands and tools.
- D: Ruler - Allows alignment and setting of tabs and margins for the document.
- E: Text Area - The main working area where text and other elements are input and edited.
- H: Scroll Bar - Allows navigation through the document vertically or horizontally.

(b) Explain the functions of C, A, B, and H features.

- C: Toolbar

Provides shortcuts to frequently used commands such as saving, opening, printing, or formatting text, improving efficiency.

- A: Title Bar
Displays the name of the current document and application, helping the user identify the open file.

- B: Menu Bar
Contains organized menus that group related commands, such as editing, viewing, and formatting options.

- H: Scroll Bar
Allows the user to scroll through the document to view different parts, especially when the document is larger than the screen size.

7. (a) Explain why there is concern at the disposal of Nickel-cadmium batteries.
Nickel-cadmium batteries contain toxic heavy metals like cadmium, which can leach into soil and water, causing environmental pollution and health hazards when improperly disposed of.

(b) Describe five advantages of automation.

- Increased Efficiency: Automation speeds up processes by reducing the time needed for repetitive tasks.
- Consistency: Automated systems maintain a consistent level of quality and performance.
- Cost Reduction: Reduces the need for manual labor, lowering operational costs.
- Improved Accuracy: Minimizes human errors in tasks such as data entry and manufacturing.
- Enhanced Safety: Reduces risks in hazardous work environments by delegating dangerous tasks to machines.

8. (a) What are the three main purposes of desktop publishing software?

1. Designing Publications: Enables users to create professional documents like brochures, magazines, and newsletters.
2. Layout Customization: Provides tools to arrange text, images, and graphics on a page for an appealing layout.
3. Improving Document Presentation: Enhances the visual quality of documents with features like color schemes, styles, and formatting.

(b) You have been requested as an expert in DTP to design a five-page school magazine. The magazine layout should display the school logo at the top of every page. Explain how you would do this.

- Open a new document in the DTP software and set the page layout (e.g., A4 size).
- Insert the school logo at the top of the first page and position it using the toolbar.
- Use the "Header" option to place the logo in the header area. This ensures the logo appears consistently on all pages.

- Design the layout of each page, including text boxes, images, and columns for content.
- Save the document and review each page to ensure the logo is correctly aligned and visible.

9. (a) What is the purpose of a database?
A database organizes and stores data efficiently, allowing easy access, management, and retrieval of information.

(b). (i) Describe any two principal ways of organizing a database.

1. Hierarchical Organization: Data is arranged in a tree-like structure with parent-child relationships, suitable for structured data.
2. Relational Organization: Data is organized in tables linked by relationships, making it easy to retrieve and manipulate.

(ii) Write down the criteria you would use to display employee details from a payroll database who earn between 900 and 1800.
Criteria: SELECT records where the "Salary" field value is >= 900 and <= 1800.

(c) Outline three benefits that computer networks provide to the users.
- Resource Sharing: Users can share printers, files, and internet connections, reducing costs.
- Communication: Facilitates instant communication through email, messaging, and video conferencing.
- Data Accessibility: Allows users to access shared files and data from different locations.

(d) Identify two types of wireless media that are used to link networks.

- Wi-Fi
- Bluetooth

10. Elaborate how data recovery, data compression, backup, and file defragmentation utility programs function.

- Data Recovery
  This utility helps restore lost or corrupted files due to accidental deletion, hardware failure, or software issues. It works by scanning storage devices for recoverable files and restoring them to a specified location. For example, data recovery tools like Recuva are commonly used after accidental file deletions.

- Data Compression

- This reduces the size of files by removing redundant data, making them easier to store and transmit. Compressed files save storage space and reduce transmission time. Examples include ZIP and RAR file formats, which are compressed using tools like WinRAR or 7-Zip.
- Backup
  This utility creates copies of important data to protect against data loss due to hardware failures, cyberattacks, or accidental deletion. Backups can be stored on external drives or cloud storage services. For instance, using Google Drive to back up documents ensures data availability even if the original files are lost.

- File Defragmentation
  This process reorganizes scattered file fragments on a hard disk, arranging them sequentially to improve read and write speeds. It enhances system performance by reducing the time required to access files. Windows Disk Defragmenter is an example of such a utility.

11. Why should a school/institution have a website? Describe by giving four reasons.

- Improved Communication
  A website provides a platform for schools to share announcements, schedules, and updates with students, parents, and staff. For example, posting exam timetables or event schedules on the website ensures timely communication.

- Global Accessibility
  Websites enable schools to showcase their programs and achievements to a global audience. This is particularly beneficial for attracting international students or partnerships. For instance, international schools often highlight their curriculum online.

- Enhanced Learning Resources
  A website serves as a repository for educational materials like lecture notes, assignments, and tutorials. This promotes e-learning and supports students' academic growth. Many institutions integrate learning management systems into their websites for this purpose.

- Promotes Transparency and Accountability
  A website allows schools to share information such as fee structures, admission criteria, and policies, fostering transparency. For example, parents can access fee breakdowns and school policies online without needing physical visits.

12. With examples, give a detailed elaboration of the classification of operating systems based on the number of users and number of tasks.

- Based on Number of Users
    - Single-User Operating Systems
- Designed to allow one user at a time to access system resources. These are suitable for personal computers. Examples include Microsoft Windows 10 and macOS.

    - Multi-User Operating Systems
- Enable multiple users to access the system simultaneously, often through networked terminals. These systems ensure resource allocation and security for multiple users. Examples include UNIX and Windows Server.

- Based on Number of Tasks

    - Single-Tasking Operating Systems
- Allow only one task to run at a time. These are typically used in simpler devices where multitasking isn't required. For example, DOS is a single-tasking operating system.

    - Multi-Tasking Operating Systems
- Capable of running multiple tasks simultaneously. They manage CPU time allocation for each task to ensure efficiency. Examples include Windows and Linux, which allow users to run applications like web browsers, word processors, and media players simultaneously.

By combining these classifications, operating systems are tailored to meet specific user and task requirements, ensuring optimal performance in different environments.