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: 2016**

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.

SECTION A (40 Marks)

Answer all questions in this section.

1. Briefly explain any three principles of teaching and learning ICT

Engagement: One principle is engagement, making lessons interactive. Using science simulations captivates students, enhancing teaching effectiveness and educational outcomes through active participation.

Clarity: Clarity ensures understandable instruction, simplifying concepts. Clear science explanations on software reduce confusion, improving learning and teaching quality through precise communication.

Relevance: Relevance connects lessons to real-world needs, like technology. Teaching science applications aligns with goals, boosting educational impact and development through applicable learning strategies.

2. Explain the following terms as used in computing:

(a) Swapping: Swapping refers to exchanging data between memory and storage, like moving science files, enhancing system efficiency and educational progress through optimized computing resources.

(b) Algorithm: An algorithm is a step-by-step procedure, like problem-solving, supporting science calculations, improving teaching effectiveness and learning outcomes through structured methods.

(c) Compiler: A compiler translates code into executable programs, like converting science scripts, boosting productivity and development through efficient software creation and educational tools.

3. Identify three applications of word processing programs to the classroom teacher

Document Creation: One application is document creation, drafting lessons. Teachers use science reports, enhancing teaching organization and educational outcomes through clear materials.

Student Assignments: Word processing supports student assignments, like essays. It aids science projects, improving teaching efficiency and learning progress through structured submissions.

Communication: It facilitates communication, like emails. Teachers share science updates, boosting teaching effectiveness and educational stability through efficient interaction and learning tools.

4. Briefly describe the major components that are involved in the information dissemination process

Data Collection: One component is data collection, gathering facts. Science surveys provide raw information, enhancing educational outcomes and teaching effectiveness through accurate inputs.

Processing: Processing transforms data into insights, like analysis. Science software organizes information, supporting teaching quality and development through meaningful outputs and learning strategies.

Distribution: Distribution shares information, like reports. Science networks deliver content, boosting productivity and educational progress through accessible resources and teaching methods.

5. Determine the use of the following in spreadsheet application software:

(a) Title Bar: The title bar displays the document name, identifying files. It aids science tracking, enhancing teaching efficiency and educational outcomes through organized software use.

(b) Standard Tool Bar: The standard toolbar provides quick access, like formatting. It supports science data management, improving teaching precision and learning progress through efficient tools.

(c) Menu Bar: The menu bar offers options, like editing. It enhances science operations, boosting teaching effectiveness and educational stability through user-friendly interfaces and learning.

6. Identify three advantages of using presentation software such as PowerPoint during teaching and learning process

Visual Engagement: One advantage is visual engagement, using slides. Science visuals captivate students, enhancing teaching impact and educational outcomes through interactive learning.

Organization: Presentation software organizes content, structuring lessons. Science topics flow logically, improving teaching efficiency and stability through clear delivery and education.

Collaboration: It fosters collaboration, sharing ideas. Science teams present data, boosting teaching quality and learning progress through group interaction and educational strategies.

7. Briefly elaborate the functions of the following in database management systems:

(a) Tables: Tables store data, like records. They manage science information, enhancing teaching precision and educational outcomes through organized storage and learning tools.

(b) Forms: Forms input data, simplifying entries. They support science updates, improving teaching effectiveness and stability through user-friendly interfaces and education.

(c) Queries: Queries retrieve specific data, like reports. They aid science analysis, boosting teaching quality and learning progress through efficient information access and teaching methods.

8. Distinguish operating system software from application software

Operating System Software: Operating system software manages hardware, like drivers, supporting science device operations, enhancing productivity and educational stability through foundational computing tools.

Application Software: Application software performs tasks, like word processing, aiding science education, improving teaching effectiveness and learning outcomes through specific functional programs.

9. (a) Describe the term “Computer user interface” as used in computing

Computer user interface refers to the interaction point, like screens, enabling science operations, enhancing productivity and development through user-friendly design and educational tools.

9. (b) Explain the two types of computer user interface

Graphical User Interface (GUI): GUI uses visuals, like icons, for science navigation, improving teaching efficiency and educational outcomes through intuitive interaction and learning.

Command-Line Interface (CLI): CLI uses text commands, like scripts, for science tasks, enhancing productivity and stability through precise control, supporting teaching precision and education.

10. Differentiate the following terms as used in databases:

(a) Primary Key and Foreign Key: Primary key uniquely identifies records, like IDs, ensuring science data integrity, supporting teaching accuracy and educational outcomes through organized systems. Foreign key links tables, like references, enhancing productivity and stability through relational science management and learning tools.

(b) Flat File Database and Relational Database: Flat file database stores data in simple files, like lists, managing science records, improving teaching efficiency but limiting complexity in education. Relational database organizes data in tables, like networks, boosting science analysis, enhancing teaching quality and learning progress through structured systems.

SECTION B (30 Marks)

Answer two (02) questions from this section.

11. Justify the contention that "the functionality of computer networks depends on the network topology"

Efficiency: One justification is efficiency, optimizing performance. Network topology, like star layouts, ensures science data flow, enhancing teaching effectiveness and educational outcomes through reliable systems.

Scalability: Topology supports scalability, expanding networks. Science configurations handle growth, improving teaching stability and learning progress through adaptable computing and education resources.

Reliability: It ensures reliability, reducing failures. Science layouts prevent bottlenecks, boosting productivity and development through stable networks and teaching precision in classrooms.

Cost-Effectiveness: Topology influences cost, guiding design. Science setups minimize expenses, supporting educational stability and teaching quality through efficient resource use and learning tools.

Management: It simplifies management, organizing operations. Science topologies streamline maintenance, enhancing teaching efficiency and educational outcomes through structured network strategies.

12. Analyze five challenges that affect internet connections in secondary schools

Infrastructure Limitations: One challenge is infrastructure, like poor wiring. Inadequate science networks slow access, reducing teaching effectiveness and educational outcomes through unreliable connections.

Bandwidth Constraints: Limited bandwidth restricts use, causing delays. Science downloads lag, challenging teaching quality and learning progress through insufficient internet capacity in classrooms.

Cost Issues: High costs hinder connectivity, limiting resources. Science internet expenses strain budgets, impacting teaching stability and educational development through financial barriers.

Technical Skills: Lack of skills complicates management, causing issues. Teachers struggle with science tech, reducing teaching precision and learning outcomes through inadequate training and support.

Power Instability: Unreliable power disrupts connections, halting use. Science blackouts affect internet, challenging teaching efficiency and educational stability through frequent interruptions in schools.

13. Discuss the role of each element in the computer system development life cycle

Planning: One role is planning, defining objectives. It outlines science project goals, enhancing teaching effectiveness and educational outcomes through structured development and learning strategies.

Analysis: Analysis identifies needs, assessing requirements. It evaluates science user demands, improving teaching quality and stability through informed design and educational progress.

Design: Design creates blueprints, structuring systems. It develops science interfaces, boosting productivity and development through efficient tools and teaching precision in education.

Implementation: Implementation builds and tests systems, ensuring functionality. It deploys science software, enhancing teaching reliability and learning outcomes through operational stability and classroom support.

Maintenance: Maintenance updates systems, ensuring longevity. It fixes science issues, supporting teaching efficiency and educational progress through sustained performance and learning tools.

14. Evaluate the significance of multimedia in the teaching and learning process in the education context

Engagement: One significance is engagement, making lessons interactive. Multimedia, like videos, captivates students, enhancing teaching impact and educational outcomes through science-based learning.

Clarity: It ensures clarity, simplifying concepts. Multimedia on ecosystems reduces confusion, improving teaching quality and stability through clear science communication and education.

Retention: Multimedia improves retention, reinforcing memory. Animations of processes aid recall, supporting teaching effectiveness and learning progress through memorable science experiences.

Accessibility: It enhances accessibility, reaching diverse learners. Science multimedia accommodates styles, boosting educational outcomes and teaching precision through inclusive learning tools.

Relevance: Multimedia ensures relevance, connecting to real-world needs. Science simulations link to applications, enhancing teaching impact and development through applicable education strategies.

SECTION C (40 Marks)

Answer two (02) questions from this section.

15. Elaborate six reasons that justify the significance of teaching and learning Information and Computer Studies (ICS) pedagogy in teachers' colleges

Skill Development: One reason is skill development, enhancing expertise. ICS training builds science tech proficiency, improving teaching effectiveness and educational outcomes through competent educators.

Technological Integration: It supports technological integration, modernizing instruction. Science pedagogy incorporates tools, boosting teaching quality and stability through innovative learning and development.

Student Engagement: ICS pedagogy increases engagement, making lessons interactive. Science simulations captivate learners, enhancing educational progress and teaching impact through dynamic strategies in colleges.

Preparation for Workforce: It prepares teachers for workforce needs, addressing demands. Science education aligns with tech requirements, supporting teaching stability and societal progress through skilled instruction.

Curriculum Relevance: ICS ensures curriculum relevance, meeting goals. Science-focused pedagogy aligns with standards, improving teaching precision and educational outcomes through relevant learning tools.

Professional Growth: It fosters professional growth, deepening insight. ICS training advances science knowledge, enhancing teaching effectiveness and stability through continuous educator development and education.

16. Examine six purposes of keeping test records in secondary schools

Tracking Progress: One purpose is tracking progress, monitoring growth. Test records on science concepts assess student development, enhancing teaching effectiveness and educational outcomes through data analysis.

Identifying Gaps: They identify learning gaps, guiding improvement. Science scores reveal weaknesses, supporting teaching quality and stability through targeted strategies and educational progress in classrooms.

Accountability: Records ensure accountability, verifying performance. Science evaluations maintain standards, boosting teaching precision and educational stability through transparent assessment and learning.

Curriculum Evaluation: They evaluate curricula, refining content. Science results guide adjustments, enhancing teaching impact and educational outcomes through data-driven planning and development.

Reporting: Test records support reporting, informing stakeholders. Science grades communicate progress, improving teaching reliability and stability through clear feedback and educational communication.

Future Planning: They aid future planning, setting goals. Science data shapes strategies, enhancing teaching efficiency and educational progress through proactive learning and development initiatives.

17. Elucidate the essence for teachers to prepare schemes of work before they begin teaching

Planning: One essence is planning, organizing instruction. Schemes outline science topics, ensuring systematic teaching and educational effectiveness for student progress and teaching stability.

Time Management: Schemes ensure time management, scheduling activities. They allocate periods for science lessons, enhancing teaching productivity and learning outcomes through efficient classroom strategies.

Resource Allocation: They guide resource allocation, listing needs. Schemes specify science materials, improving teaching precision and educational stability through available tools and learning support.

Curriculum Alignment: Schemes align with curricula, meeting goals. They cover science subjects, supporting teaching quality and educational progress through goal-oriented planning and instruction.

Assessment Support: Schemes aid assessment, evaluating progress. They schedule science quizzes, enhancing teaching strategies and student achievement through structured evaluation and educational development.

18. Why is it important for the ICS teacher to use teaching aids in his/her lesson. Substantiate your answer by giving six reasons

Engagement: One reason is engagement, making lessons interactive. Teaching aids, like models, captivate students, enhancing science learning outcomes and teaching effectiveness through visual tools.

Clarity: They ensure clarity, simplifying concepts. Charts on science processes reduce confusion, improving teaching quality and stability through clear communication and educational impact.

Retention: Teaching aids improve retention, reinforcing memory. Diagrams of science systems aid recall, supporting teaching effectiveness and learning progress through memorable experiences in classrooms.

Relevance: They ensure relevance, connecting to real-world needs. Science visuals link to applications, enhancing teaching impact and educational outcomes through applicable learning strategies.

Accessibility: Teaching aids enhance accessibility, reaching diverse learners. Science multimedia accommodates styles, boosting educational progress and teaching precision through inclusive tools and instruction.

Efficiency: They improve efficiency, saving time. Science tools streamline lessons, enhancing teaching productivity and stability through effective resource use and educational development in classrooms.