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: 2018**

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.

1. Briefly explain the meaning of each of the following terms as used in Information and Communication Technology (ICT):

(a) Data: Data refers to raw facts or figures, like numbers, collected for analysis, supporting decision-making and development through organized information processing.

(b) Knowledge: Knowledge is understood information, derived from data analysis, enhancing productivity and stability through informed science-based strategies and educational outcomes.

(c) Information: Information is processed data, providing meaningful insights, like reports, boosting economic growth and societal progress through effective communication and learning.

2. (a) What is computer application software?

Computer application software refers to programs designed for specific tasks, like word processing, enhancing productivity and development through efficient science-based operations and education.

2. (b) Briefly explain three application softwares used in schools during teaching and learning process

Word Processors: One software is word processors, like Microsoft Word, used for creating documents. They aid science lesson plans, improving teaching effectiveness and educational outcomes through organized materials.

Spreadsheets: Spreadsheets, like Excel, manage data, assisting in science analysis. They enhance teaching precision and student learning through numerical tasks and educational efficiency.

Presentation Tools: Presentation tools, like PowerPoint, support teaching, displaying science concepts. They boost engagement and teaching quality, improving educational progress through visual learning.

3. Explain the following terms as World Wide Web is concerned:

(a) Hypertext: Hypertext refers to text with links, enabling navigation, enhancing productivity and development through interconnected science information access and learning efficiency.

(b) Hypermedia: Hypermedia includes multimedia links, like videos, improving engagement, supporting educational outcomes and stability through interactive science resources and teaching effectiveness.

(c) Hyperlinks: Hyperlinks are clickable connections, facilitating navigation, boosting science learning and development through efficient information access and educational progress in classrooms.

4. Briefly explain the first three generations of computers

First Generation (1940s–1950s): First-generation computers used vacuum tubes, slow and large, supporting early science calculations, laying foundations for educational technology and development through basic computing.

Second Generation (1950s–1960s): Second-generation used transistors, faster and smaller, enhancing science processing, improving educational efficiency and stability through advanced computing and teaching tools.

Third Generation (1960s–1970s): Third-generation employed integrated circuits, improving performance, boosting science education and development through efficient systems and teaching effectiveness in classrooms.

5. (a) What is multimedia?

Multimedia refers to combined media, like text and video, enhancing communication, supporting educational outcomes and development through engaging science-based learning and teaching strategies.

5. (b) Give the differences between linear multimedia and non-linear multimedia

Linear Multimedia: Linear multimedia follows a fixed sequence, like a slideshow, limiting interaction, supporting science education through structured learning but reducing teaching flexibility and engagement.

Non-Linear Multimedia: Non-linear multimedia allows user control, like interactive simulations, enhancing science learning through flexible navigation, improving teaching effectiveness and educational outcomes through adaptability.

6. Briefly explain three characteristics of a computer

Speed: One characteristic is speed, processing tasks quickly. Computers handle science calculations fast, enhancing productivity and educational efficiency through rapid data processing.

Accuracy: Accuracy ensures reliable results, minimizing errors. Computers perform science tasks precisely, supporting teaching quality and stability through dependable outcomes in education.

Storage: Storage capacity retains data, like files. Computers hold science information, boosting learning and development through accessible resources and teaching effectiveness in classrooms.

7. Give the meaning of the following terms:

(a) Job Creation: Job creation refers to generating new employment, increasing workforce, supporting economic stability and development through science industry growth and educational opportunities.

(b) Job Replacement: Job replacement involves substituting workers with technology, like automation, impacting employment, requiring science training for stability and progress through workforce adaptation.

(c) Job Displacement: Job displacement occurs when workers lose jobs to technology, reducing labor, necessitating science education for economic stability and societal development through retraining.

8. Describe three types of computers based on their capacity, price, and performance

Personal Computers (PCs): PCs are affordable, moderate-performance devices for individual use, supporting science education, enhancing productivity and development through accessible computing and teaching tools.

Mainframe Computers: Mainframes are high-capacity, expensive systems for large organizations, boosting science data processing, improving stability and economic growth through powerful computing resources.

Supercomputers: Supercomputers are high-performance, costly machines for complex tasks, advancing science research, supporting educational outcomes and development through cutting-edge technology and efficiency.

9. Elaborate the following terms as used in Information and Communication Technology:

(a) Information and Communication Technology (ICT): ICT integrates technology for communication, like internet, enhancing productivity and development through science-based learning and teaching strategies in education.

(b) Information Technology: Information technology manages data, like databases, supporting science operations, improving educational efficiency and stability through effective information systems and teaching tools.

(c) Local Area Network: Local Area Network connects devices locally, like in schools, boosting science collaboration, enhancing educational outcomes and development through networked resources and teaching effectiveness.

10. Briefly explain the following terms:

(a) Spreadsheet: A spreadsheet is software for data organization, like Excel, managing science calculations, enhancing productivity and educational progress through efficient analysis and teaching tools.

(b) Database: A database stores and retrieves data, like records, supporting science management, improving learning outcomes and stability through organized information and teaching efficiency.

(c) Internet: Internet is a global network, connecting devices, enhancing science communication, supporting educational development and stability through accessible resources and teaching strategies.

11. Explain five advantages of having a computer network in teachers' colleges

Resource Sharing: One advantage is resource sharing, accessing files. Networks enable science data exchange, enhancing teaching efficiency and educational outcomes through collaborative tools in colleges.

Communication: Networks improve communication, like emails. They connect science educators, boosting teaching effectiveness and stability through efficient interaction and educational progress.

Cost Efficiency: They reduce costs, centralizing resources. Shared science hardware lowers expenses, supporting educational stability and development through economical teaching strategies in colleges.

Data Management: Networks enhance data management, storing records. Science databases improve organization, supporting teaching quality and learning outcomes through reliable information systems.

Collaboration: They foster collaboration, enabling projects. Science teams work together, enhancing educational impact and teaching effectiveness through networked learning and development initiatives.

12. Analyze two sources of information used by our forefathers and three sources of information used by modern generation

Forefathers' Sources:

Oral Tradition: One source is oral tradition, sharing stories. Forefathers used spoken science knowledge, supporting community stability and development through memory-based learning.

Written Records: Written records, like scrolls, stored information. They preserved science history, enhancing economic stability and progress through documented knowledge and education.

Modern Generation Sources:

Internet: Internet provides digital information, like websites. It supports science learning, boosting productivity and development through accessible resources and teaching efficiency.

Books: Books offer structured knowledge, like textbooks. They enhance science education, supporting teaching quality and stability through reliable learning materials and outcomes.

Media: Media, like television, delivers news, informing society. It advances science awareness, improving educational progress and development through broad communication and teaching tools.

13. Using database in keeping college data is inevitable in this Information and Communication Technology world. Discuss five advantages of using electronic database over the traditional way of keeping data at your college

Efficiency: One advantage is efficiency, quick data access. Electronic databases manage science records faster, enhancing teaching productivity and educational outcomes through streamlined systems.

Accuracy: They ensure accuracy, minimizing errors. Digital science storage reduces mistakes, supporting teaching quality and stability through reliable data and learning processes.

Security: Electronic databases offer security, protecting information. Encrypted science files prevent loss, boosting educational stability and development through safe data management and teaching tools.

Storage Capacity: They provide large storage, retaining data. Databases hold science records extensively, improving teaching effectiveness and learning outcomes through accessible resources in colleges.

Accessibility: They enhance accessibility, enabling remote use. Science data is available online, supporting teaching flexibility and educational progress through convenient learning and management systems.

14. Elaborate five factors that teachers must consider when selecting a teaching strategy

Student Needs: One factor is student needs, ensuring engagement. Strategies for science concepts match abilities, enhancing teaching effectiveness and educational outcomes through tailored instruction.

Learning Objectives: Objectives guide strategy selection, defining goals. Science-focused methods align with aims, improving teaching quality and student progress through targeted learning.

Resource Availability: Available resources, like software, influence strategies. Choosing digital tools for science ensures effective education, supporting teaching precision and learning outcomes in classrooms.

Time Constraints: Time availability shapes strategies, ensuring efficiency. Short activities for science topics fit schedules, enhancing teaching productivity and educational stability within limits.

Teacher Skills: Teacher expertise affects strategy choice, ensuring success. Skilled science educators use interactive methods, improving teaching effectiveness and learning outcomes through competent instruction.

15. Analyze five factors to consider when setting new computer laboratory in a school

Space Requirements: One factor is space, ensuring room size. Adequate areas for science equipment support functionality, enhancing educational stability and teaching efficiency through proper facilities.

Infrastructure: Reliable power and internet are crucial, supporting use. Science labs need connectivity, boosting teaching quality and learning outcomes through functional technology and development.

Budget: Financial resources determine feasibility, ensuring affordability. Funding for science hardware supports educational progress, enhancing stability and teaching effectiveness through cost management.

Safety Measures: Safety protocols, like fire exits, protect users. Science labs require secure environments, improving teaching precision and student well-being through risk management and education.

Technical Support: Ongoing support ensures maintenance, maintaining use. Science technicians fix equipment, enhancing teaching reliability and learning outcomes through sustainable laboratory operations.

16. Assessing students' achievement in teaching and learning at any level of education is very important. Explain any five assessment tools used to assess student achievement in secondary schools

Tests: One tool is tests, measuring knowledge. Science quizzes on chemistry evaluate progress, enhancing teaching effectiveness and educational outcomes through structured assessment in classrooms.

Projects: Projects assess application, like experiments. Science assignments on biology demonstrate skills, improving teaching quality and student learning through practical evaluation and progress.

Quizzes: Quizzes provide quick feedback, gauging understanding. Science checks on physics concepts support teaching precision, enhancing educational stability and student achievement through frequent assessment.

Observations: Observations evaluate behavior, like participation. Science teachers monitor biology labs, improving teaching impact and learning outcomes through direct assessment and engagement strategies.

Portfolios: Portfolios compile work, showing growth. Science collections of physics projects track progress, enhancing teaching effectiveness and educational development through comprehensive evaluation.