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: 2012**

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. Give brief description of the following categories of software:

(a) Operating System (OS): An operating system manages hardware, like memory, supporting science operations, enhancing teaching efficiency and educational outcomes through foundational computing and learning tools.

(b) Utility Software: Utility software maintains systems, like antivirus, protecting science data, improving teaching precision and stability through reliable performance and educational strategies.

(c) Application Software: Application software performs tasks, like word processing, aiding science education, enhancing teaching effectiveness and learning outcomes through specific functional programs and instruction.

2. Outline three purposes of assessment in learning ICS

Measuring Progress: One purpose is measuring progress, tracking outcomes. Science tests on programming evaluate growth, enhancing teaching effectiveness and educational outcomes through feedback and learning.

Identifying Gaps: Assessment identifies learning gaps, guiding improvement. Science quizzes reveal weaknesses, supporting teaching quality and stability through targeted strategies and educational progress.

Motivating Students: It motivates students, encouraging effort. Science scores inspire participation, boosting teaching impact and stability through achievement recognition and learning outcomes in classrooms.

3. With the aid of a well labelled diagram, show the relationship between data, processing, and information

Diagram Description:

Data: Raw facts, like numbers, enter the system, supporting science input, enhancing teaching precision and educational outcomes through initial resources and learning.

Processing: Processing transforms data, like analysis, managing science operations, improving teaching efficiency and stability through meaningful outputs and educational strategies.

Information: Processed data, like reports, exits as insights, boosting science understanding, enhancing teaching quality and learning progress through clear communication and instruction tools.

Arrows: Arrows connect data to processing, then to information, illustrating science flow, supporting teaching effectiveness and educational outcomes through structured learning and development.

4. What are the basic hardware and software requirements for setting up a LAN network?

Hardware Requirements:

Computers: Devices connect, like PCs, supporting science communication, enhancing teaching efficiency and educational outcomes through networked learning and instruction tools.

Cables/Switches: Cables or switches link devices, ensuring connectivity, boosting teaching precision and stability through reliable science networks and educational strategies.

Software Requirements:

Network Operating System: Software, like Windows Server, manages networks, improving teaching quality and stability through efficient science operations and learning tools.

Protocols: Protocols, like TCP/IP, enable communication, enhancing teaching effectiveness and educational progress through functional science networking and instruction.

5. (a) Why would network users connected via a hub experience network transmission problems with increasing number of users?

Congestion: One reason is congestion, overwhelming the hub. More science users slow traffic, challenging teaching efficiency and educational outcomes through limited bandwidth and learning.

Collision: Hubs cause collisions, disrupting data. Increasing science connections increase errors, reducing teaching precision and stability through unreliable networks and educational strategies.

Limited Bandwidth: Hubs share bandwidth, restricting speed. More users strain science resources, impacting teaching quality and stability through performance issues and learning tools.

5. (b) What network hardware will be required to replace the hub in order to improve network performance?

Switch: One hardware is a switch, managing traffic. It directs science data efficiently, enhancing teaching precision and educational outcomes through improved connectivity and learning tools.

Router: A router connects networks, optimizing flow. It improves science performance, boosting teaching quality and stability through reliable communication and educational strategies.

6. Distinguish the following terms as used in database management systems:

(a) A Field: A field is a data column, like names, storing science details, enhancing teaching precision and educational outcomes through organized records and learning tools.

(b) A Record: A record is a data row, like a person's info, managing science entries, improving teaching quality and stability through structured storage and educational strategies.

(c) A File: A file is a collection of records, like a database, handling science information, boosting teaching efficiency and learning progress through comprehensive systems and instruction.

7. With examples, briefly describe the following types of peripheral device interfacing:

(a) Parallel Interface: Parallel interface transfers multiple bits, like printers, sending science data simultaneously, enhancing teaching efficiency and educational outcomes through fast communication and learning.

(b) Serial Interface: Serial interface sends one bit, like USBs, transmitting science data sequentially, improving teaching precision and stability through reliable connections and educational tools.

8. (a) Differentiate interpreters from compilers as used in computing

Interpreters: Interpreters execute code line-by-line, like debugging science scripts, supporting teaching effectiveness and learning outcomes through real-time processing and educational tools.

Compilers: Compilers translate code into programs, like creating science applications, enhancing teaching quality and stability through optimized software and learning strategies in education.

8. (b) Why were interpreters more suitable in early computers compared to compilers?

Simplicity: One reason is simplicity, requiring less memory. Interpreters handled science tasks easily, enhancing teaching efficiency and educational outcomes through basic computing and learning tools in early systems.

Immediate Feedback: They provided immediate feedback, aiding debugging. Science errors were fixed instantly, improving teaching precision and stability through quick adjustments and educational strategies.

Resource Constraints: Early systems had limited resources, favoring interpreters. Science memory needs were minimal, boosting teaching quality and stability through efficient use and learning in classrooms.

9. Describe the following concepts as used in ICT:

(a) Centralized Computer Lab: A centralized computer lab consolidates devices, like servers, managing science resources, enhancing teaching efficiency and educational outcomes through shared systems and learning tools.

(b) Hypermedia: Hypermedia includes multimedia links, like videos, improving science engagement, supporting teaching impact and stability through interactive resources and educational strategies in education.

10. Outline four criteria which teachers can use to select a film as a teaching material

Relevance: One criterion is relevance, aligning with goals. Films on science concepts match objectives, enhancing teaching effectiveness and educational outcomes through applicable learning and instruction.

Clarity: Clarity ensures understandable content, simplifying ideas. Science films with clear visuals improve teaching quality and stability through effective communication and learning tools.

Engagement: Engaging films, like interactive clips, captivate students. Science media holds attention, boosting teaching impact and educational progress through dynamic education and strategies.

Appropriateness: Appropriate content, avoiding harm, ensures suitability. Science films suit audiences, enhancing teaching precision and stability through safe materials and learning outcomes.

SECTION B (30 Marks)

Answer two (2) questions from this section.

11. With examples, analyse the main stages of software development process

Planning: One stage is planning, defining objectives. Outlining science goals, like a database project, ensures structured development, enhancing teaching effectiveness and educational outcomes through clear strategies and learning.

Analysis: Analysis identifies needs, assessing requirements. Evaluating science user demands, like user interfaces, improves teaching quality and stability through informed design and educational progress.

Design: Design creates blueprints, structuring systems. Developing science layouts, like app interfaces, boosts productivity and development through efficient tools and teaching precision in education and learning.

Implementation: Implementation builds and tests systems, ensuring functionality. Deploying science software, like coding applications, enhances teaching reliability and learning outcomes through operational stability and classroom support.

Maintenance: Maintenance updates systems, ensuring longevity. Fixing science issues, like bugs in programs, supports teaching efficiency and educational progress through sustained performance and learning tools.

12. Examine why most organizations prefer their computers networked

Resource Sharing: One reason is resource sharing, accessing files. Networked science systems enable data exchange, enhancing teaching efficiency and educational outcomes through collaborative tools and learning in organizations.

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

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

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

Collaboration: They foster collaboration, enabling projects. Science groups work together, enhancing teaching impact and stability through interactive learning and educational strategies in organizations.

13. Describe the important elements of multimedia

Text: One element is text, providing information. Science descriptions in presentations enhance teaching clarity and educational outcomes through readable content and learning tools.

Audio: Audio, like narration, adds engagement. Science sounds in simulations captivate students, improving teaching impact and stability through interactive education and development.

Video: Video, like tutorials, offers visuals. Science clips clarify concepts, boosting teaching quality and learning progress through dynamic science resources and instructional strategies.

Graphics: Graphics, like charts, visualize data. Science diagrams present information, enhancing teaching precision and stability through clear visuals and educational tools in learning.

Animation: Animation adds motion, engaging audiences. Science transitions illustrate processes, improving teaching effectiveness and educational outcomes through interactive learning and instruction.

14. Elaborate the factors to consider when designing a website

User Needs: One factor is user needs, ensuring usability. Understanding science audience preferences enhances teaching effectiveness and educational outcomes through relevant design and learning tools.

Navigation: Easy navigation improves access, structuring content. Science menus simplify use, boosting teaching precision and stability through user-friendly systems and educational strategies.

Design Aesthetics: Attractive design, like colors, engages users. Science visuals captivate, enhancing teaching quality and learning progress through appealing interfaces and instruction.

Performance: Fast loading ensures efficiency, minimizing delays. Science optimization supports functionality, improving teaching reliability and stability through effective websites and learning tools.

Security: Secure features, like encryption, protect data. Science measures prevent breaches, enhancing teaching precision and educational outcomes through safe systems and learning strategies.

SECTION C (40 Marks)

Answer two (2) questions from this section.

15. Evaluate the role that assessment plays in implementing the ICS curriculum

Measuring Progress: One role is measuring progress, tracking outcomes. Science tests on programming assess growth, enhancing teaching effectiveness and educational outcomes through feedback and learning in the curriculum.

Identifying Gaps: Assessment identifies learning gaps, guiding improvement. Science quizzes reveal weaknesses, supporting teaching quality and stability through targeted strategies and educational progress in ICS.

Motivating Students: It motivates students, encouraging effort. Science scores inspire participation, boosting teaching impact and stability through achievement recognition and learning outcomes in classrooms.

Curriculum Evaluation: Assessment evaluates curricula, refining content. Science results guide adjustments, enhancing teaching precision and educational outcomes through data-driven planning and learning in ICS.

Ensuring Accountability: It ensures teacher accountability, maintaining standards. Science evaluations assess instruction, supporting teaching reliability and stability through transparent assessment and educational strategies.

16. With examples, analyse the application of ICT in the areas of education and business

Education – E-Learning: One application is e-learning, using platforms. Science courses online, like coding, enhance teaching effectiveness and educational outcomes through accessible learning and instruction tools.

Education – Collaboration Tools: ICT supports collaboration, like forums. Science groups discuss projects, improving teaching quality and stability through interactive education and learning strategies in classrooms.

Business – Data Management: ICT manages data, like databases. Science systems track sales, boosting productivity and development through efficient operations and educational support for business training.

Business – Communication: ICT improves communication, like video calls. Science meetings connect teams, enhancing economic stability and progress through effective strategies and learning tools in organizations.

17. Explain five advantages of projected materials in the teaching and learning process

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

Clarity: They ensure clarity, simplifying concepts. Projected science diagrams reduce confusion, improving teaching quality and stability through clear communication and educational strategies.

Accessibility: Projected materials enhance accessibility, reaching all. Science content on screens accommodates styles, boosting teaching precision and educational progress through inclusive learning tools.

Efficiency: They improve efficiency, saving time. Projected science lessons streamline delivery, enhancing teaching productivity and stability through effective resource use and education in classrooms.

Retention: Projected materials improve retention, reinforcing memory. Science animations aid recall, supporting teaching effectiveness and learning outcomes through memorable experiences and learning tools.

18. Elaborate five factors which teachers must consider while 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 and learning.

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

Resource Availability: Available resources, like software, influence choices. Selecting science tools ensures effective learning, supporting teaching precision and stability through accessible materials and instruction.

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

Teacher Skills: Teacher expertise affects strategy choice, ensuring success. Skilled science educators use interactive methods, improving teaching impact and stability through competent instruction and education.