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: 2015**

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 three benefits of technology to teachers

Efficiency: One benefit is efficiency, streamlining tasks. Technology, like science software, automates grading, enhancing teaching productivity and educational outcomes through saved time.

Engagement: It increases engagement, making lessons interactive. Science tools, like simulations, captivate students, improving teaching effectiveness and learning progress through dynamic instruction.

Access to Resources: Technology provides resource access, like online materials. Science databases support lesson planning, boosting teaching quality and stability through comprehensive learning tools.

2. Give three differences between operating system and application software

Function: One difference is function, managing hardware versus tasks. Operating systems control science devices, while applications perform specific jobs, like word processing, affecting teaching efficiency and education.

Installation: Operating systems are foundational, requiring installation first. Applications, like science programs, install on systems, influencing teaching precision and learning outcomes through software use.

Examples: Operating systems include Windows, managing devices. Applications, like Excel, handle science data, impacting teaching effectiveness and educational stability through distinct roles.

3. Give three reasons why proofreading a word processed document is important even when spellchecker is used

Context Errors: One reason is context errors, missed by spellcheckers. Science terms may be misspelled but contextually wrong, requiring review for teaching accuracy and educational outcomes.

Grammar Issues: Proofreading catches grammar, beyond spelling. Science documents need correct syntax, enhancing teaching quality and stability through clear communication and learning.

Consistency: It ensures consistency, aligning styles. Science reports maintain uniform formatting, improving teaching precision and educational progress through professional presentation and instruction.

4. Explain the following terms as used in computer programming:

(a) Translators: Translators convert code, like compiling science scripts, enhancing productivity and development through efficient programming and educational tools for teaching.

(b) Interpreters: Interpreters execute code line-by-line, like debugging science algorithms, supporting teaching effectiveness and learning outcomes through real-time processing and education.

(c) Compilers: Compilers translate code into executable programs, like creating science applications, boosting teaching quality and stability through optimized software and learning strategies.

5. Differentiate the following pairs of terms as used in spreadsheets:

(a) Workbook and Worksheet: A workbook is a file, containing worksheets, managing science data, enhancing teaching efficiency and educational outcomes through organized storage. A worksheet is a single tab, like a science table, supporting teaching precision and learning progress through specific data handling.

(b) Active Cell and a Cell Address: An active cell is the current focus, like a science input point, improving teaching interactivity and education. A cell address, like A1, identifies location, enhancing teaching accuracy and stability through precise science data referencing.

(c) Formula Bar and Menu Bar: Formula bar displays formulas, like science calculations, boosting teaching effectiveness and learning outcomes through visible data processing. Menu bar offers options, like editing, supporting teaching quality and stability through user-friendly science operations and education.

6. Identify at least three advantages of the teacher of using computer to keep students' records as opposed to manual system of record keeping

Speed: One advantage is speed, accessing data quickly. Computers retrieve science grades faster, enhancing teaching efficiency and educational outcomes through rapid record management.

Accuracy: Computers ensure accuracy, minimizing errors. Digital science records reduce mistakes, supporting teaching quality and stability through reliable data and learning tools.

Security: They offer security, protecting information. Encrypted science files prevent loss, boosting teaching reliability and educational progress through safe storage and education strategies.

7. Briefly describe three qualities of a well-prepared presentation for educational purposes

Clarity: One quality is clarity, ensuring understandable content. Science slides use simple terms, enhancing teaching effectiveness and educational outcomes through clear communication and learning.

Engagement: Presentations are engaging, capturing attention. Science visuals, like graphs, captivate students, improving teaching impact and stability through interactive education and development.

Organization: They are organized, structuring information. Science topics flow logically, boosting teaching precision and learning progress through structured delivery and educational strategies.

8. Interpret the following flowchart by writing an equivalent pseudocode

Pseudocode:

START

INPUT Age

```
IF Age >= 18 THEN
   OUTPUT "Adult"
ELSE
   OUTPUT "Young Person"
END IF
STOP
```

This pseudocode processes science age data, enhancing teaching efficiency and educational outcomes through structured logic and learning tools for programming instruction.

9. If the mean score of Computer Studies test at Makuja Secondary School is 83, calculate the Z score and T score of Masolwa who got 78 in the test given that:

(a) The standard deviation is 4.12

Z Score Calculation:

$Z = (X - \mu) / \sigma$

$Z = (78 - 83) / 4.12$

$Z = -5 / 4.12 \approx -1.21$

The Z score of -1.21 indicates Masolwa's science performance is below average, supporting teaching precision and educational assessment through statistical analysis.

T Score Calculation:

$T = (Z \times 10) + 50$

$T = (-1.21 \times 10) + 50$

$T = -12.1 + 50 \approx 37.9$

The T score of 37.9 shows Masolwa's science achievement, enhancing teaching effectiveness and learning outcomes through normalized evaluation and education strategies.

10. Briefly explain any three major 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.

SECTION B (30 Marks)

Answer two (2) questions from this section.

11. Analyze five advantages of configuring a star network topology over other types such as a bus network topology

Reliability: One advantage is reliability, isolating failures. Star networks limit science disruptions, enhancing teaching stability and educational outcomes through dependable connections.

Scalability: Star topology supports scalability, adding devices. Science expansions are easy, improving teaching efficiency and learning progress through flexible network systems and education.

Performance: It offers high performance, reducing congestion. Star networks handle science data efficiently, boosting teaching quality and stability through fast communication and learning tools.

Ease of Management: Star networks simplify management, centralizing control. Science administration is streamlined, enhancing teaching precision and educational outcomes through organized systems.

Security: They enhance security, controlling access. Star setups protect science data, supporting teaching reliability and stability through secure networks and educational strategies.

12. Examine five major factors to consider when selecting a programming language

Ease of Use: One factor is ease of use, ensuring accessibility. Simple science syntax aids learning, enhancing teaching effectiveness and educational outcomes through user-friendly tools.

Performance: Performance, like speed, is crucial, supporting tasks. Efficient science languages boost productivity, improving teaching quality and stability through reliable programming and education.

Compatibility: Compatibility with systems ensures integration. Science languages match hardware, enhancing teaching precision and learning progress through seamless applications and instructional strategies.

Community Support: Strong community support aids development. Science forums offer resources, improving teaching efficiency and educational outcomes through collaborative learning and tools.

Scalability: Scalability supports growth, handling complexity. Science languages adapt to needs, boosting teaching stability and stability through flexible programming and educational systems.

13. Elaborate the first five major stages of website development

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

Design: Designing layouts follows, creating visuals. Science interfaces are crafted, improving teaching quality and stability through user-friendly sites and learning tools.

Development: Development builds the site, coding functions. Science features are programmed, boosting productivity and educational progress through functional websites and teaching resources.

Testing: Testing ensures functionality, checking errors. Science sites are verified, enhancing teaching precision and learning outcomes through reliable systems and education.

Deployment: Deployment launches the site, making it live. Science websites go online, supporting teaching reliability and stability through accessible platforms and instructional strategies.

14. Describe five ways which can be used to ensure the safety of computers and equipment in the computer laboratory

Regular Maintenance: One way is regular maintenance, preventing faults. Checking science hardware ensures reliability, enhancing teaching stability and educational outcomes through safe systems.

Security Software: Using security software, like antivirus, protects data. Science programs guard against threats, improving teaching precision and learning progress through secure environments.

Access Control: Limiting access prevents misuse, ensuring safety. Science labs restrict entry, boosting teaching quality and stability through controlled equipment use and education.

Training: Training users on safety, like handling, reduces risks. Science education on proper use enhances teaching effectiveness and educational outcomes through knowledgeable practices.

Environmental Controls: Maintaining conditions, like temperature, protects equipment. Science labs regulate climate, supporting teaching reliability and stability through functional systems and learning tools.

SECTION C (40 Marks)

Answer two (2) questions from this section.

15. Explain six procedures that will ensure that teacher-made tests are fair and reliable

Clear Instructions: One procedure is clear instructions, ensuring understanding. Science tests specify tasks, enhancing teaching fairness and educational outcomes through precise guidelines and assessment.

Diverse Questions: Using diverse questions prevents bias, covering topics. Science exams include chemistry and physics, improving teaching equity and stability through balanced evaluation and learning.

Standardized Scoring: Standardized scoring ensures consistency, minimizing errors. Science rubrics apply uniformly, boosting teaching precision and educational progress through reliable assessment and instruction.

Pilot Testing: Pilot testing validates tests, checking clarity. Science trials identify issues, enhancing teaching effectiveness and stability through refined evaluation and learning tools.

Anonymous Marking: Marking anonymously avoids bias, ensuring fairness. Science papers are graded without names, improving teaching integrity and educational outcomes through objective assessment.

Feedback Provision: Providing feedback supports improvement, ensuring reliability. Science comments guide students, enhancing teaching quality and stability through constructive evaluation and learning strategies.

16. Explain the significance of teaching and learning of Information and Computer Studies (ICS) to the learners (Give six points)

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

Technological Literacy: It fosters technological literacy, modernizing knowledge. Science education in ICS prepares students, boosting teaching quality and stability through relevant skills and development.

Career Opportunities: ICS opens career paths, increasing employability. Science tech skills lead to jobs, enhancing educational progress and teaching impact through practical learning and stability.

Problem-Solving: It develops problem-solving, addressing challenges. Science coding tasks improve critical thinking, supporting teaching precision and educational outcomes through analytical skills.

Collaboration: ICS promotes collaboration, enhancing teamwork. Science projects foster group work, boosting teaching effectiveness and stability through interactive learning and educational strategies.

Innovation: It encourages innovation, driving progress. Science tech solutions advance ideas, enhancing teaching impact and educational outcomes through creative learning and development tools.

17. Describe any six tools which can be used by teachers in assessing students' achievement during the teaching and learning of ICS

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

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

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

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

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

Presentations: Presentations assess communication, like tech reports. Science demonstrations on systems evaluate skills, boosting teaching quality and learning outcomes through oral assessment and instruction.

18. Evaluate the functions of teaching aids in teaching and learning Information and Computer Studies (ICS)

Engagement: One function is engagement, making lessons interactive. Teaching aids, like simulators, 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.