THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
DIPLOMA IN SECONDARY EDUCATTION EXAMINATION

738 INFORMATION AND COMMUNICATION TECHNOLOGY

Time: 3 Hours **ANSWERS** **Year: 2022**

Instructions.

1. This paper consists of sections A and B with a total of **Fourteen (14)** questions.
2. Answer **all** questions from section A and **four (4)** questions from section B.
3. Section A carries **forty (40)** marks and section B Carries **sixty (60)** marks.
4. Cellular phones are **note** allowed in the examination room.
5. Write your **examination Number** on every page of your answer booklet(s).

SECTION A (40 Marks)

Answer all questions from this section. Each question carries 4 marks.

1. Explain the efforts made by different institutions in ensuring that their clients are getting the correct, authenticated and updated information. Use four factors to provide the importance of information.

Institutions invest in **regular data verification and updates** to ensure clients receive accurate and current information. This involves checking facts, correcting errors, and removing outdated details from databases, publications, and digital platforms.

Many institutions have introduced **information management systems** such as content management software and database applications to organize, control access, and track changes to information, ensuring authenticity and accuracy.

Institutions also provide **official communication channels** like verified websites, help desks, customer care centers, and official social media accounts where clients can access reliable and updated information.

Additionally, they engage in **staff training and professional development** to equip employees with the skills and knowledge needed to handle information responsibly and maintain professional information standards.

Importance of information:
Information is important because it **supports decision-making**. Accurate and timely information helps individuals and organizations make sound, informed choices.

It **enhances problem-solving abilities** by providing facts and insights needed to identify problems, analyze options, and implement solutions effectively.

Information is essential for **planning and forecasting**. Institutions use reliable data to anticipate future trends and prepare strategies that suit expected changes.

Lastly, information **reduces uncertainty** by offering facts and verified knowledge, allowing individuals to act with greater confidence in various situations.

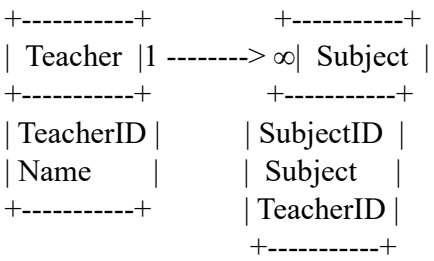
2. Identify the memory space contained in the statement "In God we trust" in the storage area by counting the characters.

The statement **"In God we trust"** contains 15 characters, including letters, spaces, and punctuation marks.
Breakdown:
I = 1
n = 1
(space) = 1
G = 1
o = 1
d = 1

(space) = 1
w = 1
e = 1
(space) = 1
t = 1
r = 1
u = 1
s = 1
t = 1
Total = 15 characters

3. Describe the type of relationship that exists between two tables in a given case as well as drawing an entity relationship diagram to show the relationship in the given case.

When two tables in a database are linked so that one record in the first table can be related to multiple records in the second table, it forms a **one-to-many relationship**. For example, a **'Teacher'** table and a **'Subject'** table can be linked this way, as one teacher can teach many subjects.
Entity Relationship Diagram (ERD):



Here, **TeacherID** is the primary key in the Teacher table and a foreign key in the Subject table, representing a one-to-many relationship.

4. Distinguish dimensional from multidimensional array by giving one C++ array declaration statement.

A **dimensional (one-dimensional) array** stores a list of elements in a single row or column.
Example:
int marks[5];

A **multidimensional array** stores data in a table-like structure involving rows and columns (or higher dimensions).
Example:
int matrix[3][4];

Difference: A one-dimensional array holds elements in a single line, while a multidimensional array organizes elements in multiple lines or grids.

5. Compare smartphones and computers
Smartphones are **portable devices** primarily designed for communication, including calls, messaging, and internet access, though they can also run apps for productivity and entertainment.

Computers are **more powerful and versatile devices** designed for complex tasks like programming, video editing, and data analysis, offering larger screens, keyboards, and storage capacity.

While both devices support internet browsing and apps, **computers offer better multitasking capabilities**, allowing users to open multiple applications or browsers simultaneously without significant performance issues.

Lastly, **computers typically allow easier hardware upgrades** (like increasing RAM or storage), while smartphones have limited upgrade options and rely on factory-installed specifications.

6. Provide the effects of prolonged television watching to human health

Prolonged television watching can cause **eye strain and vision problems** due to continuous exposure to screen light, especially in poorly lit rooms.

It contributes to **physical inactivity and obesity** as sitting for long hours reduces physical exercise, leading to weight gain and associated health risks.

Extended viewing time can lead to **sleep disturbances**, particularly if viewers watch late into the night, affecting the body's natural sleep cycle.

It also negatively affects **mental health**, especially when exposing individuals to violent or distressing content, which can increase stress, anxiety, or aggression.

7. Explain why foods and beverages are not allowed in computer laboratories

Foods and drinks can **spill on computers and accessories**, causing short-circuits, damage to internal components, or sticky keyboards and mice.

They also attract **pests like ants and cockroaches**, which can hide inside computer parts, potentially causing internal damage or hygiene issues.

Consumption of food may lead to **greasy or dirty hands**, which can transfer dirt onto keyboards, mice, and screens, affecting the cleanliness and usability of equipment.

Lastly, allowing food in computer labs can **distract users and create an untidy environment**, lowering the standard of professionalism expected in such learning or working spaces.

8. Provide the positive impacts of search engines in contributing to students' thinking capacity, problem solving and decision making

Search engines offer **instant access to diverse information**, enabling students to gather facts, compare ideas, and broaden their understanding of academic topics.

They enhance **critical thinking** by exposing students to different viewpoints, encouraging them to evaluate information and select what is most relevant and accurate.

Search engines improve **problem-solving skills** by offering resources such as tutorials, case studies, and expert opinions that guide learners in tackling academic and real-life challenges.

Finally, they support **informed decision-making** by providing up-to-date, reliable information that helps students make choices based on evidence rather than assumptions.

9. Explain how ICT can be integrated in the learning of mathematics and science subjects among student teachers

ICT can be used through **educational software and simulation programs** that allow student teachers to experiment with mathematical models or scientific concepts virtually.

Teachers can integrate **multimedia presentations** like videos, animations, and graphics to visually demonstrate abstract theories or processes in both subjects.

Online resources and research tools provide access to a wide range of scientific journals, instructional videos, and interactive mathematics platforms for extended learning.

ICT tools like **spreadsheets, graphing software, and data analysis programs** can assist student teachers in teaching statistics, handling experimental data, and presenting findings clearly.

10. Analyze four curriculum resources necessary during teaching and learning process

Textbooks and reference books are essential as they provide reliable content and exercises aligned with the curriculum objectives, guiding both teachers and students.

Teaching aids such as charts, diagrams, and models make lessons more interactive and help clarify abstract ideas, especially in science and technical subjects.

ICT resources like projectors, computers, and educational software enhance lesson delivery through visual presentations, simulations, and access to online educational content.

Human resources, including experienced teachers and guest speakers, bring expertise and real-world experiences into the classroom, enriching the learning process and motivating students.

SECTION B (60 Marks)

Answer all questions from this section. Each question carries 15 marks.

11. Assess the contribution of Multimedia in teaching and learning process

Multimedia improves **students' understanding of complex concepts** by combining text, images, audio, video, and animations. This makes lessons more interactive and appealing, especially for visual and auditory learners.

It enhances **student engagement and attention** in class. When lessons include multimedia content such as videos or simulations, learners remain more focused and interested throughout the session.

Multimedia allows for **diverse teaching approaches**. Teachers can present information through different formats, catering to various learning styles and abilities, making lessons more inclusive.

It supports **practical demonstrations of abstract ideas**, especially in science and technology subjects, by using simulations and virtual experiments that may not be possible in ordinary classroom settings.

Lastly, multimedia contributes to **easy access to information and resources**. Educational videos, online tutorials, and interactive quizzes are widely available, allowing students to revise and practice independently outside the classroom.

12. Explore five benefits secondary school students get from learning Information and Computer Studies (ICS)

One benefit is that ICS equips students with **basic computer skills**, enabling them to use devices for typing, internet browsing, and managing files, which are essential in today's digital world.

It improves **problem-solving and logical thinking**. Through programming exercises and computer-based tasks, students learn to analyze problems, plan solutions, and implement them using technology.

Learning ICS prepares students for **future careers in ICT-related fields** like software development, networking, or graphic design, increasing their employability in a technology-driven job market.

ICS enhances **communication and information-sharing abilities**. Students learn to use tools like emails, presentation software, and online platforms for academic and personal purposes.

Lastly, it encourages **innovation and creativity** by exposing students to digital tools that can be used for creating designs, editing media, or developing apps and websites.

13. Analyze the importance of opting for a word processor during the preparation of notes

A word processor allows for **easy editing and formatting of notes**. Mistakes can be corrected without rewriting, and important points can be emphasized using bold, italics, or colored text.

It enhances **organization and clarity of information**. Teachers and students can create headings, bullet points, and numbered lists to make notes well-structured and easy to follow.

Using a word processor improves **speed and efficiency** in preparing, saving, and printing notes compared to handwriting, especially when preparing large volumes of material.

A word processor enables **insertion of multimedia elements** like images, diagrams, and hyperlinks, which makes notes more interactive and visually appealing.

Lastly, it allows for **digital storage and sharing**, meaning notes can be saved, retrieved, or sent via email and online platforms, reducing the risk of loss and enhancing collaboration.

14. Elaborate five assessment tools that can be used in assessing Information and Computer Studies in secondary schools

One tool is the **practical test**, where students demonstrate their ability to operate computers, use software applications, or write simple programs, assessing hands-on skills.

Another tool is the **written test**, which includes multiple-choice questions, essays, or structured questions to evaluate students' theoretical understanding of ICS concepts.

Project work is also useful, where students undertake a task like designing a database, creating a website, or developing a simple application, testing their creativity and application of knowledge.

A **portfolio** assessment involves collecting samples of a student's work over a period, including assignments, projects, and practical exercises, offering a comprehensive record of progress.

Lastly, **oral presentations or demonstrations** can be used, where students explain and demonstrate how they carried out a project or task, assessing their understanding, communication, and technical skills.