

**KYAMBADDE DEREK
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WORD PROCESSING
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QUESTION 1

1. Mr.Kyambadde is a patron of the ICT club in XXX High School. His School will be holding its inter-club competitions soon: Being a Day school, Mr.Kyambadde needs to put in extra time to perfect most of the activities. He intends to send special letters requesting parents to release their children on non-schooling day for practice.

a) Type the letter and save it as permit Letter-Your name.

**XXX High School
P.O. Box 35, KAKIRI
29TH JUNE 2025**

THRU: THE HEADTEACHER
TO: Parent/Guardian of: <<**STUDENT'S NAME**>>
<<**PARENT'S NAME**>>

<<PHONE NUMBER>>

Dear <<TITLE>>

RE: REQUEST TO LET YOUR CHILD COME TO SCHOOL ON SUNDAY 06TH OF JUNE 2025

As the annual Inter-club competitions draw nearer, our club is devising means of increasing time for practice.

I hereby request you to let your <<**GENDER**>> on the above-mentioned date, to enable us polish his/her performance as a <<**CATEGORY**>>.

We will be grateful for your positive response. Yours
faithfully,

.....
Mr.Kyambadde Derek

HOUSE MISTRESS-UGANDA HOUSE

Student's Name	Parent's Name	Phone Number	Title	Gender	Category
Nalwanga	Mr.Okech Moses	0703-232 522	Sir	Daughter	Dancer
Kale Angel	Ms. Nankya Percy	0772-545 333	Madam	Daughter	Actress
Ssali Ben	Mr.Ssali James	0752-562 418	Sir	Son	Actor
Bbaale Tonny	Mr. Bbuye Bob	0712-214 555	Sir	Son	Singer
Nambi Annet	Ms. Sonko Sally	0783-655 631	Madam	Daughter	Actress
Ladli Robert	Mr. Okidi Fred	0752-989 536	Sir	Son	Drummer

Required

- b) Create the table and save it as permit table-Your name.
- c) Include a header of your name on the letter.
- d) Insert a curved down ribbon auto shape on the bottom side of the letter
- e) Add suitable text in the shape created above
- f) Insert current date and time in the lower bottom centre of your letter and update it automatically.
- g) Apply a Drop cap to three lines in the letter.
- h) Insert an image called ict lab and send it behind text
- i) Insert three lines 6-point page border on your document (letter)
- j) Using appropriate word processing feature link the table to the letter so as to generate 5 letters to be sent to the respective parents of the participants in Mr.kyambadde's House. And ensure that all merge fields inserted should be bolded.
- k) Insert a printed water mark of your **SCHOOL NAME** in the entire document.
- l) Make the reference appear in blue colour font size 14 Arial Black style and the rest of the text 14 font size and in Black times Roman.
- m) Print your letters

MR. SSEBALAMU ERIC TOM
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PRESENTATION SOFTWARE

QUESTION 1

You are required to create a compelling 5-slide presentation basing on the summary saved as **socialmedia.rtf**

Using a presentation software program of your choice, save it as **Social Media Edited** and use the following instructions.

Using a slide master, format your presentation to have:

- i) All headings to appear in stencil font style
- ii) Font size is 30
- iii) Font colour is red
- iv) The rest of the body should be Times New Roman
- v) Slide background colour is light green
- vi) Animation for headings is bounce
- vii) Slide transition is random vertical bars
- viii) A picture of a social media icon placed in the top left corner. Resize the picture so that it fits the space without overlapping

Slide Requirements:

Slide 1: Present the title, name and your email address(if applicable)

Slide 2: Briefly give a simple introduction to the topic

Slide 3: A list of any six social media platforms in a cycle format using smart Art.

Slide 4: Table showing social media percentage usage

Slide 5: Use the details in slide 4 to create a 3D pie chart.

Instructions

- Add relevant graphics or pictures from the support files folder on every slide
- Include slide numbers on all slides
- Set all slides to run automatically until "Esc"
- Change the presentation to fit on a 16:9 on screen show
- Include your name and index number as footer in the header section of the handout print preview
- Include speaker notes on slide four indicating your favorite social media platform.
- Link All Slides To One Another using action buttons
- Include date and time that updates automatically

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DATABASES

QUESTION ONE

Create a database called SCHOOL and within it create a table called students as below;

STID	SNAME	GENDER	DOB	COUNTRY	CONTACT	FEEDPAID
S001	NSAMBA PAUL	M	12/06/1991	UGANDA	0752886655	700000
S002	NABWIRE RITA	F	11/12/1997	KENYA	0789653342	800000
S003	KAREN TENDO	F	12/06/1995	TANZANIA	0774653255	750000
S004	NAMAYE ROSE	F	08/11/1987	UGANDA	0702487690	600000
S005	NGWERA DEO	M	15/06/1999	KENYA	0782764355	800000
S006	AKOTH IRENE	F	12/09/1996	RWANDA	0703657799	500000
S007	OPIO RONALD	M	04/01/1999	KENYA	071753466	900000

Required;

- Use **auto number** for STID field
- Apply lookup wizard for **gender** and **country** fields
- Validate the DOB field such that students who were born before the year 1990 and after the year 2000 cannot be accepted in the file. A validation text of **"Date out of range"** should be displayed.

- Format your currency of Fee paid with **"SHS"** symbol.

Create queries to;

- Display students whose second name begins with letter **R**, save the query as R.
- Display students whose contact belongs to **Airtel**, save the query as Airtel
- Display students whose Fee paid is above **600000** but below **900000**
- Calculate the 20% discount of the fee paid by students who paid 700000/=and above. Save it as discount.

- i) Display students' countries with only **6 letters**, save it as 6 letters.
- j) Display the **current age** of all students, save it as Age.
- k) Display students born **between 1996 and 1999**, save it as between.
- l) Display students born on **12th day**, save it as 12th day.

Create forms to;

- i. Create a combo box using country field which has Uganda, Kenya, Tanzania and Rwanda as your drop down list.
- ii. Add a header as your name and include a print command button at its right, and a footer as your personal number.
- iii. Calculate the fees balance if all students are supposed to pay **1,000,000/=**
- iv. Apply relevant form navigation buttons.
- v. Create a split form from the students' table. Save it as split form.

Create a Report to;

- ✓ Display the entire student list grouped by SNAME in ascending order.

QUESTION TWO

- 1) Import files labelled table1 and table2 to database
- 2) Rename table1 as Husbands and Table2 as Wives respectively
- 3) Create a relationship between the two tables
- 4) Create a query to display HUSID, FULLNAME, DATE OF BIRTH and DISTRICT. Save it as Full Name.

MR. MUTYABA DANIEL
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Asst. Academic Registrar-Ernest Cook University
SPREADSHEETS

QUESTION ONE

- 1. Using spreadsheet software, open the file **Seminar.xls** and save it as your name and personal number
- 2. Copy and paste the worksheet to a new work sheet
- 3. Apply borders on the data
- 4. Change the orientation of the titles to -45
- 5. In cell B12, B13, B14, B15 use functions compute min, max, mode, median and variance for each subject.
- 6. Insert columns to calculate total mark and mean mark
- 7. Insert columns to grade math, English language, science and sst
- 8. Based on the following grading system use **Vlookup function** to grade math, English, science and sst

Marks	90-100	80-89	75-79	70-74	65-69	60-64	55-59	50-54	0-49
Aggregates	D1	D2	C3	C4	C5	C6	P7	P8	F9

9. Compute the total aggregate for each candidate.
10. Using Rank function, Basing on the total aggregate determine the positions for all candidates
11. Use a function to determine the number of candidates whose total aggregate is less than or equal to 12
12. Use **Hlookup** function to assign **pass** to students whose total aggregate is 13 and below **fail** if the total aggregate is above 13
13. Name the sheet pre mock
14. Save and print out your work

1. Load file "**Performance**"
 - a) Rename sheet1 one as "**good**"
 - b) Insert a row above the data and insert a heading "PUPILS' PERFORMANCE" in font face "*show card gothic, font size 17*."
 - c) Merge and centre the heading to cover the data
 - d) Using the functions determine:
 - i) Total
 - ii) Average score
 - iii) Positions in descending order
 - iv) Lowest mark in each subject
 - v) highest mark in each subject
 - vi) Mode
 - vii) Median

- e) Using the Hlookup function grade math scores using the grading system
Below, using the same grading system use vlookup to grade SST scores

85-100	D1
75-84	D2
70-74	C3
65-69	C4
55-64	C5
50-54	C6
45-49	P7
30-44	P8
29 and below	F9

- f) Change the orientation of the titles to -90
- g) Sort the data so that the oldest pupil is at the bottom
- h) Create a 3-D clustered bar graph showing the average score and move it another independent sheet "chart"
- i) Using count if function determine the number of pupils' who scored 70 and above in English language

2. Open sheet 2 of the work book
 - a. Rename sheet 2 as "better"
 - b. Insert a column between nigh duty allowance and Revenue Tax and name it gross pay
 - c. Using a formula determine the gross pay for each employee.
 - d. Determine the new gross pay after an increment of the basic pay by 25%
 - e. Using the absolute cell reference determine the tax revenue which is 10% of the new gross pay.
 - f. Format the figures into "Ushs"
 - g. Determine the net pay
 - h. Create a pie chart showing each employee's basic pay

QUESTION 2

The table below shows employers of Nalubale Hardware Mukono. The workshop uses the following information to compute the employee's remuneration.

Employee	Age	Basic salary	Allowances	Overtime
Kamilo Deo	35	120000	70000	40000
Kutosi Kato	40	125000	75000	45000
Nakimwero Ruth	43	130000	85000	50000
Jabuli Abbey	62	150000	100000	55000
Apesi Teo	59	150000	100000	55000
Rwampara David	55	150000	100000	55000
Kimanje Tadeus	48	130000	85000	50000
Miiri Priscilla	50	140000	90000	52000
Kalanzi Jimmie	29	110000	60000	35000
Gonza Lucy	32	120000	70000	40000
Katuntu Jeremy	51	130000	75000	45000
Gogolo Mine	54	110000	60000	35000

- i). Enter the above data into a spreadsheet.
- ii). Assume each employee started working at the age of 23 years , compute the number of years spent in service for each employee.
- iii). Calculate tax for Each employee at 15% of basic salary
- iv). Compute the gross pay for each employee.
- v). Compute the net pay for each employee.
- vi). Sort the data with age starting with the highest.
- vii). Give the table a title "employee records" font Georgia, font size 13 and centre it.
- viii). Format the figures to Uganda shillings
- ix). Create a column graph of employees name and basic pay only.
- x). Save the work under your name

MR. LUKYAMUZI RONALD
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QUESTION ONE

Digital Skills Academy, based in Kyengera, is a computer training center that also operates an internet café. During school holidays, the center offers hands-on computer training sessions for Senior Four and Senior Six vacationers. The Director, Mr. Isaac Mugisha, has requested you to design a publication to be given to learners who successfully complete the two-month training in the following course modules:

Word Processing
Spreadsheet Management
Networking & Internet Fundamentals
Digital Media and Content Design

- (a) Using any desktop publishing software of your choice, design a certificate of with width **29.7 cm** and height **21cm**. Save the publications as **your name** and **class**.
- (b) Use word art to provide an appropriate title to the certificate.
- (c) Use creativity skills and add relevant content of a good certificate.
- (d) Include **two signatories** for the *Director* and *Mrs. Nabatanzi Patricia* the Lab Technician.

- (e) Include **your name** as the recipient of the certificate.
- (f) Insert an image saved **Skills Logo.png** in the folder **Academy**
- (g) Use a suitable background for your certificate.
- (h) Apply a relevant border to enclose your certificate.
- (i) Add a page header of **your name** and **class**.
- (j) Save and print your certificate.

QUESTION 2

Your elder sister plans to make a birthday party for her daughter. You have been assigned to design an **Invitation Card** for the guests.

- (a) Using appropriate publishing software, create an invitation card that fit on an **A5 landscape page**.
- (b) Use WordArt to write the main subject of your invitation as “**CRYSTAL’S BIRTHDAY PARTY**”.
- (c) Using text boxes, personal creativity and design skills, appropriately layout the text below on the rest of the card area.

Baby Crystal invites the company of.....to her second birthday on
Sun-30th Nov. 2025
Time: 2:00pm.
 Come and Join us at **Mariaz Gardens** as we play, eat and sing with Crystal.
Lots of fun:
 The bouncing Castle, Swimming in the through-carry your swimming costumes.

- (d) Insert two images **Baby Crystal.jpg** and **Cake.png** from the folder saved as **Birthday Images**.
- (e) Apply a relevant page border art to the card.
- (f) Add a relevant page background color.
- (g) Include your name as recipient of the card.
- (h) Insert a header of your name and personal number.
- (i) Save the card as **Crystal Invitation-Card**.
- (j) Print the card.

SAMPLE MOCK PAPER

1. (a) Write the steps that can be followed to check the specifications of a computer. (03 marks)

Using This PC Icon

- Right-click on This PC, My Computer.
- Select properties
- Click Ok to confirm
- The specifications will be displayed

Using the System Information Utility

- Steps:
- Press Windows + R to open the Run dialog box.
- Type msinfo32 and press Enter.
- The System Information window will open, displaying a summary of your computer's hardware and software environment.

Using the Settings App (Windows 10/11)

Steps:

- Press Windows + I to open the Settings app.
- Go to System > About.
- Under Device specifications, you'll see details like the processor, installed RAM, and system type (e.g., 64-bit operating system).
- Under Windows specifications, you can see the edition, version, and build of your operating system.

Using Command Prompt

Steps:

- Press Windows + R, type cmd, and press Enter to open the Command Prompt.
- To get system information, type **systeminfo** and press Enter. This command provides a detailed list of your system specifications, including OS version, BIOS version, and more.
- For processor information, type **wmic cpu** get name and press Enter.
- For memory information, type **wmic memorychip** get capacity and press Enter

- (b) Mention any two specifications that are displayed in (1a) above.(02 marks)

- Processor generation
- Processor manufacturer
- Processor speed
- Amount of RAM available
- Screen type
- Operating system installed
- Computer manufacturer, brand and architecture

2. (a) Define the term green computing. (02 marks)

Green computing, also known as green IT or sustainable computing, refers to the practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems such as monitors, printers, storage devices, and networking and communications systems in an environmentally responsible and energy-efficient manner.

OR

Green computing is the practice of using computers and technology in a way that **protects the environment**.

(b) State the three goals of green computing. (03 marks)

- Reduce energy consumption
- Reduce electronic waste
- Promote sustainable manufacturing
- Optimize resource use
- Encourage eco-friendly behavior
- Reduce the use of hazardous substances.
- Minimize environmental impact
- To promote recyclability and biodegradability of resources

Practices that promote green computing at school

- **Turn off computers and devices when not in use**
– Saves energy and reduces electricity bills.
- **Use energy-efficient devices**
– Choose computers and printers with energy-saving features (e.g., Energy Star rated).
- **Print only when necessary**
– Reduce paper waste by using digital documents and assignments.
- **Use both sides of paper when printing**
– Minimizes paper usage.
- **Encourage digital learning**
– Use projectors, e-books, and online platforms instead of printed materials.
- **Recycle old computers and electronics**
– Prevents e-waste and reduces pollution.
- **Enable power-saving modes**
– Put computers on sleep or hibernate mode when idle.
- **Maintain and upgrade computers**
– Keeps them running longer, reducing the need for replacements.
- **Use shared resources**
– Share printers and projectors to reduce energy and equipment use.
- **Educate students and staff**
– Raise awareness about green computing and its benefits.
- **Use email instead of printed letters**
– Reduces paper use and supports eco-friendly communication

3. (a) What is the function of the CMOS Battery during computer booting? (02 marks)

The CMOS battery powers your laptop's BIOS firmware, which is responsible for booting up your computer and configuring data flow

(b) Mention two types of a booting a computer. (02 marks)

- Cold/ hard booting
- Warm/ soft booting

(c) Write acronym POST in full. (01 mark)

- Power On Self-Test

4. (a) Define the term Utility Software? (02 marks)

Utility software is a type of system software designed to help manage, maintain, and control computer resources.

These programs perform specific tasks that are typically related to the optimization and maintenance of the computer system. Utility software is often used to support the operating system and improve the efficiency of the computer

(b) Mention three examples of common utilities of a computer. (03 marks)

- *Anti-virus software*
- *File compression utility*
- *Disk defragmenter utility*
- *Disk scanners*
- *Cryptographic utility*
- *Backup utility*
- *System archives*
- *File management system*
- *Data recovery utilities*
- *Disk management utility*

5. (a) Define the term Secondary Storage media. (01 mark)

Secondary storage media refers to any non-volatile storage device that is used to keep data, files, and programs that are not currently being used or processed by the computer's primary memory (RAM).

(b) Name the three types of secondary storage media. (03 marks)

- *Solid state drives*
- *Magnetic storage*
- *Optical storage*

(c) Identify one example of secondary storage media with the highest transfer rate and give reasons to support your answer. (01 mark)

- *Solid State Disks like NVME have no moving parts. They use flash memory to store data, which allows for almost instantaneous data retrieval and storage*

Examples of magnetic storage media

- *Hard Disk Drive (HDD)*
- *Floppy Disk*
- *Magnetic Tape*
- *Zip Disk*
- *Magnetic Drum*
- *Cassette Tape*
- *Magneto-Optical Disk*
- *SuperDisk (LS-120)*
- *Jazz drive*

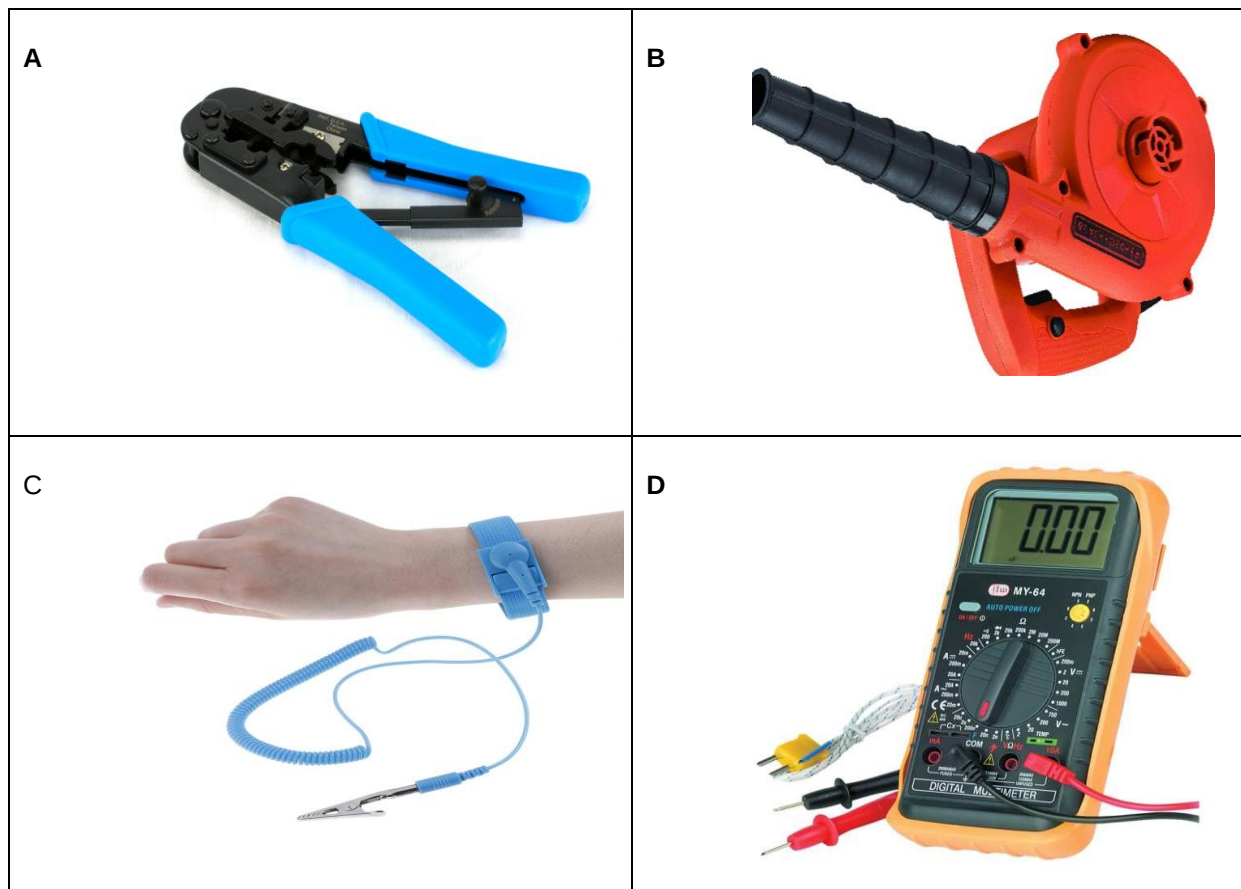
Solid State Storage Media

- *Solid-State Drive (SSD)*
- *USB Flash Drive (Pen drive)*
- *Memory Card (e.g., SD card, microSD card)*
- *Embedded MultiMediaCard (eMMC)*
- *CompactFlash Card (CF card)*
- *NVMe SSD (Next-gen internal SSD with faster speed)*
- *Solid-State Hybrid Drive (SSHD) (part SSD, part HDD)*
- *Internal Flash Memory (built into devices like smartphones and tablets)*

Optical Storage media

- CD-ROM (Compact Disc - Read Only Memory)
- CD-R (Compact Disc - Recordable)
- CD-RW (Compact Disc - ReWritable)
- DVD-ROM (Digital Versatile Disc - Read Only Memory)
- DVD-R / DVD+R (Recordable DVDs)
- DVD-RW / DVD+RW (ReWritable DVDs)
- Blu-ray Disc (BD)
- MiniDisc (less common now, but once used for music and data storage)

6. Given the following tools used in servicing and repairing computers



(a) Name the tools shown above.

(04 marks)

- A. Crimping Tool
- B. Dust Blower
- C. Anti-static wrist strap
- D. Digital Multi-meter

(b) Give the function of tool C during repairing computer system units.

(01 mark)

An anti-static wrist strap is a safety device used to prevent the buildup of static electricity on a person's body, which can discharge and potentially damage sensitive electronic components, such as computer parts, during handling or assembly.

7. (a) What is the Central Processing Unit? (01 mark)

Often referred to as the "brain" of the computer, the CPU executes instructions from programs, performs calculations, and manages data flow to and from other components within the computer.

(b) Explain why the CPU performs the following operation during data processing. (04 marks)

- **Fetch:** The CPU retrieves an instruction from memory. The address of the instruction is stored in the Program Counter (PC), and the instruction is loaded into the Instruction Register (IR).
- **Decode:** The CPU decodes the fetched instruction to understand what action is required. This involves interpreting the instruction and preparing the necessary components of the CPU to execute it.
- **Execute:** The CPU performs the operation specified by the instruction. This could involve arithmetic calculations, data movement, or other operations depending on the instruction.
- **Storing:** The result of the execution is written back to memory or a register. This step ensures that the output of the instruction is stored in the appropriate location for future use.

8. (a) Name two security elements that make an email more secure than ordinary post. (02 marks)

- **Encryption**--Emails can be encrypted during transmission (using SSL/TLS) and at rest, preventing unauthorized access.
- **Authentication**--Email systems use login credentials (username and password) to verify the sender's identity.
- **Digital Signatures**--These verify the authenticity of the sender and ensure that the content has not been tampered with.
- **Spam and Malware Filters**-- Email systems scan messages for malicious content and filter out harmful messages.
- **Access Control**--Email accounts can have access controls like multi-factor authentication (MFA) to prevent unauthorized access.
- **Audit Trails**--Emails create logs and records, allowing tracking of when and where messages were sent and received.

(b) Given the web address below.
<https://www.computerhope.com/history/laptops.html>
Identify the

(03 marks)

- **https** – The protocol (HyperText Transfer Protocol Secure), which ensures encrypted and secure communication.
- **www** – Subdomain--Stands for World Wide Web, commonly used for websites.
- **computerhope** – Second-level domain (SLD)- This is the name chosen by the organization or individual; it identifies the website.
- **.com** – Top-level domain (TLD)- Indicates the type of organization or purpose. .com stands for commercial.
- **/history/** – The directory or folder path on the server that helps organize content.
- **laptops.html** – The webpage or file name, which in this case is an HTML document about laptop history.

9. (a) State one duty or responsibility of the following computer professionals in an organization. (03 marks)

(a) Computer Engineer.

- A computer engineer is responsible for designing, developing, testing, and maintaining computer systems, hardware, and software.
- **Designing Hardware Components:** Creating blueprints and designs for computer hardware like processors, memory devices, routers, and circuit boards.
- **Prototyping and Testing:** Building and testing prototypes to evaluate their functionality, performance, and reliability.
- **Upgrading Existing Hardware:** Enhancing the performance of existing hardware systems by improving their efficiency, speed, and capacity.

(b) Web Master.

- **Website Maintenance:** Regularly updating website content, software, and plugins to ensure the site is current and functions properly.
- **Monitoring Performance:** Tracking website performance metrics such as uptime, load times, and traffic to ensure optimal operation.
- **Troubleshooting Issues:** Identifying and fixing website errors, broken links, and other technical issues that may arise.

(c) Software Engineer

- **Programming and Coding:** Writing code in various programming languages to create software applications, operating systems, and firmware.
- **Software Testing:** Conducting tests to identify and fix bugs or issues in the software, ensuring it meets required standards.
- **System Integration:** Integrating software with hardware components to create a fully functional system.

(b) Explain any two ways how an organization can protect its' data and information against unauthorized access. (02 marks)

- Implement strong access control
- Use data encryption
- Apply folder locks and passwords to sensitive data
- Regular security audits and assessments
- Regularly update and patch software
- Data masking anonymization
- Activate firewalls
- Installing updated anti-virus
- Employee awareness trainings
- Implement data loss prevention solutions
- Regular backup and secure cloud storage
- Implement physical security measures

10. (a) What is a wireless transmission media? (01 mark)

Wireless transmission media refer to the various methods and technologies used to transmit data without physical cables or wires. These methods rely on electromagnetic waves to carry signals over the air.

(b) Name three examples of wireless transmission media. (03 marks)

- Radio waves
- Microwaves
- Infrared waves

Rejected

- Bluetooth
- Wireless Fidelity
- Satellite connection
- Lite Fidelity
- Radio frequency identification

(c) Give one reason why a school may prefer using **Fiber Optic cables** over **Twisted Pair cables** when networking computers. (01 mark)

- **High Speed**- Transmits data much faster than copper cables.
- **Large Bandwidth**- Can carry a large amount of data at once.
- **Long Distance Transmission**- Signals can travel farther without losing quality.
- **Resistance to Electromagnetic Interference (EMI)**- Not affected by electrical noise from nearby equipment.
- **Better Security** - Difficult to tap without detection, making it safer for transmitting sensitive data.
- **Lightweight and Thin**- Easier to install and manage in tight spaces.
- **Low Signal Loss (Low Attenuation)**- Very little reduction in signal strength over long distances.
- **Durability and Reliability**- Resistant to temperature changes and moisture compared to metal wires.

11. (a) Explain the meaning as used in database management systems.(03 marks)

(i) **Database Query**

A database query is a request for data or information from a database. It is used to retrieve, update, insert, or delete data within a database management system (DBMS). Queries are typically written in a query language that the DBMS can interpret and execute.

(ii) **Database Form**

A database form is a user interface element in a database management system (DBMS) that allows users to enter, view, and modify data in a structured and organized manner

(iii) **Relational Database**

A relational database is a type of database that organizes data into tables, which are also known as relations. In a relational database, data is stored in a structured format using rows and columns.

(c) Name two examples of database management systems software. (02 marks)

- Microsoft Access
- My SQL
- Microsoft Access
- MariaDB
- Microsoft SQL server
- Oracle DMS
- Mongo DB
- postgreSQL
- Redis

12. (a) What is an executable file? (02 marks)

An executable file is a type of computer file that contains a program capable of being executed or run by a computer.

Give two examples of file extensions of executable files. (02 marks)

- .exe
- .bat
- .com
- .msi
- .vbs
- .app
- Apk

C:\Users\John\Documents\Projects\Finalreport.docx

PART	DESCRIPTION
C:	Drive letter – Refers to the storage drive (usually the main hard disk).
\	Backslash – Used to separate folders in Windows file paths.
Users	Parent folder – Contains all user accounts.
John	User folder – Specific to the user named John.
Documents	Subfolder – A common place for storing documents.
Projects	Folder – Created by the user to group related files.
Final	Subfolder – A subfolder inside Projects.
report	The actual file name
.docx	File extension indicates a Word document.

(b) A computer system indicates that an executable file of a particular program has been corrupted. Give one likely causes for the corrupted file.

(01 mark)

- **Hard Drive Issues:** Physical problems with the hard drive, such as bad sectors, can lead to file corruption.
- **Memory Failures:** Faulty RAM can cause data corruption during file read/write operations.
- **Power Surges:** Sudden power outages or surges can interrupt file operations and lead to corruption.
- **Application Crashes:** If an application crashes while a file is being written or modified, the file may become corrupted.
- **File System Errors:** Issues with the file system, such as those caused by improper shutdowns or software bugs, can corrupt files.
- **Incompatibility:** Files saved or opened with incompatible software versions may become corrupted or unreadable.
- **Malware:** Viruses, worms, or other malware can alter or damage files, leading to corruption.
- **Ransomware:** Ransomware encrypts files, making them inaccessible without a decryption key, effectively corrupting the files.

13. (a) Define the term netiquette. (02 marks)

Netiquette (short for "network etiquette") refers to the set of rules and guidelines for proper and respectful behavior when communicating online. It encompasses the norms and best practices for interacting with others via email, social media, forums, and other online platforms

(b) State three netiquette rules that must be observed while using the internet (03 marks)

Don't hide behind the computer

Courtesy: Treat others with respect and kindness, just as you would in face-to-face interactions.

Avoid Trolling: Refrain from making inflammatory, offensive, or disruptive comments.

Clarity: Write clearly and concisely to avoid misunderstandings. Use proper grammar, punctuation, and spelling.

Subject Lines: In emails, use descriptive and relevant subject lines.

Confidentiality: Do not share personal or sensitive information without permission.

Permission: Obtain consent before sharing others' content or private details.

Tone: Be mindful of the tone of your messages, as text can be easily misinterpreted.

Avoid Jargon: Use language that is understandable to your audience, avoiding unnecessary jargon or abbreviations.

Relevance: Only send relevant and meaningful messages. Avoid sending unsolicited or excessive communications.

Promotions: Do not engage in excessive self-promotion or advertising without permission.

Community Guidelines: Adhere to the rules and guidelines of online communities or forums you participate in.

Moderation: Respect the decisions of moderators and administrators.

Timing: Be mindful of the timing of your communications, especially in different time zones.

Response Time: Respond in a timely manner to messages, but avoid demanding immediate replies.

Readability: Use appropriate formatting to enhance readability, such as bullet points or paragraphs.

Avoid Overuse of Caps: Writing in all capital letters is often perceived as shouting and should be avoided.

14. Outline any five functions of operating system software. (05 marks)

- Memory management
- Monitors system performance
- Provides a user interface
- Processor management
- Device management
- File management
- Booting a computer
- Administers security through user accounts.
- Provides a platform for installation of application software
- Establishes network connections
- Monitors system to detect errors

Examples of operating system software

- Microsoft Windows (e.g., Windows 10, Windows 11)
- macOS (e.g., macOS Ventura, Monterey)
- Linux (e.g., Ubuntu, Fedora, Debian)
- Chrome OS (used in Chromebooks)
- Google's Android (used on many smartphones and tablets)
- iOS (used on iPhones and iPads)
- HarmonyOS (developed by Huawei)
- KaiOS (used in feature phones)

15. Identify the most appropriate computer hardware for performing the following tasks
- (a) The cursor control device located in the middle of the keyboard between the G, H, and B keys. (01 mark)
- **TrackPoint**
- (b) An impact printer that renders text as tangible dot cells which are felt and read by the blind. (01 mark)
- **Braille printer**
- (c) A digital camera that captures video and audio data and transmits it in real-time over the internet. (01mark)
- **Web camera**
- (d) A non-impact printer that creates images using a laser beam and powdered ink, called toner. (01 mark)
- **LaserJet printer**
- (e) A printer used to produce large, high-quality, vector graphic drawings such as blueprints, maps, posters, and signs. (01 mark)
- **Plotter**
16. (a) Distinguish between a router and switch as used in networking (02 marks)
- A **router** connects different networks, such as a LAN to a wide area network (WAN) or the internet, and directs data between them based on IP (Internet Protocol) addresses
- WHILE**
- A **Switch** connects multiple devices within the same local area network (LAN) and facilitates communication between them by forwarding data based on MAC (Media Access Control) addresses
- (b) Name three types of computer networks. (03 marks)
- Local area network.
 - Personal area network
 - Wide area network
 - Metropolitan area network
 - Campus area network
 - Storage Area Network
17. (a) State three examples of emerging technologies in ICT as of today. (03 marks)
- Artificial Intelligence (AI)
 - Machine Learning (ML)
 - Quantum Computing
 - 5G Technology
 - Internet of Things (IoT)
 - Blockchain Technology.
 - Augmented Reality (AR).
 - Virtual Reality (VR)
 - Autonomous Vehicles
 - Edge Computing
 - 3D Printing
 - Biotechnology and Genetic Engineering
 - Renewable Energy Technologies
 - Nanotechnology

- Cyber security Technologies.
- Natural Language Processing (NLP)
- Human Augmentation
- Advanced Robotics

(b) Explain two negative implications as a result of emerging technologies mentioned above. (02 marks)

- Loss of jobs and replacement
- Loss of privacy
- Security risks and threats
- Digital divide in the society
- Dependency on technology
- Environmental impact
- Health issues
- Misinformation
- Expensive cost of living

18. The following information shows monthly sales of Fair Price Retail shop. Read it carefully and answer the questions that follow.

	A	B	C	D	E	F	G	H	I
1	MY RETAIL MONTHLY SALES								
2	ITEM	QUANTITY (BAGS)	UNIT COST (SHS)	SALE PRICE (SHS)	TOTAL COST (SHS)	TOTAL SALES (SHS)	MONTHLY PROFIT	YEARLY PROFIT	
3	Maize Flour	50	50,000 UGX	80,000 UGX				#####	
4	Rice	10	220,000 UGX	280,000 UGX				#####	
5	Cassava flour	20	30,000 UGX	60,000 UGX				#####	
6	Irish Potatoes	23	150,000 UGX	200,000 UGX				#####	
7	Beans	30	200,000 UGX	280,000 UGX				#####	
8	Ground nuts	5	330,000 UGX	420,000 UGX				#####	
9									
10									
11									

(a) Write the formula for finding. (03 marks)

- Total Cost: $=B3 * C3$
- Total Sales: $=B3 * D3$
- Monthly profit: $=E3 - E3$

(b) Give the reason why the Yearly Profit appears as shown and explain how it can be rectified. (01 mark)

Cause: This is not an error but an indication that the column width is too narrow to display the cell contents.

Fix: Increase the column width by dragging the column boundary or double-clicking it.

(c) Identify the address of the active cell. (01 mark)

D10

19. (a) Explain the meaning of the following terms as used in application software

- (i) **Bespoke Software.** (01 mark)
Bespoke software refers to custom-designed and developed software that is tailored specifically to meet the unique needs and requirements of a particular organization or user.
- (ii) **Off-shelf software.** (01 mark)
Off-the-shelf software refers to the type of application software which is commercially available software products that are designed to meet the needs of a broad range of users rather than being customized for a specific organization
- (iii) **Copyrighted software.** (01 mark)
Copyrighted software refers to computer programs that are protected by copyright law. This legal protection grants the creator or owner of the software exclusive rights to its use, distribution, and modification.

(b) Mention two characteristics of a good application software. (02 marks)

- User friendly interface
- Reliability
- Robust security
- Compatibility
- Scalability
- Support and documentation
- Customizability
- Cost effectiveness
- Performance
- Integration capabilities
- Updates and maintenance

20. (a) Give one reason why an internet user may need the following. (03 marks)

- (a) **Web Browser**
• A web browser is a software application used to access, retrieve, and view information on the internet
- (b) **Internet Service Provider**
• An Internet Service Provider (ISP) is a company or organization that provides individuals and businesses with access to the internet.
- (c) **Search Engine**
A search engine is a web-based tool that allows users to search for and retrieve information from the internet.

(b) State two negative implications of installing internet at school? (02 marks)

- Access to pornographic content
- Loss of privacy
- Cyber-bullying of fellow students
- Viruses and malware
- Distraction and reduced focus
- Expensive internet bundles
- Legal and ethical issues
- Administrative and maintenance costs
- Misleading and wrong information
- Spam messages

Common terms used in Email

- **Inbox** – Folder where received emails are stored.
- **Subject** – The title or topic of the email.
- **To** – The main recipient(s) of the email.
- **Attachment** – A file (e.g. document, photo) sent along with the email.
- **Spam/Junk** – Unwanted or suspicious email messages.
- **Reply** – Send a response to the sender of the email.
- **Reply All** – Responds to the sender and all other recipients.
- **Forward** – Sends a received email to a new person.
- **Draft** – A message saved but not yet sent
- **Signature** – A block of text automatically added at the end of emails (often name/contact info).
- **Sent Items** – Folder showing emails you have sent.
- **Trash/Deleted Items** – Folder for removed emails.
- **Outbox** – Temporarily holds emails waiting to be sent.
- **CC (Carbon Copy)** Used to send a copy of the email to other people besides the main recipient. Everyone **can see** who else received the email (i.e. all the CC'd addresses are visible).
- **BCC (Blind Carbon Copy)**-Also sends a copy of the email to others, but in secret. Also sends a copy of the email to others, but in secret. Other recipients can't see who was BCC'd — not even the person in the "To" or "CC" line.

Computer professionals

1. Software Developer / Programmer

Designs, writes, tests, and maintains software applications to meet user needs.

2. Web Developer

Creates and manages websites by coding and optimizing design and functionality.

3. Mobile App Developer

Develops, tests, and updates mobile applications for smartphones and tablets.

4. Network Administrator

Installs, configures, and secures computer networks to ensure smooth communication.

5. Network Engineer

Plans and implements advanced network systems and solves complex networking issues.

6. Database Administrator (DBA)

Maintains and secures databases to ensure data is stored, accessed, and backed up properly.

7. Systems Analyst

Studies existing IT systems and suggests improvements or new solutions to meet business needs.

8. IT Support Technician

Provides technical help by troubleshooting and resolving computer and software issues.

9. ICT Teacher / Trainer

Teaches computer skills and digital literacy through practical lessons and demonstrations.

10. Cybersecurity Specialist

Protects computer systems from cyber threats by monitoring, detecting, and responding to attacks.

11. Cloud Engineer

Builds and manages cloud infrastructure to run applications and store data efficiently.

12. Data Analyst

Collects and interprets data to help organizations make informed decisions.

13. Data Scientist

Uses data modeling and machine learning to discover patterns and predict outcomes.

14. IT Project Manager

Plans and oversees ICT projects to ensure they are completed on time and within budget.

15. Computer Systems Engineer

Designs and integrates computer systems by combining hardware and software solutions.

Computer Crimes

- **Hacking** – Unauthorized access to computer systems or networks.
- **Phishing** – Sending fake messages or websites to trick users into giving personal information.
- **Identity Theft** – Stealing someone's personal data to impersonate them.
- **Spreading Malware** – Creating or distributing harmful software like viruses or trojans.
- **Cyberbullying** – Harassing or threatening someone using electronic communication.
- **Online Fraud** – Scamming people online for financial gain (e.g., fake online businesses).
- **Denial of Service (DoS)** – Overloading a server or website to shut it down.
- **Software Piracy** – Illegally copying, sharing, or using software without permission.
- **Cyberstalking** – Continuously tracking or threatening someone using digital means.
- **Data Breach** – Unauthorized access and theft of confidential digital data.
- **Ransomware Attacks** – Locking someone's files and demanding payment to unlock them.
- **Keylogging** – Secretly recording a user's keystrokes to steal information like passwords.
- **Fake Antivirus Scams** – Tricking users into downloading malware disguised as antivirus software.
- **Child Exploitation Online** – Sharing or accessing illegal content involving minors.
- **Cryptojacking** – Secretly using someone's computer to mine cryptocurrency.
- **Impersonation** – Pretending to be another person online for fraud or abuse.
- **Social Engineering** – Manipulating people to reveal confidential information.
- **Eavesdropping Attacks** – Intercepting private communications over a network.
- **DNS Spoofing** – Redirecting traffic from a real website to a fake one.
- **Online Defamation** – Posting false and harmful information about someone on the internet.

1. (a) Describe the following stages of the information processing cycle.

(04 marks)

(i) **Input stage.**

Data, instructions and commands are entered into the computer with the help of input hardware devices for processing.

(ii) **Processing stage**

Data is converted, changed, transformed, interpreted, manipulated into information that can be understood by the user. The central processing unit (CPU) inside the computer then takes that binary code and does the calculations needed to get that data to display in a way that makes sense to the user. The CPU works with the computer's memory to get instructions on how to display the information from the input device and stores it as pixels in the computer's memory.

(iii) **Output stage**

At this stage, information is produced, conveyed or displayed to the user. The user can be able to see the results of processing with the help of output devices.

(iv) **Storage stage**

Storage is where the computer takes the input and stores it in its memory banks. There are many ways to store the data, but the basic process is as follows:

The CPU writes the data to the computer's temporary storage, or random access memory (RAM).

The computer then waits for the user's command to move the data from the RAM to more permanent storage. If that command is given, the computer writes the data to the disk drive. Lastly, the computer saves the data in a location on the drive, either the default storage location or a location set by the user. The user can then recall this stored information at any time.

You can also store information using external storage devices (for example USB drives or external hard drives).

(b) Identify one hardware device that can be used at the first stage in (a) above.
(01 mark)

- Keyboard
- Mouse
- Trackball
- Digital Camera
- Screen touch
- Digital pen

2. (a) What is meant by an installer? (02 marks)

- An installer is a piece of software used to install software programs on a system. Installers simplify software installation by providing the user a step-by-step process with the ability to select the desired options.

(b) State three factors one must consider before installing a new operating system on a computer. (03 marks)

- Amount of memory available/RAM size
- Generation of the processor
- Hard disk space available
- Availability of the operating system setup
- The nature of the operating system
- The processor speed
- Compatibility of the operating system

3. Explain how ICT has been applied in the following fields of our society.

(a) Art, Leisure and Entertainment. (03 marks)

- The use of computer software to play games like GTA Vice City, Need for speed.
- The use social media platforms to communicate and interact during leisure
- Digital cameras can be used to record and capture videos on parties.
- Computers are used to compose and edit songs by producers through using audio and video production software.
- Internet enables people to read magazines online.
- Internet has promoted social networking that has enabled interaction between people. Examples include Twitter, Facebook, LinkedIn etc.
- Computers can be used to play music during free time.

(b) Politics and Government. (02 marks)

- Paying government tax online through a government website.
- Online forms such as vehicle registration and passport forms.
- Advertising government tenders and Applying for government tenders
- Public records -A maintained database of statistical information such as electoral register and census data can be availed online.
- Use of electronic voting during elections.
- Government departments can use a computer based platform to get feedback from the citizens.

4. (a) Explain the function of the following features of a word processor.

(i) Thesaurus. (01 mark)

Thesaurus is a tool, which is used in Microsoft Word or Microsoft Word to search for synonyms and synonyms for a particular selected word. Thesaurus in Microsoft Word helps writers to find exact and suitable words to express their idea.

(ii) Spell Checker. (01 mark)

Spelling checker: Allows a user to check the spelling of a whole document at one time, or to check and even correct the spelling of individual words as they are typed (i.e., **AutoCorrect**).

(iii) Word-wrap. (01 mark)

Word-wrap: Allows a user to type continually without pressing the enter key at the end of each line.

(b) Identify the keyboard short cut for performing the following operations when using a word processing software?

(a) Selecting all the contents in the document. (01 mark)

Control +A

(b) Opening the print window. (01 mark)

Control +P

5. (a) Suggest three measures that can be applied to improve on the speed and performance of a computer. (03 marks)

- Installing/ adding more random access memory
- Remove programs no longer in use.
- Run limited applications
- Regular servicing and maintenance
- Regular cleaning of the hard disk drive
- Scanning and removing malware
- Updating all outdated software
- Upgrading to solid state drives

(b) Name two icons commonly found on the desktop computers. (02 marks)

- Recycle bin
- This PC
- Control panel
- Network places
- Microsoft Edge/ Internet Explorer

6. Identify the most appropriate utility software for carrying out the following tasks on the computer.

(a) These detect computer files whose content is scattered in several locations on the hard disk and move fragments to one location to increase efficiency. (01 mark)

Disk Defragmenter

(b) A utility that can be used to search, find and remove viruses from the computer. (01 mark)

Anti- virus utility

(c) These compress/reduce the size of the file thus increasing the capacity of the disk. (01 mark)

Disk Compression Utility/File compression utility

(d) A utility that can be used to encrypt and decrypt streams of files (01 mark)

Cryptographic utility

(e) This makes a copy of all information stored on the hard disk onto another storage medium. (01 mark)

Backup utility

7. (a) Give two reasons why a computer user may prefer using a command line interface over graphical user interface. (02 marks)
- *Commands are executed faster.*
 - *Consumes limited Random Access Memory*
 - *Cannot easily affected by viruses and malware*
 - *Ideal for programming and programmers*
 - *Commands can be grouped together.*
- (b) Name three examples of operating system software. (03 marks)
- *Microsoft Windows*
 - *iPhone Operating System*
 - *Googles' Android*
 - *Mac Operating system*
 - *Chrome operating system*
 - *UNIX operating system*
 - *Linux*
 - *Ubuntu OS*
 - *Fedora OS*
 - *Blackberry OS*
8. (a) Identify three characteristics of non-impact printers. (03 marks)
- *They can print on transparent object/papers*
 - *They don't produce noise*
 - *They are very fast*
 - *Print high quality images and graphics*
 - *Do not make physical contact between the paper and the ink ribbon*
 - *They spray ink or tonner to create characteristics*
 - *They can print colored graphics and images*
- (b) List two examples of non-impact printers. (02 marks)
- *Ink-jet printers*
 - *Laser-printers*
 - *Thermal printers*
 - *Plotters*
 - *3D printers*
 - *Mobile printers*
9. (a) Define the term Internet traffic. (02 marks)
- Internet traffic is the flow of data within the entire Internet, or in certain network links of its constituent networks*
- (b) State three requirements needed for connecting to the internet.(03 marks)
- *Modem*
 - *Computer /smartphone*
 - *Internet service provider*
 - *Network interface*
 - *Digital subscriber line*
 - *Web browsing software*

10. Given the following examples of secondary storage media

SSD Drive	Blu-ray disc
Floppy diskette	Digital Versatile disc
Compact Disc	Zip drive

(a) Identify any three optical storage media above.

(03 marks)

- Digital versatile disc
- Compact disc
- Blu-ray disc

(b) Name the device which has the highest access *time* from the above.

(01 mark)

- SSD Drive

(c) Give one reason to support your answer in (b) above.

(01 mark)

- SSD drives have no moving parts. Data is stored electronically unlike magnetic and optical storage media.
- **They use electrical circuitry and have no physical moving parts.** This leads to shorter wait times when you're starting up and fewer delays when opening apps or doing heavy computing tasks

11. (a) Name two examples of language translators in programming. (02 marks)

- Assembler
- Compiler
- Interpreter

(b) Explain the meaning of the following terms as used in programming

(i) Bug.

(01 mark)

A bug is an error in the source code that causes a program to produce unexpected results or crash altogether. Computer bugs can affect an application's performance, so developers need to make sure they are corrected before the software gets sold to customers.

(ii) Machine language.

(01 mark)

*Sometimes referred to as **machine code** or **object code**, **machine language** is a collection of binary digits or bits that the computer reads and interprets. Machine language is the only language a computer is capable of understanding.*

(iii) Program syntax.

(01 mark)

Syntax refers to the rules that define the structure of a language. Syntax in computer programming means the rules that control the structure of the symbols, punctuation, and words of a programming language.

12. (a) What is the function of cache memory to the Central Processing Unit?

(02 marks)

Cache memory is a small-sized type of volatile computer memory that provides high-speed data access to a processor and stores frequently used computer programs, applications and data. A temporary storage of memory, cache makes data retrieving easier and more efficient. It is the fastest memory in a computer, and is typically integrated onto the motherboard and directly embedded in the processor or main random access memory (RAM).

(b) Identify two examples of primary memory in the computer. (02 marks)

- Random Access Memory
- Read Only Memory
- Flash Memory/Virtual memory

(c) Write the following abbreviations in full. (02 marks)

- (i) **ALU:** Arithmetic Logic Unit
- (ii) **CMOS:** Complementary Metal Oxide Semiconductor

13. (a) Explain the meaning of the following features of an electronic mail.

(i) **Spam box.** (01 mark)

The spam folder is the storage space in your email account for unwanted emails or for emails that fail to reach your inbox and are flagged as spam by email service providers (ESPs). It is also known as the "Bulk Folder" or "Junk Folder".

(ii) **Draft.** (01 mark)

In simple terms, draft e-mails are those e-mails that you haven't yet sent. They get saved in the drafts section of the e-mails and can be retrieved whenever you like. They remain in that folder forever.

(iii) **Trash.** (01 mark)

Emails that are deleted from a folder are not completely gone. Deleted emails are usually stored for a defined time at the trash folder.

(b) Give two advantages of using ordinary post over electronic mail. (02 marks)

- **Emails can spread Viruses:** The recipient needs to scan the mails, as viruses are transmitted through them and have the potential to harm computer systems.
- **Spam and Junk:** E-mails when used to send unsolicited messages and unwanted advertisements create nuisance called Spam.
- **E-mail spoofing** is another common practice. Spoofing involves disguising as different sender by altering the e-mail headers or the addresses from which the mail is sent.
- **Hacking and email interception:** The act of unauthorized attempts to bypass the security mechanisms of an information system or network is termed as hacking.
- **Misinterpretation:** One has to be careful while posting any kind of content through an e-mail. If typed in a hurry, the matter could be misinterpreted.
- **Crowded inbox:** Over a period of time, the e-mail inbox may get crowded with mails. It becomes difficult for the user to manage such a huge chunk of mails.
- **Need to check the inbox regularly:** In order to be updated, one has to check his e-mail account regularly, which may be expensive in the long run.
- Email cannot be used without computers especially in remote areas without electricity.
- In case **one forgets his/her** password, signing in is not possible and this can lead to loss of information.
- Email may violate privacy in case someone else gets to know your user password since the other may check your mails

14. (a) Describe the term Security Vulnerability. (02 marks)

Vulnerability is a weakness that can be exploited by cybercriminals to gain unauthorized access to a computer system. After exploiting vulnerability, a cyber-attack can run malicious code, install malware, and even steal sensitive data

(b) State three examples of threats to computer hardware. (03 marks)

- *Hardware vandalism*
- *Hardware theft*
- *Power faults*
- *Hardware age*
- *Default passwords*
- *Fire outbreak*
- *Natural disasters*

15. (a) Explain any three negative implications of social media websites.(03 marks)

- *Social media causes depression and anxiety to users.*
- *Social media is a source of misleading and wrong information to the society*
- *Allow easier access and sharing of pornographic content.*
- *It has contributed to domestic violence in families*
- *Loss of personal information and privacy*
- *Cyber bullying of social media users*
- *It has caused addiction to users and social isolation.*
- *Increased cost of living through increased electricity bills and internet bundles*
- *Has caused accidents on roads due to poor concentration road users*

(b) Identify any two examples of social media websites. (02 marks)

- *Facebook.com*
- *Youtube.com*
- *Whatsapp.com*
- *Twitter.com*
- *Instagram.com*
- *We-Chat.com*
- *TikTok.com*
- *Sina Weibo.com*

16. (a) Name two publications that can be designed using a desktop publishing software. (02 marks)

- *Business cards*
- *Award certificates*
- *Invitation cards*
- *Brochures*
- *Flyers*
- *Calendars*
- *Newsletters*
- *Postcards*
- *Menu*
- *Letterheads*
- *Catalogs*
- *Business forms*

(b) Identify three examples of desktop publishing software. (03 marks)

- *Microsoft Publisher*
- *Adobe PhotoShop*
- *Adobe InDesign*
- *Affinity Publisher*
- *CorelDRAW*
- *QuarkXPress*
- *Xara Page & Layout Designer*
- *VivaDesigner*
- *Scribus*
- *LucidPress*
- *Pagination*
- *Venngage*
- *iStudio Publisher*
- *Canva*
- *LibreOffice Suite*
- *VistaCreate*
- *PageStream*
- *Swift Publisher*
- *DesignCap*
- *Kofax Power PDF*
- *Conga Composer*
- *Publuu*

17. (a) Explain the meaning of the elements of data communication.

(i) Message. (01 mark)

This is most useful asset of a data communication system. The message simply refers to data or piece of information which is to be communicated. A message could be in any form, it may be in form of a text file, an audio file, a video file, etc.

(ii) Protocol. (01 mark)

The protocol is a set of rules that govern data communication. If two different devices are connected but there is no protocol among them, there would not be any kind of communication between those two devices..

(iii) Transmission media. (01 mark)

It is pathway by which data or message travels from sender to receiver. Transmission medium could be guided (with wires) or unguided (without wires), for example, twisted pair cable, fiber optic cable, radio waves, microwaves, etc.

(b) Identify two examples of protocols used in data communication. (02 marks)

- *Transmission Control Protocol/Internet protocol-TCP/IP*
- *Simple Mail Transfer Protocol*
- *Hypertext Transfer Protocol*
- *File Transfer Protocol*
- *User Datagram Protocol*
- *Internet Protocol*
- *Transmission Control protocol*
- *Address Resolution Protocol*
- *Trivial File Transfer Protocol*

18. (a) Define term application software. (02 marks)

Application software is a computer program that performs a specific function, be it educational, personal, or business. It is also known as an end-user program or a productivity program. Each application is designed to assist users with a particular task that may be related to creativity, productivity, or communication. Application software programs are specific in their functionality and perform the job they are designed to do communication to take place.

(b) Give three advantages of using off-shelf packages over custom software. (03 marks)

- *They are very cheaper to buy since the user doesn't incur development costs*
- *They designed to be implemented quickly*
- *The user can access reviews and advice from existing customers*
- *There are pre-existing solutions to the program from fellow customers*
- *Updates are usually included in the program*
- *Offers more functionalities than the ones needed*
- *Have various training materials and tutorials available*
- *They always offer free trials to users*
- *Compatible to most computers and operating systems.*
-

19. Identify five business opportunities in small and medium enterprises on earning with ICTs in the society. (05 marks)

- *Internet Café operators*
- *Music and Movie venders*
- *Selling of computer hardware*
- *Selling new ICT devices*
- *Repair of computer equipment*
- *Social media managers*
- *ICT instructors*
- *Mobile money venders*
- *Online marketing handlers*

20. (a) Describe the term a firewall. (02 marks)

A Firewall is a network security device that monitors and filters incoming and outgoing network traffic based on an organization's previously established security policies. At its most basic, a firewall is essentially the barrier that sits between a private internal network and the public Internet. A firewall's main purpose is to allow non-threatening traffic in and to keep dangerous traffic out.

(b) Explain the meaning of the following terms as used in networking.

(i) Virtual Private Network. (01 mark)

A virtual private network, or VPN, is an encrypted connection over the Internet from a device to a network. The encrypted connection helps ensure that sensitive data is safely transmitted. It prevents unauthorized people from eavesdropping on the traffic and allows the user to conduct work remotely.

(ii) Router (01 mark)

*A **Router** is a networking device that forwards data packets between computer networks. A router is a switching device for networks, which is able to route network packets, based on their addresses, to*

(iii) Network Switch. (01 mark)

In a network, a switch is a device that channels incoming data from any of multiple input ports to the specific output port that will take it toward its intended destination.