

# **Student's Revision Book for COMPUTER STUDIES P840/1**

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## DEDICATION

***This book is dedicated to all my beloved Students of Makindye Secondary School and Pimbas Secondary School***

***“You must leave a legacy”***

***Inspire people***

**The only way to do great work is to love what you do.” –Steve Jobs**

“No masterpiece was ever created by a lazy artist”.

*“Success is not something that you run into by accident. It takes a lot of preparation and character. Everyone likes to win but how many are willing to put in the effort and time to prepare to win? It takes sacrifice and self-discipline.*

***There is no substitute for hard work.”***

## **PREFACE**

**“Student’s Revision Book for COMPUTER STUDIES”** has been compiled to assist learners prepare for Computer Studies and ICT examinations. This revision book contains a series of questions from different topics.

I therefore encourage users of this revision book to always consult where possible from instructors, teachers for clear understanding.

I am pretty confident that this revision book shall enable computer students accustom to necessary computer literacy skills. For any query, advice or contribution, kindly refer to:

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## **HOW TO PREPARE AND PASS ICT EXAMS.**

### **Prepare yourself for the ICT subject.**

- Get a full ICT syllabus depending on your level.
- Get a termly course outline from your teacher at the beginning of every term
- Include ICT on your revision time table(as many students take it to be a luxury)

### **GETTING PREPARED FOR AN ICT EXAM.**

- Prepare your mind.
- Think about it positively.
- Find out reasons why you need to sit for this exam.(Anything done without purpose is wasted energy).
- Set goals of your performance ( How do you want to perform)

### **Prepare your Heart.**

- Find reasons to love what you're doing.
- Enjoy every minute of your time practicing any ICT activity.
- You can never succeed in something you don't love and enjoy.
- Visualize yourself Successful, or passed with flying colours.

### **Get ICT Notes.**

- Copy ICT Notes or buy good ICT text books.
- Read your notes
- Study the notes
- Summaries the Notes.
- Revise the notes.
- Memorize some important, definitions, acronyms'.(Abbreviations) in paper

### **How to prepare for Practicals.**

- Get some minimal typing skills.( at least get to master some major keys on the keyboard)
- Master the space bar knowing both your thumbs sit on the space bar. I wonder how you start looking for a space bar during the exam.
- Master the saving, making of folders and knowing how to save in your folder.
- How to prepare for Practicals cont'd
- Master how to restart your pc. Just in case it freezes or jams in any way( bearing in mind that most invigilators are computer illiterate.

- Before you sit for the papers, make sure you have learnt how to burn your own data on CD at least practice it 10 times or more just to be sure.
- Make sure you have the burning software on your pc. (remind the Teacher in Charge)
- How to prepare for Practicals cont'd
- Practice how to print your own document.

“The mediocre teacher tells.  
The good teacher explains.  
The superior teacher demonstrates.  
The great teacher inspires”.

William Arthur Ward

“The more I give away the more I get what to give.  
Help others in what they cannot do for themselves”

“Success is not something that you run into by accident. It takes a lot of preparation and character. Everyone likes to win but how many are willing to put in the effort and time to prepare to win? It takes sacrifice and self-discipline.  
**There is no substitute for hard work.**”

## INTRODUCTION TO COMPUTERS.

**(a) Mention the way (basis) of categorizing computer**

- By size (physical, memory or numbers)
- By process (digital, analogy or hybrid) or logic or functionality
- Purpose (general or special) or function
- By processor (PI-PIV, iseries)/process/type/power
- How and where used (desktop, palmtop, laptops)
- By Brand (Dell, Acer, Lenovo, Compaq, IBM)
- By generation (1<sup>st</sup> -5<sup>th</sup>)

**(a) Define the term Computer generations.**

- A computer generation refers to the development of computers today.

**(b) List the generation and mention the distinguished characteristic there in.**

- First Generation (1940-1956) Vacuum Tubes
- Second Generation (1956-1963) Transistors
- Third Generation (1964-1971) Integrated Circuits
- Fourth Generation (1971-Present) Microprocessors/Large scale Integration
- Fifth Generation (Present and Beyond) Artificial Intelligence

**(c) Differentiate between the first and fourth generation computers**

<b>First Generation computer</b>	<b>Fourth generation computers</b>
They used punched cards and paper tape for input.	Large scale integrated and very large-scale integrated circuits were developed and contained hundreds and millions of transistors on a tiny chip.
They used magnetic drums for memory.	Memory increased to hundreds of megabytes (100Mb)
They had memory size of approximately kilobytes of RAM	They had ram of up 2 Gb
Speed was about 10,000 instructions per second	Speed increased from 1 giga to tera instructions per second
consumed a lot of power	Consumed less power

They produced a lot of noise.	Very little or no noise
Very big in size	Smaller in size.eg Phones

**Mention four examples of computers in the first generation.**

- ENIAC (Electronic Numerical Integrator and Calculator): It was the first electronic computer built by John Eckert and John Mauchly.
- EDVAC: It stands for Electronic Discrete Variable Automatic Computer
- EDSAC: It stands for Electronic Delay Storage Automatic Computer and was developed by M.V. Wilkes at Cambridge University in 1949.
- UNIVAC: (Universal Automatic Computer): Eckert and Mauchly produced it in 1951 by Universal Accounting Computer setup.

**Mention four limitations of computers in the first generation**

- The operating speed was quite slow.
- Power consumption was very high.
- It required large space for installation.
- The programming capability was quite low.
- Limited primary memory
- Generated a lot of heat
- Weighted about 30 tons

**Mention four examples of computers in the second generation.**

- **CDC 3600:**
- **UNIVAC-III ,**
- **IBM-1600 Series,**
- **IBM-1400 Series.**



## COMPUTER SYSTEM

### **Define the term computer system in relation to computers.**

A computer system is a set of components working together for a common goal. Failure of one of the system components may imply failure for the whole system.

- The computer system basically consists of hardware, software, and human ware.
- Other components are data and, communication.

### **Distinguish between data and information.**

Data is raw facts and figures with no meaning While Information is processed data with meaning.

Data can also be defined as a collection of unprocessed items.

## HARDWARE

### **What is meant by the term computer Hardware?**

Computer hardware components are tangible or physical (they can be touched).

### **(b). List any four categories of computer hardware.**

Computer hardware includes

- Input devices like the keyboard and mouse,
- Processing devices like the Microprocessor Chip,
- Storage devices like the Hard disks and the CDs,
- Output devices like the monitor and the printer.

## INPUT AND PROCESSING COMPONENTS

### **Explain the meaning of the term control unit as used in a computer system**

The *control unit* is the component of the processor that directs and coordinates most of the operations in the computer.

### **State any two functions of the control unit.**

- The *control unit* directs and coordinates most of the operations in the computer.
- It interprets each instruction issued by programs and then initiates the appropriate action to carry out the instruction.
- the control unit performs the machine cycle which includes the steps (Fetching, Decoding, Executing and Storing)

**a). Differentiate between input and input devices**

Input is data or instructions entered into the computer

**While**

An input device is any hardware component that allows you to enter data or instructions into the computer

**ii). Define the following.**

**i. Text input devices**

*These are devices that help us to input text like letters, numerical digits, symbols and marks into a computer.*

**ii. Pointing input Devices**

*A pointing device is an input device, which allows users to move a pointer and make selections on the computer screen.*

**iii. Imaging input Devices**

*Imaging input Devices are devices that input images such as still photos, motion pictures, graphics, video etc. into the computer for processing.*

**iv. Gaming input Devices**

*Gaming input devices are devices specifically designed to be used for playing computer games.*

**v. Audio input Devices**

*Audio input device is a device used for entering any sound into the computer such as speech, music, and sound effects.*

**vi. Biometric input Devices**

*A biometric device translates a biological personal characteristic into a digital code that is stored or compared with a digital code stored in the computer.*

**(b). Give any four examples of each of the following input devices**

**i). Text input devices**

- The keyboard,
- Voice Recognition Equipment

- OMR and Barcode readers
- OCR and Optical readers
- MICR readers
- RFID readers
- Magnetic Strip Card Readers, etc.

### **ii). Pointing input Devices**

- Mouse
- Stylus pen & digitizing tablet
- Cordless Mouse
- Trackball
- Touchpad
- Light pen
- Touch Screen
- A Track Point

### **iii). Imaging input Devices**

- Image scanner
- Digital Camera
- Digital video (DV) camera
- Camcorder
- Web cam

### **iv.). Gaming input Devices**

- Gaming keyboard
- Gaming wheels
- Joysticks
- Game pad
- Light guns
- Dance pad
- Motion sensing game controllers

### **v). Audio input Devices**

- Microphones,
- Tape players,
- CD/DVD players,
- MIDI devices
- Dictaphone, E.t.c

**vi). Biometric input Devices**

- Fingerprint scanner
- Face Recognition systems
- Hand geometry systems
- Signature verification systems
- Iris Recognition systems

**(c). Give three advantages of using a keyboard.**

- *Keyboards are very common (commonly supplied with computers)*
- *Entering data and commands with keyboard is faster as compared to the mouse*
- *Keyboards are more reliable*

**(d). Give three disadvantages of using a keyboard.**

- It takes a lot of time to practice in order to type quickly
- Keys can easily become faulty due to dust.
- Some keyboards keys are very hard to press, causing fingers to hurt.

**ii). Mention any four keyboard layouts that you know**

- The QWERTY is referred to as the "Universal" keyboard.
- Dvorak,
- ABCDE,
- GKOS,
- QWERTZ
- and AZERTY

**21. (a). Mention any three parts that make up a keyboard.**

- **Typing keys (Alphabetical key pad):** Which include letters of the alphabet, numbers, punctuation marks, and other basic keys.
- **Numeric key pad:** on the right side of the keyboard.
- **Functional Keys:** which are labelled with the letter F followed by a number (F.1, F2.....F12)
- **Cursor movement keys**

(b). State the practical importance of the following keys on your keyboard

**(i). NUMLOCK key:**

*Used to convert to convert part of the keyboard with both numeric pad and separate arrow keys.*

**(ii). Esc key:**

*It is used to cancel an application under taken*

**(c). Apart from the keyboard, state any three examples of text input hardware devices commonly used.**

- *Voice Recognition Equipment*
- *OMR and Barcode readers*
- *OCR and Optical readers*
- *MICR readers*
- *RFID readers*
- *Magnetic Strip Card Readers, etc.*

**2. a). Explain the following mouse techniques.**

**(i). Clicking (single click)**

This to point to the item on the screen, and then press and release the primary mouse button (usually the left button).

**(ii). Double clicking**

This is to point to the item on the screen, and then press and release the primary button mouse twice quickly (usually the left button).

**(iii). Dragging**

This is to point to the object on the screen, press and hold the primary left button, move the object to a new location, and then release the primary button.

**(iv). Right clicking**

This to point to the item on the screen, and then press and release the secondary mouse button (usually the rightbutton).

**(v). Scrolling**

This is to roll the wheel backward (toward you). To scroll up, roll the wheel forward (away from you).

**Give one function of each of the following keys (buttons) on the computer keyboard.**

**Enter Key (Execute key)**

*It is used to accept a command or execute a command. Or it is used to go to another line when typing*

**Back space key.**

*It is used to erase / rub characters to the left side of the cursor.*

**Space bar**

*It is the longest key on the keyboard and it is used to insert spaces between word and characters.*

**Caps lock.**

*It is used to turn capital letters into small letters and small letters into capital letters.*

**Shift key**

*It is used to activate characters on top of the buttons, it can also turn in either small letters or capital letters depending on the keyboard case mode.*

**Delete key.**

It is used to erase characters on the right side of the cursor.

**F1:** It is used as help.

**Esc (escape):** it is used to cancel an application under taken.

**Distinguish between a CPU and system unit.**

The processor interprets and carries out the basic instructions that operate a computer.

**While**

A system Unit is a case that houses (contains) the electronic components of a computer used to process data.

**c). Name three major parts of the CPU.**

- Control Unit
- Arithmetic Logic Unit
- Registers

**d). Explain the function of each part in (c) (i) above.**

- **The control unit.**  
The control unit is the component of processor that directs and coordinates most of the operations in the computer.

➤ **Arithmetic Logic Unit**

*The Arithmetic Unit is another component of the processor, which performs arithmetic, comparison, and Logic operations.*

*Arithmetic operations include basic calculations such as addition, subtraction, multiplication, and division.*

➤ **Registers**

*The registers are devices that hold data inside the computer's memory long enough to execute a particular function, such as indexing, calculating, sorting or otherwise manipulating data.*

**c). How does the use of the mouse make Windows easier compared to the use of the Key board alone?**

- i. The mouse provides quick access to common tools just by clicking.
- ii. You don't have to practice a lot.

**Name any four ports through which computer peripherals are connected.**

- Serial
- Parallel
- USB
- PS2
- RJ45 LAN port
- PCMCIA port
- ESATA port
- IEEE1394
- Hot Swappable/plug and play
- Micro ISD
- Game port
- Port A and Port B

**Give and three components inside a computer which can be replaced or upgraded, when the computer is slow.**

- RAM
- Hard Disk
- CPU
- VGA Card/Video card

**b). Outline any four uses of a computer system control panel.**

- System and security management
- Network and internet management
- Hardware and sound management

- Systems programs
- User accounts and family safety
- Appearance and personalization
- Clock, language and regional settings
- Ease of access
- System configuration

**ii). Explain a system interface**

Systems or mechanisms or tools through which a user interacts with a computer system (which can be graphical tools, menus, command programs, voice and touch recognition tools. Remote control interfaces etc.)

**Differentiate between an expansion slot and adaptor card.**

- An *expansion slot* is a socket on the motherboard that can hold an adapter card.

While

- An *adapter card*, also called expansion card, is a circuit board that increases the capabilities of the system or provides connections to peripherals.

**ii). Outline any four examples of adaptor cards that can be connected to the motherboard.**

**Adapter Card**

**Purpose**

**Sound card**

Connects speakers or a microphone

**MIDI card**

Connects musical instruments

**Network interface card (NIC)**

Connects other computers

**Video card**

Connects a monitor

**USB card**

Connects USB devices

**TV tuner card**

Allows viewing of television channels

**Video capture card**

Connects a video camera

**Modem card**

Converts telephone or cable analog signals to digital

**FireWire card**

Connects FireWire devices



**b). Define the term motherboard**

The motherboard is a single main circuit board of the system unit, which provides the path through which the processor communicates with internal and peripheral devices.

**ii). Outline four components of the motherboard**

- i. Processor chip (the CPU),
- ii. Memory chips,
- iii. Buses
- iv. Expansion Slots
- v. Adapter Cards.

**iii). With examples device used by each differentiate between parallel and serial port.**

- **A serial port** is a type of interface that connects a device to the system unit by transmitting data one bit at a time. It usually used to connect devices that do not required fast data transmission rates, such as a mouse or keyboard.
- **Parallel ports** allow the parallel transmission of data; that is, several bits are transmitted simultaneously. These ports provide the interface for such devices as high-speed printers.

**You are provided with the following computer hardware parts and other electrical accessories**

- i. AC main socket outlet
- ii. Uninterrupted Power Supply (UPS)
- iii. UPS power cable
- iv. System Unit
- v. System Unit power cable
- vi. Monitor
- vii. Monitor power cable.
- viii. Mouse.
- ix. Keyboard.
- x. VGA cable

**Describe how they can be assembled to make a complete functioning computer.**

- Connect the UPS to the AC mains socket outlet using the **UPS power cable**.
- Connect the monitor to the UPS using power the **monitor power cable**.
- Connect the system unit to the UPS using the **system unit power cable**.
- Connect the monitor to the system unit using **VGA cable**.
- Connect the **mouse** to the **system unit**.
- Connect the **keyboard** to the **system unit**.

NB: Accept a well labeled drawing of a computer system

**Outline the logical order of switching on the computer system, assembled in (a).**

- (i) Turn on the AC main socket outlet.
- (ii) Turn on the UPS power supply switch.
- (iii) Turn on the monitor power switch.
- (iv) Turn on the system unit power switch.

## **OUTPUT AND STORAGE**

### **1. Distinguish between primary and secondary memory**

Secondary memory is computer memory used to store larger amounts of data, and information more permanently

#### **While**

Primary memory is memory that provides a small amount of temporary storage area for the data and instructions required by the CPU for processing.

Primary memory is memory found inside the computer

#### **b). Give two types of RAM chips**

- **Dynamic RAM (DRAM)** must be refreshed (or recharged) constantly by the CPU.
- **Static RAM (SRAM)** is faster and more reliable than any form of DRAM. The term static refers to the fact that it does not have to be re-energized as often as DRAM.
- **Magneto resistive RAM (MRAM)**, stores data using magnetic charges instead of electrical charges.
- **MRAM** has greater storage capacity, consumes less power, and has faster access times.
- **Virtual RAM (VRAM)**: Modern operating systems can use spare storage space on the hard disk as if it is working memory and this is referred to as Virtual memory or Virtual RAM

**c). Outline two types of ROM chips**

▪ **PROM (Programmable Read only Memory)**

PROM is read-only memory that can be modified only once by a user. The user buys a blank PROM and enters the desired contents using a PROM programmer.

▪ **EPROM (Erasable and Programmable Read Only Memory)**

The EPROM can be erased by exposing it to ultra-violet light for a duration of up to 40 minutes. Usually, an EPROM eraser achieves this function.

▪ **EEPROM (Electrically Erasable and Programmable Read Only Memory)**

The EEPROM is programmed and erased electrically. It can be erased and reprogrammed about ten thousand times.

**(d). Describe the features of ROM and RAM?**

- RAM. These are semiconductor memories.
- It is known as main memory.
- Usually volatile memory.
- Data is lost in case power is switched off.
- It is working memory of the computer.
- Faster than secondary memories.
- A computer cannot run without primary memory.

**ROM**

- ❖ Non volatile
- ❖ Cannot be increased
- ❖ Read only
- ❖ Cannot be erased
- ❖ Permanent memory

**(2(a). Give the application of RAM and ROM**

**Application of RAM**

- ❖ RAM stores the operating system and other system software that control maintain the computer and other devices.
- ❖ RAM stores application programs that carry out a specific task e.g. Microsoft word,
- ❖ RAM stores the data being processed by the application programs resulting information.

**Application of ROM**

- ❖ Rom stores firmware written on by the manufacturers
- ❖ BIOS configurations which performs the POSTs are stored in the ROM chips

**(c). Explain the difference between volatile and non-volatile.**

- ❖ Volatile means memory that stores instructions temporarily or stores instructions as long as power is on.

**While**

- ❖ Non- Volatile means memory that stores instructions permanently and will retain them even when the power is off
- ❖ The contents of volatile memory are lost when the computer power is turned off. while
- ❖ The contents of nonvolatile memory are not lost when power is turned off.

**d). Why is a computer's main memory system referred to as random access memory**

It stores instructions waiting to be executed by the processor, data needed by those instructions and the result of processed data (information)

**(e). Compact disc –Rom devices are now used to store games. State three advantages and disadvantages of supplying games on the above mentioned device.**

**Advantages**

- A compact disc is more portable.
- The storage capacity of a compact disc is very much larger than that of a floppy disk.
- The average access time of a compact disc is faster than that of a floppy disk.
- Compact Disks cannot easily be affected by computer viruses.
- Compact Disk drives are very common nearly all computers have got CD drives.
- Compact Disks are cheap compared to other storage devices.
- Compact Disk stored information permanently

**Disadvantages**

- Compact disks have limited storage capacities as compared to other storage mediums
- Compact disc –Rom games are written once unlike other storage mediums.
- Less access time as compared to other storage mediums like Hard disks

**3. (a). Explain the meaning of the term control unit as used in a computer system.**

The control unit is the component of the processor that directs and coordinates most of the operations in the computer.

**(b). State any two functions of the control unit.**

- The control unit directs and coordinates most of the operations in the computer.
- It interprets each instruction issued by programs and then initiates the appropriate action to carry out the instruction.
- the control unit performs the machine cycle which includes the steps (Fetching, Decoding, Executing and Storing)

**(ii). Define a byte**

When 8 bits are grouped together as a unit, they form a byte.

Or is the basic storage unit in memory.

**(iii). How many bits are in the word COMPUTER and how many bytes are in the word COMPUTER?**

Bits: COMPUTER = 8 X 8 = 64 bits

Bytes: COMPUTER = 8 X 1 = 8 bytes

**(a). What are the differences between RAM and ROM.?**

- ROM does not require a constant source of power to keep the information stored on it (i.e. nonvolatile), whereas; RAM does require a constant source of power to retain the information (i.e. volatile).
- Content in RAM can be modified, while; content in ROM cannot be modified.
- ROM can also be found in computers, to store the programming needed to begin the initial boot up process when turning on a computer, while; RAM does not store programming needed to begin the initial boot up process of a computer.
- RAM is used in computers, as well as other devices, to store information of the programs currently running on the computer, while; ROM does not store documents the user is currently working on.
- RAM is fast because it is connected directly to the CPU; while; ROM is slow because it is stored slightly far away from the CPU.
- RAM capacity can easily be upgraded using the additional slots provided, while capacity of ROM can be upgraded, it is fixed.
- RAM is high level memory, while, ROM is low level memory.
- RAM stores data temporarily, while ROM stored data for a long

**b). “The storage capacity of my computer is 25GB”. Explain the statement.** It means that the computer’s hard disk space is 25GB and the computer can only store files equivalent to only 25GB

**(c). Mention four advantages of hard disks over flash disks.**

- Hard disks provide far larger storage capacities compared to flash disks
- Much faster access times than flash disks.
- Hard disk is cheaper than flash disks per Megabyte.
- Hard disk is usually more reliable than flash disks (a better protection against dust and dirt).
- Hard disks cannot be easily misplaced since they are found inside the system unit.
- Hard disks are more durable than flash disks.
- Hard disks provide more security to data than a CD
- Hard disk supplements RAM by providing virtual memory

**(d). Why are computer games and other programs commonly supplied on CD-ROMs. (Give four reasons)**

- A compact disc is more portable.
- The storage capacity of a compact disc is very much larger than that of a floppy disk.
- The average access time of a compact disc is faster than that of a floppy disk.
- Compact Disks cannot easily be affected by computer viruses.
- Compact Disk drives are very common nearly all computers have got CD drives.
- Compact Disks are cheap compared to other storage devices.
- Compact Disk stored information permanently

**(5) (a).What are**

### **Impact printers**

An impact printer forms characters and graphics on a piece of paper by striking a mechanism against an inked ribbon that physically contacts the paper.

### **Non- Impact printers**

These form characters and graphics on a piece of paper without actually striking the paper. Some spray ink, while the use heat or pressure to create images.

**(b). Give three advantages and four disadvantages of laser printers over dot matrix printers.**

### **Advantages**

- i. Laser printers are capable of printing in strong clear color, good for printing pictures than dot matrix printers
- ii. Laser printers can handle graphics and often a wider variety of fonts than

- dot matrix printers
- iii. Laser printers generally much quieter than impact printers because there is no striking mechanism
- iv. Laser printers have high quality of output, capable of printing fine and smooth details
- v. Laser printers are readily available on the market unlike dot matrix printers

**Disadvantages**

- i. Laser printers are more expensive than dot matrix printers.
- ii. Laser printers cannot print on multi-part stationary or make carbon copies as compared to dot matrix printers.
- iii. Laser printers cannot print triplicate documents because they do not strike the paper.
- iv. Laser printers are not as reliable and durable (lasting for a long time) as dot matrix printers.

**6(a). As the head of department ICT the procurement officer wanted to inquire from you about the factors that affect display devices before buying monitors for the school. List down any five you know.**

- i. Resolution is the number of horizontal and vertical pixels in a display device. A higher resolution uses a greater number of pixels and thus provides a smoother, sharper, and clearer image. Resolution is measured in dpi (dots per inch)
- ii. Dot pitch, aka pixel pitch, is the distance in millimeters between pixels on a display device.

**(b). Distinguish between primary and secondary devices and give an example of each.**

Secondary memory is computer memory used to store larger amounts of data, and information more permanently. e.g. Flash disks, zip disks, Compact Disks, Digital Versatile Disks, memory cards

**While**

Primary memory is memory that provides a small amount of temporary storage area for the data and instructions required by the CPU for processing.

Primary memory is memory found inside the computer. e.g. RAM, ROM, CACHE, CMOS

**(c). List four characteristics of non-impact printers.**

- ❖ Non-impact printer print in strong clear color, good for printing pictures
- ❖ Non- impacts cannot print multipart forms
- ❖ Non - impact printers can handle graphics and often a wider variety of fonts than impact printers

- ❖ Generally much quieter than impact printers because there is no striking mechanism
- ❖ Print head is less durable, inclined towards to clogging and damage
- ❖ Impact printers are more expensive
- ❖ Inkjet printer, laser printer and thermal printer
- ❖ Non-impact printer are reasonably fast
- ❖ High quality of output, capable of printing fine and smooth details

**Printers are computer peripherals. They are also known to be output hardware. State two categories of printers.**

**Impact printers**

An impact printer forms characters and graphics on a piece of paper by striking a mechanism against an inked ribbon that physically contacts the paper.

**Non- Impact printers**

These form characters and graphics on a piece of paper without actually striking the paper. Some spray ink, while the use heat or pressure to create images.

**(b). VDU's (Visual Display Unit) are of two categories these are**

- **CRT MONITORS** (Cathode Ray Tube): this is a desktop monitor similar to a standard television because it contains Cathode Ray Tubes it is large, sealed glass tubes, the front of the tube is a screen.
- **LCD MONITOR and SCREENS:** an LCD monitor sometimes called an LCD flat panel monitor, is a desktop monitor that uses a liquid Crystal Display instead of cathode - ray -tube to produce images. These monitors produce sharp, flicker -free images.

**c) Explain the difference between Hardcopy and Softcopy of data.**

Softcopy is output stored electronically on a display and appears for a temporary period

**While**

Hard copy is output that exists physically and it is a more permanent form of output than that presented on display devices (soft copy)

**c) Give four advantages of a soft copy over a hard copy**

- ❖ Output can be modified and changed easily No need of paper to access a softcopy.
- ❖ You can easily scroll through that enables focus on a particular or part of the document.
- ❖ Transmission to another device is faster e.g. on a LAN
- ❖ The displays are the user's workplace, therefore making it easier to use  
Screen displays can include text, graphics and colour

**8. (a). Explain four advantages of hard disk over a compact disk.**



- Hard disks provide far larger storage capacities compared to CD
- Much faster access times than CD.
- Hard disk is cheaper than flash disks per Megabyte.
- Hard disk is usually more reliable than flash disks (a better protection against dust and dirt).
- Hard disks cannot be easily misplaced since they are found inside the system unit.
- Hard disks are more durable than CDs.
- Hard disks provide more security to data than a CD
- Hard disk supplements RAM by providing virtual memory

**(b). Define the following terms**

**(i). Flash memory**

Is an electronic non-volatile computer storage medium that offers fast read and write access time as fast as dynamic RAM and can be electronically erased and reprogrammed.

**(ii). Optical character recognition**

An input device / mechanism which allows pre-printed text in hard copy form to be converted to editable digital text.

**(iii). Laser jet printer**

This is a non-impact printer, which uses light / laser mechanism to print with high speed and high quality output.

**(a). Describe any five devices used for storage of data on a computer.**

*Punch card.*

- *Hard disk.*
- *Floppy diskette.*
- *Flash disc.*
- *Compact disc.*
- *Digital versatile disc.*
- *Memory cards.*
- *Bluray disc.*
- *Magnetic tapes, e.t.c.*

**10. (a). State two storage media that use:**

**Magnetic technology**

- i. Hard disk
- ii. RAM
- iii. Diskettes
- iv. Zip disks
- v. Magnetic drums

**Laser technology**

- i. CD-ROM. (Compact Disk - Read Only Memory)
- ii. CD-R (Compact Disc- Recordable)
- iii. CD-RW (Compact Disk-Rewritable)
- iv. DVD. Digital Versatile Disk

**Microchip technology.**

- i. Memory cards Flash
- ii. Flash disks

b). State three ways through which hardware devices can be useful to education  
(03 marks)

.....  
.....  
.....

**11.(a). Distinguish between ROM and RAM. (04 marks)**

- ❖ ROM does not require a constant source of power to keep the information stored on it (i.e. non-volatile), whereas; RAM does require a constant source of power to retain the information (i.e. volatile).
- ❖ Content in RAM can be modified, while; content in ROM cannot be modified.
- ❖ ROM can also be found in computers, to store the programming needed to begin the initial boot up process when turning on a computer, while; RAM does not store programming needed to begin the initial boot up process of a computer.
- ❖ RAM is used in computers, as well as other devices, to store information of the programs currently running on the computer, while; ROM does not store documents the user is currently working on.
- ❖ RAM is fast because it is connected directly to the CPU; while; ROM is slow because it is stored slightly far away from the CPU.
- ❖ RAM capacity can easily be upgraded using the additional slots provided, while capacity of ROM can be upgraded, it is fixed.
- ❖ RAM is high level memory, while, ROM is low level memory.
- ❖ RAM stores data temporarily, while ROM stored data for a long

**(a). State two storage media that use:**

**(i). Magnetic technology**

- Hard disk
- RAM
- Diskettes
- Memory cards Flash

**(ii). Laser technology**

- ❖ CD-ROM. (Compact Disk - Read Only Memory)
- ❖ CD-R (Compact Disc- Recordable)
- ❖ CD-RW (Compact Disk-Rewritable)
- ❖ DVD. Digital Versatile Disk

**(iii). Microchip technology**

- ❖ Memory Card
- ❖ Flash Disk

**(ii) State two examples of:**

**Primary memory**

- ❖ RAM
- ❖ ROM
- ❖ CACHE
- ❖ CMOS

**Secondary memory**

- ❖ Hard Disk
- ❖ Floppy Disk
- ❖ Compact Disk
- ❖ Zip Disk
- ❖ Flash disk
- ❖ DVD
- ❖ Memory Card

**(b). state two ways one can protect his data on any one storage device**

- ❖ Write protecting the device.
- ❖ Storing the device properly in their covers.

**(b), write the following in full.**

**(i). ROM**

Read Only Memory

**(ii). EPROM**

Electronically Erasable Programmable Read Only Memory

**12. (a) printers are computer peripherals. They are also known to be output hardware**

State two categories of printers

- ❖ Impact Printers
- ❖ Non-Impact Printer

**(b) VDU'S (visual display unit) are two categories these are:**

- ❖ Cathode Ray Tube (CRT)
- ❖ Liquid Crystal Display (LCD)

**(c) What is a peripheral?**

*A peripheral is a device attached to a host computer but not part of it whose primary functionality is to expand the host's capabilities*

*This a device that can be attached to the systems units' mother board e.g. printer, mouse, keyboard*

**13. A computer needs to be updated so that it can backup data to a CD and DVD'S**

**(a) Explain one difference between these two media**

The difference between CD and DVDs lies in the data density or capacity a standard DVD hold 4.7gigabytes of data while a standard CD hold 700megabytes of data.

**(b) Discuss the importance of backup as used in computing**

- i. Restoring original data after loss events
- ii. Restoring Corrupt files

**(c) Name one software and one hardware that can be used for the backup process:**  
Backup4all

**SOFTWARE**

1. (a). State the difference between **hardware** and **software**.

**Hardware** refers to the physical / tangible / touchable parts of a computer,

While; **Software** refers to a set of instruction (programs) that a computer needs to work.

**ii). Explain the two types of computer software.**

**System Software:** This is software that control or manage the operation of the computer and its devices. System software serves as an interface between users, the application its software and the computer's hard ware.

**Application Software:** It consists of programs that perform specific tasks to a user

**iii). Mention five characteristics of computer software**

- *Computer software is intangible*
- *Computer software gives instructions/procedures to computers*
- *Computer software is copyrighted*
- *Computer software can be installed*
- *Computer software is executable*
- *Loads into Memory when running*
- *All software has a source Code written by a programming Language.*

**(b). List three branches of system software.**

- ❖ Operating System
- ❖ Utility Programs
- ❖ Programming Languages

**(c). Mention one application program that can be used to carry out the following tasks:**

**(i). To prepare a talk to senior one students**

*Presentation software or an example of this program.*

**(ii). To draw a school budget for term two**

*Spreadsheet program or an example of this program.*

**(iii) To maintain records of students for quick retrieval**

*Database management system program or an example of this program.*

**(2.a.). In relation to word processing, briefly explain the following:**

**(i). Copy**

*Duplicating a piece of text in a given document.*

**(ii). Cut**

*Move a piece of text in a given document and in this case, there is no duplicate text.*

**b) Differentiate between system software and application software.**

**System Software:** This is software that control or manage the operation of the computer and its devices. System software serves as an interface between users, the application its software and the computer's hard ware.

## **While**

**Application Software:** It consists of programs that perform specific tasks to a user

**(b) Give any six functions of an operating system.**

- ❖ Provides basic working environment/interface.
- ❖ Controlling the use of peripherals.
- ❖ Controlling the loading and running of application programs.
- ❖ Organizing the use of memory/Memory management
- ❖ Conducting the process of Booting
- ❖ File management
- ❖ Protecting hardware and software
- ❖ Configuring devices
- ❖ Processor management e.g multitasking and time sharing.
- ❖ Controlling a network through network operating systems.

**(ii). In relation to classifications of Operating Systems explain the following**

**i. Multi-user operating systems**

A multi-user operating system is one that allows for multiple users to use the same computer at the same time. UNIX, VMS and mainframe operating systems, such as MVS, are examples of multi-user operating systems.

**ii. single user operating systems**

A single-user operating system is designed to manage the computer so that a single user can effectively do one task at a time.

The Palm OS for Palm handheld computers is a good example of a modern single-user, single-task operating system.

**iii. Multi- threading operating systems**

A multithreading operating system is one that allows different parts of a software program to run concurrently.

**iv. Multi-processing operating systems**

A Multiprocessing operating system is one capable of supporting and using more than one computer processor at a time.

**v. Real Time operating system**

Real time operating systems are designed to respond to an event within a predetermined time. As soon as the data is input, it is processed and output immediately.

These types of operating systems are found in environments where computers are responsible for controlling systems continuously; for example, robotics, manufacturing, interactive games, airlines and theatre booking systems.

**vi. Stand-alone operating system / Desktop operating System.**

This is a complete set of operating system that works on desktop or notebook computer. E.g. Disk Operating System (DOS), windows XP, NT, 95, Vista.

**vii. Network operating system**

These are designed to be used on several computers that exist on a network. It can be installed on a stand-alone computer as well. Examples include, Novell's Netware, DOS os/ z, UNIX, Linux, Solaris

**viii. Embedded Operating System**

These are found in handheld devices that are open driven and or touch sensitive system and small devices

**ix. Single task or single program operating system**

These are OS that allow processing of only one user program at a time. This implies that the user can only run one interactive program at a time.

**b). Mention four factors one should consider before choosing an operation system**

- ❖ The type of computer in terms of size and make. Operating systems are available for all sizes of computers.
- ❖ The hardware configuration of the computer such as the memory capacity, processor speed and hard disk capacity should meet the required minimum requirements for a the operating system to run well
- ❖ The application software to be installed on the computer should be supported by the operating system. For example Microsoft Office 2010 cannot run on Windows 2000.
- ❖ The operating system should be user friendly. This depends on the skills of the intended users of the computers.
- ❖ The operating system should have adequate information and help guides for user reference.
- ❖ The cost of the operating system.
- ❖ Reliability and security provided by the operating system.
- ❖ The number of processors and hardware devices it can support.
- ❖ The number of users it can support
- ❖ The availability of basic utilities and accessory programs within the operating system.

**(c) (i) What is a computer virus?**

A computer virus is also a program that copies it's self into other programs and spread through multiple

A computer virus is a program that is often designed to affect, effect and infect a computer negatively by altering the way the computer normally works without the knowledge or permission of the user.

**(ii) Name any two antivirus software.**

- i. Norton anti-virus.
- ii. Panda anti-virus.
- iii. A vast anti-virus.
- iv. F-secure ant--virus
- v. MacAfee anti-virus
- vi. Kaspersky anti-virus
- vii. E-scan anti-virus
- viii. SMAD anti-virus
- ix. Window Defender.

21 (a). (i). What is a **device driver**?

**A driver** is a small program that tells the operating system how to communicate with a specific device.

(ii) State **four** uses of device drivers to a computer user?

- i. Provides software interface to hardware devices.
- ii. Controls a particular type of device that is attached to your computer.

**26. (a) What is a utility program?**

They are programs designed to configure, analyze, optimize, and maintain a computer in a normal working state.

Some are included with the operating system (for example, disk repairing programs) while others are purchased separately by the user (for example, Norton Disk Doctor).

**(b) Outline any four functions of utility programs**

- Backup:** This utility allows you to make a duplicate copy of every file on your hard disk, which can be stored on CDs or diskettes.
- Disk defragmentation:** A defragmenter utility finds fragmented files on a disk and organises them back in a contiguous manner.
- Disk repair utility:** A disk repair utility scans a hard disk or floppy disk for bad sectors (defective areas) and either makes repairs to these sectors, or marks the defective area so that the operating system does not store any data in that location.
- Virus protection utility:** Antivirus software programs scan for computer viruses and removes them.
- Computer language translators:** Computer language translators (assemblers, compilers and interpreters) translate a program written by a programmer into machine language (the language the computer can understand).



- ❑ **Check Disk** utilities: Check Disk is a utility that checks your hard drive (or floppy drive) for problems. It will check for directory structure errors, file errors, etc.
- ❑ **Scandisk:** This is a utility provided with Windows that is used to scan computer disks to see if there are any potential problems on the disk, such as bad disk areas, and possibly repairs them. Since disks are magnetic media, all disks, including the hard drive, can be corrupted.

❑ **Disk cleaners**

These are utilities used to find files that are unnecessary to the computer's operation and taking up disk space. Disk cleaners help the user to decide what to delete when your hard disk is full.

❑ **Disk partitioning software**

Such utilities are used to divide an individual drive into multiple logical drives, each with its own file system, which can be mounted by the operating system and treated as individual/separate drives.

**Disk compression utilities**

Disk compression utilities are used to compress the contents of a disk, increasing the capacity of the disk, or to decompress its compressed contents.

**File managers:** A file manager or file browser is a computer utility program that provides a user interface to work with file systems.

**A screensaver** (or screen saver) is a computer program that blanks the screen or fills it with moving images or patterns when the computer is not in use.

(a) Explain the following terms:

**Off-the-shelf software.**

- This refers to packaged software that is designed to meet the needs of a wide variety of end users.
- Off the shelf software is mass-produced, commercially sold software, and copyrighted.

Examples include: Microsoft Office Word and Adobe Photoshop are examples of Off-the shelf software.

**Custom software.**

Custom software is tailor-made software, which is developed at a user's request to perform specific functions for a specific user.

**Examples of custom made software**

- ❑ Locally made school management information systems(SMIS)
- ❑ Inventory management systems
- ❑ Payroll management systems
- ❑ Library management systems

**Mention four advantages of off-shelf software over custom made software.**

**Advantages of off- shelf software**

- ❖ Easy to use, because it is known by many people.
- ❖ Cheaper because it is massively produced and packaged for commercial purposes.
- ❖ Easy to acquire because it is already made.
- ❖ More reliable because it is tried and well tested by many users.
- ❖ Containing online help to guide users in case of any problems in use.
- ❖ Meets all user requirements and can be edited if need arises.

### **Disadvantages of Off-shelf software**

- ii) Off-the-shelf software does not address needs of specific users.
- iii) Off-the-shelf software may take a long time to learn properly. This is because this software tends to be large and complicated.
- iv) Using off-shelf is time consuming to learn and adopt because it requires the user to adapt to the system itself to do work.
- v) Off-shelf may not address some of the individual needs of the user. There will probably be operations that you require that you simply cannot do with the software.

### **Advantages of custom made**

- A custom-made application directly addresses the user's needs because it is written to the user's requirements and fits in with his/her work.
- The solutions it offers given the greatest depth, breadth and flexibility possible in meeting the needs of an organization, since the software product is tailored to the organization's specifications.
- The software developer delivers and installs the software and trains the end users in the use of the new software.
- The software also performs tasks that the general purpose software cannot perform.
- This kind of software can be quickly changed when the needs of the organization change, since the source code belongs to the company

### **Disadvantages of Custom made**

- ❖ Unique, and requires extensive training before use.
- ❖ Expensive because it requires hiring a programmer.
- ❖ Difficult to acquire due to the time needed for programming it.
- ❖ May contain programming errors since it is not tested adequately.
- ❖ Usually lacking online help services.
- ❖ Cannot be modified or changed to meet unique user requirements.

### **(a).(i). Explain what is meant by the term Operating System.**

This is a set of programs containing instructions that co-ordinate all the activities among hardware resources.

### **(ii) Give any four features of a graphical interface.**

**A toolbar** is a series of selectable icon buttons in a GUI that gives the user an easy way to select desktop, application or Web browser functions.

**A scrollbar** is a graphical object in a graphical user interface (GUI) with which continuous text, pictures or anything else can be scrolled, i.e., viewed even if it does not fit into the space in a computer display, window, or viewport.

**A list box** is an on-screen display of text items in a scrollable window.

**A drop-down menu**, also called a pull-down menu, is a menu of commands or options that appears when you select an item with a mouse or click on the drop-down arrow at the right-hand corner of the menu box.

**A menu bar** is a region on a screen of a computer program window which contains lists of available menus or application interface where drop down menus or a lists of available menus for a certain program are displayed.

**Radio buttons** are small, hollow circles adjacent to text in a configuration menu box.

**An icon** in computing is a small pictogram that conveys its meaning through its pictorial resemblance to a physical object. Icons may represent a file, folder, application or device on a computer system.

**A wizard** is a tool to guide you through the steps of a process or task by asking a series of questions or presenting options for you to proceed through a task

(b)(i). Describe as precisely as possible the use of each of the following features:

### **List Box**

A list box is an on-screen display of text items in a scrollable window. The list box allows the user to select one or more items from a list contained within a static, multiple-line text box.

### **Drop down list**

Is a menu of commands or options that appears when you select an item with a mouse or click on the drop-down arrow at the right-hand corner of the menu box.

Clearly state one example where anyone of the above features in

### **(a) Explain the following terms as used in computer studies:**

#### **i. System software**

This is software that control or manage the operation of the computer and its devices. System software serves as an interface between users, the application its software and the computer's hard ware.

#### **ii. Application software.**

Software that allows end users to accomplish one or more specific tasks

#### **iii. Utility programs**

They are programs designed to configure, analyses, optimize, and maintain a computer in a normal working state.

**With examples, mention five application software programs.**

- a. **Word Processors** – Used for producing textual documents like letters, notes, reports, memos, etc. Examples Include:
  - WordPerfect,
  - Lotus Word Pro,
  - Word Star,
  - OpenOffice.org Writer,
- b. **Spread sheet software** - Used for performing calculations, and the creating of graphs. Examples include:
  - Microsoft Excel,
  - Lotus 1-2-3,
  - KSpread,
  - OpenOffice.org Calc,
- c. **Database management software (DBMS)** - Used to create and manage an organized collection of related and structured information (a database). Examples include:
  - Lotus Approach,
  - Microsoft Access,
  - OpenOffice.org Base,
  - Corel Paradox,
- d. **Presentation software** - These applications are used for making presentations and slide shows that can aid a speech presentation. Examples include:
  - Screencast ,
  - Microsoft PowerPoint,
  - OpenOffice.org Impress,
  - Adobe Persuasion,
- e. **Computer aided design (CAD) software** - Used by engineers and architects to produce technical drawings such as designs of building structures and floor plans  
Examples include
  - ArchiCAD,
  - AutoCAD, e.t.c.
- f. **Desktop publishing software** - These are applications used for creating publications like cards, flyers, calendars, brochures, Newsletters, Certificates, etc. Examples include:
  - Microsoft Publisher,
  - Celframe Publisher,

- Adobe Page Maker,
- g. **Web browsing software** for displaying Webpages from the internet or html documents on computers. Examples Include:
  - Mozilla Firefox,
  - Internet Explorer,
  - Safari,
  - Opera
  - Netscape Navigator, e.t.c.
- h. **Web authoring software** – Used by webmasters for building websites. Examples include:
  - Microsoft FrontPage,
  - Adobe Dreamweaver,
  - Microsoft Expression Web,
  - Antenna Web Design Studio
- i. **Media Players for Audio and Video playback on computers.** Examples include:
  - Windows Media Player,
  - Nero Showtime,
  - JetAudio,
  - Power DVD,
  - VLC Media Player, e.t.c.
- j. **Graphics software** – Used by graphic designers to create and design artistic graphics and to manipulate visual images on a computer such as logos, cartoons etc. Examples include
  - Paint,
  - Adobe Photo shop,
  - Corel Draw,
  - Adobe Illustrator etc.

**(c) List any five operating systems that you know.**

- i. Windows
- ii. Fedora
- iii. Ubuntu
- iv. Linux
- v. UNIX
- vi. Novel Netware
- vii. Macintosh
- viii. Window server

**(b) (i) list any two ways of starting an application in Windows.**

- i. Double click on the program shortcut icon on the desktop.
- ii. Click on start from the start menu and the click on all Programs then select the application

**ii). What is the Windows utility used to view contents of a floppy hard and network drivers?**

.....

.....

.....

**(ii) What do we call the basic applications that are built into Windows that allow us to perform tasks like drawing or text editing?**

- ❖ Paint Programs like Paint
- ❖ Text editors like Notepad and WordPad

**(b) Fill in the gaps in the table below.**

Task	Type of software that can be used
(i) Creating and editing photographs and images.	Adobe Photoshop, Paintbrush, Ms-Word
(ii) Present a lecture	Microsoft PowerPoint
(iii) performing calculation on data and creating charts	MS-Excel
(iv) Reading information on the Internet	Web browsers like Mozilla, Opera

**(c) (i) Explaining what a computer system interface is**

Systems or mechanisms or tools through which a user interacts with a computer system (which can be graphical tools, menus, command programs, voice and touch recognition tools. Remote control interfaces etc.)

**(ii) Identifying any two features of an application software interface**

- |   |                            |
|---|----------------------------|
| Tool bar  | Title bar,                 |
| Menu bar, formatting bar, standard, drawing bar, Status bar |                            |
| Ribbon  | Scroll bars                |
| Work area   | Interactive icons, buttons |
| Ruler   | Cursor                     |
| Tabs  | Key tips                   |
| Help  | Office buttons             |
| Task pane   |                            |

**iv). What is meant by the term software suite?**

- A software suit is a collection of individual application soft-ware programs sold as a single package.

- When you install the suite, you install the entire collection of applications at once instead of installing each application individually.

**v). Mention three examples of software suites.**

- ❖ Lotus Smart Suite
- ❖ Microsoft Office
- ❖ KOffice
- ❖ OpenOffice.org
- ❖ WordPerfect Office
- ❖ Adobe Master Suite

**(a) (i) Distinguish between Internet and World Wide Web.**

Internet also called the *Net* is a worldwide collection of networks that link millions of businesses, government agencies, educational institutions and individuals.

*While*

*World Wide Web is a collection of electronic documents. Each document on the web is called web*

**(ii) Mention any four services offered by the Internet.**

**E-mail**

E-mail refers to electronic sending and receiving of messages on internet. It requires a user to have an address, email software and a message to sent to the recipient.

**News group**

A forum in users can post electronic messages to the subscribed members on a common topic.

**File Transfer Protocol**

A protocol that enables upload and download of files on the internet. It addresses the specific IP address.

**Chat rooms**

A service that enables users to exchange views in text or voice or video through a ISP either through subscription or anonymous

**Video Conferencing**

A service on the internet that enables geographical separated users to exchange text, voice and video feeds. It requires a web camera and conferencing hardware and software.

**World Wide Web**

A feature on the internet that contains multimedia documents that users can access, download from a website.

- i. Online learning/distance education
- ii. Financial services
- iii. Reservations
- iv. Tracking locations and devices
- v. Weather updates
- vi. Mailing list
- vii. Entertainment (online games)
- viii. Collaboration/social networking
- ix. Software updates (antivirus, drivers)
- x. Telnet
- xi. Telecommuting
- xii. Internet telephony (Skype/VoIP)
- xiii. Bulletin board services
- xiv. Discussion forum services
- xv. Internet relay chat services
- xvi. Gopher
- xvii. Information
- xviii. e-banking
- xix. e-shopping
- xx. tele-medicine

(b) Define the following terms.

**(i) Band Width.**

Bandwidth is the amount of Data (bits) that can be transmitted along a communication channel in a given time (per second) which is measured in bits per second or bps

**(ii) Packet Switching**

This is a data transmission technique which involves transmitting and routing of messages by dividing the electronic message/data into packet segments and sending them rapidly and sequentially over a network channel

**(iii). Circuit Switching**

A method of communicating in which a dedicated communications path referred to as a circuit or channel is established between two devices through one or more intermediate switching nodes before communication between the devices takes place.



**(c) Name four basic items that are required to gain access to the internet.**

- Modem
- Computer or computer related device
- Internet Service Provider.
- Web browser.
- **Hub/switch**  
Provides a central point on a network
  
- **Repeater**  
Accepts signal from a transmission medium, amplifies it and retransmits it over the medium
- **Gateway**  
Is a combination of hardware and software that connects networks that use different protocols?
- **Router**  
Is an intelligent communication device that sends (routes) communication traffic to the appropriate network using the fastest path?
- **Modem/dongle**  
It modulates and demodulates transmission signals.

**(a) Briefly explain the following terms in relation to websites**

**(i). Uploading**

It refers to transferring of an electronic document to the web server for storage

**(ii) Web hosting**

It is an internet service that enables websites to be available on the internet for internet users to access it.

**(iii) Hyperlinks**

This is a built-in - connection from a web page to another related **web** page or part of a web page.

**(iv) Web master**

Is an individual responsible for creating, updating and maintaining a website?

**(b) Identify any three qualities of a good website**

- Well communicated content
- Clear identity
- Visible contact information
- Well hyperlinked to facilitate easy navigation
- Use of strong password
- Good use of color:
- Text that is easily read
- Meaningful graphics

- Simplicity

**(c) Outline four advantages of using a website to your school.**

- Platform form for communication
- Platform for advertising/marketing.
- Face lifting as well as boosting schools corporate image.
- A teaching tool through posting notes, videos and exercises to students and getting feedback/e-learning tool
- Skills building like online publishing, conferencing, sharing of ideas
- Cloud computing and storage for backup of school data.
- Pride of ownership
- Platform for getting donations
- Offering an opportunity for a wider audience

**(a) Define the following terms**

**(i) Hyperlinks**

This is a built -in - connection from a web page to another related **web** page or part of a web page.

**(ii) Webpage**

A webpage can also be defined as an electronic document on the web; it can contain t audio (sound) and video

**(b) State three factors that slow down the speed of internet download.**

**Computer Processor speed.** A person using a Computer with dual Pentium IV processor is most likely to get faster connectivity to the internet as compared to one with a Pentium III or Pentium II processor.

**2. Distance the data travels.** Actual Internet speeds will vary, depending on the distance the data travels coupled with how many servers it has to go through and the different speeds of each server.

**3. Heavy traffic on the network.** The greater the number of computers on the network is, the more the internet speed reduces.

**4. Malware, Spyware and Viruses.** Viruses hinder the operation of programs on the computer, regardless of its processor strength; this in turn slows down the speed of connectivity.

**5. Modem speed.** If the modem is substandard with a low rating, or not compatible with the ISP's modem then this will slow down the speed at which data is transmitted.

**6. Natural Conditions.** Instability in connection speed is also commonly caused by natural conditions such as stormy weather and thunder, which interfere with the transmission of signals.

**7. Positioning of Routers.** Routers in wireless networking should be strategically positioned.

The routers should not be put below or under tables but should be raised well to be able to send the signals directly to the receiving computers/ laptops

**8. Hardware problems.** A poor network card, video card or signal receiver can seriously reduce the speed of the data being processed by your system, slowing down the speed at which your computer can take the information coming in.

**9. Software problems.** You need a good updated web browser software to display the web pages efficiently. It is also good to have updated software and device drivers to newer versions for optimum performance.

**10. RAM Memory available.** The less memory there is available to receive the data.

**11. Computer internet settings.** Improper computer settings can also affect the speed of your internet connection. Setting your firewall, safe search and other options properly will improve the speed as well.

**12. Technological Circumstances.** Slow speed of an internet connection can be due to technical causes such as maintenance works being done by an ISP.

**13. Cookies.** When surfing, the browser collects information, such as passwords and stores it on your local hard drive in a file known as a cookie.

**4. (a) Explain the following terms:**

(i) **Hyper link**

This is a built-in connection from a web page to another related **web** page or part of a web page

(ii) **Web browser (Give examples)**

Is application software that allows users to view or access web pages?

- i. Microsoft internet explorer
- ii. Mozilla
- iii. Netscape
- iv. Google chrome
- v. Opera,
- v. *Safari*
- vi. Opera
- vii. Konqueror

(iii). **Web master**

Is an individual Responsible for maintaining and designing web pages and websites.

(iv) **Web site**

A website is a collection of related web pages and associated items such as documents and pictures owned by an individual or organization on a web server.

- (b) (i) Write URL in full and state its use.

**Uniform Resource Locator:** This is a unique address of a web page.

The URL tells the browser where to locate the names and sometimes the path to a specific web page or location on a web page.

**(ii).Give two example of URL.**

- ❖ www.newvision .com
- ❖ www. Kodak.com
- ❖ www. Facebook.com

**(i) What is an ISP in full in relation to internet?**

- ❖ Internet Service Provider.

**(iii) State the use of an ISP.**

- Provide internet services to an individual or company
- Offer connection to the Internet
- They do system analysis and consultancy
- Network servicing and maintenance
- Provide network security
- Other services like website hosting

**(iii) State any four factors that should be considering in choosing an ISP.**

- ❖ Setup costs
- ❖ Experience for both ISP and client.
- ❖ Auxiliary/additional services offered by the ISP e.g. E – Mail/telephone SMS facility.
- ❖ Availability of online help.
- ❖ Compatibility of ISP software with yours e.g. windows Vs Linux Vs Wang.
- ❖ Efficiency/Effectiveness of ISP devices e.g. speeds of ISP modem, Bandwidth etc. cabling architecture, Bit–Bus architecture for devices etc.
- ❖ Available technology. For example, In case you intend to hire a dial-up service, you need to consider the availability of a local phone number or toll-free number for access,
- ❖ You also need to consider the Technology offered by the ISP. Some technologies are older and less efficient than others. The ISP should be able to offer the latest and most efficient technology.
- ❖ Technical support. What kinds of support services can the ISP provide. Are there any additional charges for support?

- ❖ The terms of service. You need to consider the terms of services offered by the ISP and determine whether they meet your expectations or not
- ❖ Other services offered by the ISP that you can have on top of internet connection. E.g. web hosting and domain services.
- ❖ The fee charged for the services. What is the monthly fee for the service? Are there any additional equipment or setup fees?
- ❖ The size of the ISP's Client base. ISP capacity is usually limited, the bigger the client base the less reliable is the ISP.
- ❖ Coverage. Does the ISP coverage reach your location or not?

## 5. Explain the following terms:

### (i) **Telnet**

A terminal emulation protocol that allows a user to log onto a remote device (computer)

### (ii) **FTP**

These are sets of rules that allows files containing text, programs, graphics, and numerical data, and so on to be downloaded off or uploaded onto a network.

### iii. **TCP/IP**

These are rules responsible for delivery of data over the network.

### (iii). **Intranet**

An internal computer network that belongs to an organization and is accessible only by that Organization's members.

### (iv) **What is a web browser? Give one example of a web browser.**

Is application software that allows users to view or access webpages?

- i. Microsoft internet explorer
- ii. Mozilla
- iii. Netscape
- iv. Google chrome
- v. Opera,
- v. *Safari*
- vi. Opera
- vii. Konqueror

### (c) **State four major components of an e-mail message.**

- ❖ **Subject:** The theme of the email message.
- ❖ **To:** Carries the address of the recipient (to whom the message is sent to)
- ❖ **Cc (Carbon Copy):** Enables copies of the email message to be sent to the third party while acknowledging other recipient.
- ❖ **BCC: (Blind Carbon Copy):** Enables copies of the e- message to be sent to a third party without acknowledge any other recipient (if present).
- ❖ **Attachment**

**(c)(ii). Mention five advantages and disadvantages of using and email over using and ordinary postal services.**

**Advantages**

- i. A message can be sent anywhere in the world at the price call without having to leave your desk.
- ii. Speed of delivery: The message will arrive in a few minute: can be picked up the next time the recipient looks at their e-mail.
- iii. Ability to send to multiple recipients: the message can be sent to a group of people.
- iv. It is very easy to send a reply to an email as soon as it is receive using the reply button.
- v. Large files such as spreadsheets and graphics can be sent attachments
- vi. Low costs: an email is very cheap.
- vii. E-mail is universal while ordinary mail one has to change address wherever he/she is located.
- viii. Free mail like sports can be subscribed,
- ix. You can send multimedia like Music, Videos
- x. Assurance of whether the mail has been delivered or not.
- xi. **Easy to use.** Emails applications have user friendly tools that help during composing messages.
- xii. Easy to **prioritize**: Since the mails have subject lines, it is easy to prioritize them and ignore unwanted mails.
- xiii. Emails can also carry **hyperlinks** that lead to other Web Pages with just a click.
- xiv. One can **subscribe** to news and other online services through email
- xv. Email software have **management features** that help users to organize their messages in folders like inbox, sent, draft, etc.
- xvi. Easier for **reference**: When one needs to reply to a mail, there is a provision in the mailing system to attach the previous mails as references. This refreshes the recipient's knowledge, on what he is reading.
- xvii. **Environment friendly**: Postal mails use paper as a medium to send letters. Electronic mail thus, saves a lot of trees from being axed. It also saves fuel needed in transportation.
- xviii. Email softwares have **address book features** that may be sorted in alphabetical order.
- xix. Email software has a good degree of **security features** such as username and password before sign in
- xx. Email applications have inbuilt English dictionary which safeguards the sender from incorrect **spelling and grammar**.
- xxi. There is **flexibility** in time of opening the e-mail for any time access. At any time of the day or night, one can communicate with friends, relatives, professors and business associates.

- xxii. Messages remain **permanent** for future and frequent accessing from anywhere.
- xxiii. Use of **graphics** such as colourful greeting cards and interesting pictures can be sent through e-mails.
- xxiv. **Advertising** tool: many individuals and companies are using e-mails to advertise their products, services, etc.

### **Disadvantages**

- Emails can carry **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. Checking and deleting these unwanted mails can unnecessarily consume a lot of time, and it has become necessary to block or filter the unwanted e-mails by means of spam filters.
- E-mail **spoofing** is another common practice. Spoofing involves deceiving the recipient 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. After the e-mail is sent and before it is received by the desired recipient, it "bounces" between servers located in different parts of the world. Hence, the e-mail can be intercepted by a professional hacker.
- **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.
- Since the content posted via e-mails is **considered informal**, there is a chance of business documents going unnoticed. Thus, urgent transactions and especially those requiring signatures are not managed through e-mails.
- **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.

(ii) Differentiate between a **domain** name and an **IP address**.

A domain name is a text version of an IP

**While**

An IP address is a number that uniquely identifies each computer on a network.

**(b) State two undesirable behaviors internet.**

- ❖ IP hijacking.
- ❖ Spoofing.
- ❖ Pharming.
- ❖ Spamming.
- ❖ Sharing of pornographic mails.
- ❖ Illegal profiling.
- ❖ Tapping of messages.
- ❖ Fraud.
- ❖ Spread of viruses
- ❖ Phishing
- ❖ Spamming
- ❖ Identity theft
- ❖ Defaming
- ❖ Cyber terrorism
- ❖ Cyber bullying
- ❖ Hacking

(a) **Explain the functions of 5 devices that can be used to connect to the internet.**

**Hub/switch**

Provides a central point on a network

**Repeater**

Accepts signal from a transmission medium, amplifies it and retransmits it over the medium

**Gateway**

Is a combination of hardware and software that connects networks that use different protocols.

**Router**

Is an intelligent communication device that sends (routes) communication traffic to the appropriate network using the fastest path.

**Modem/dongle**

It modulates and demodulates transmission signals.

Smart phone

NIC

Radio/parabolic antenna

Desktop Computer, laptops, Ipads, tablets

(c). **Explain five advantages and disadvantages of the internet**

**Advantages**



- Access a wealth of information, such as news, weather reports, and airline schedules.
- Shop for goods and services through E – commerce
- Use online banking services and manage investments.
- Do research and take online training courses.
- To download files, software etc.
- For Advertisement. People use internet to publish information about themselves or their work
- Make cheap internet calls
- Send and receive email to and from other connected users.
- Communicate with others around the world through chat rooms, videoconferencing e.t.c
- Access sources of entertainment and leisure, such as online games, magazines, and vacation planning guides, listen to music, and watch movies..
- Has storage where you can store information safely and can access it anywhere.
- It is accessible 24/7 (always on)
- Search Engines like Yahoo, Google can help you get what you want – compared to looking for a information in a Library.

### **Disadvantages**

- Computer viruses these can be downloaded and spread across machines and have destructive effects.
- Internet provides unsuitable material such as Pornography, the biggest threat related to healthy mental life.
- Theft of Personal information  
If you use the Internet, you may be facing grave danger as your personal information such as name, address, credit card number etc. can be accessed by hackers or thieves.
- Spamming: Spamming refers to sending unwanted e-mails in bulk, which provide no purpose and needlessly obstruct the entire system.
- Some people are getting addicted to the internet and thus causing problems with their interactions of friends and loved ones.
- Some of the sites on the internet require passwords to have access to information that you want.
- The initial cost of connecting to the internet is high. e.g. buying computers.
- Many people are computer illiterate and so cannot use internet.
- There is a lot of wrong information on the internet. Anyone can post anything, and much of it is deceit/garbage

### **6. Study the URL below and answer the questions which follow:**

<http://www.iicd.org>

(i) What does http stands for?

Hyper Text Transfer Protocol (Protocol)

(ii) Name the domain name in the above URL

iicd

(iii) Give the top-level domain (TLD) in this URL.

Org

(iv). Which type of organization is the website.

(Non-government organization)

### **7. (a) Who is a webmaster**

Is an individual Responsible for maintaining and designing web pages and web sites.

### **(ii). Mention any four web authorising software.**

- i. Note Pad
- ii. Microsoft FrontPage 2003
- iii. Adobe Dreamweaver CS4
- iv. WebPlus X4 (Now owned by Microsoft)
- v. Microsoft Expression Web 3.0 & Studio 3
- vi. Namo Web Editor 8 & Professional Sothink
- vii. DHTML Menu 9 & Tree Menu 2 Antenna
- viii. Web Design Studio 3
- ix. AllWebMenus PRO 5
- x. PhotonFX Easy Website Pro 4

### **b). Mention three precautions a web designer should consider when designing a web page**

- i. Precious content (The content shouldn't be much)
- ii. Use minimal graphics. (You should avoid using a lot of graphics like photos)
- iii. Consumer Requirements. The web page must meet the customers needs and contents
- iv. Copyright consideration
- v. Take into account version of client browsers
- vi. Avoid use of frames

### **ii). Why is it not good to have a lot of graphics in a webpage.**

- i. The page may take too long to load.

- ii. The client computer may support different colour depth (Resolutions)
- iii. Graphics take a lot of space

**(iii). Mention four qualities of a good webpage.**

- i. It should load quickly
- ii. Should have feedbacks
- iii. Should have webpage titles and a brief summary about the page.
- iv. Should have links (references) to other resources
- v. Should have date of last update,
- vi. Should have good navigation buttons,
- vii. Faster data transmission
- viii. It should transmit more data, support large bandwidth
- ix. More resistant to external interface e.g. noise

## **COMPUTER NETWORKING AND DATA COMMUNICATION**

### **1. a). Define the term computer network**

This is a connection of two or more computers via a communication media to share resources. E.g. a group of computers can be sharing a printer.

### **ii). Mention and explain three types of computer networks that you know.**

#### **a). Local Area Network (LAN)**

This is a network that connects computers and devices in a limited geographical area such as a home, school computer lab, Office Building

#### **b). Metropolitan Area Network (MAN)**

Is a high-speed network that connects local area networks in a metropolitan area e.g. a city or town.

#### **c). A Wide Area Network (WAN)**

Is a Network that covers a large geographical area (such as a city, country or the world) using a communication channel.

### **b). Mention six advantages of computer networking over standalone computers**

- i. Facilitates communication: Using a network, people communicate efficiently and easily via email, Instant messaging, chat rooms e.tc
- ii. Sharing hard ware: In a networked environment, each computer on the network has access to hardware on the network e.g. Printers, scanners e. t. c.
- iii. Data and Information sharing: In a networked environment any authorized computer user can access data and Information stored on computers on the

network.

- iv. Sharing software: Users connected to a network has access to software on the network. To support multiple users access of software most Venders sell network version or site licenses of their software.
- v. A network license is a legal agreement that allows multiple users to access the software on a server.

A site license is legal agreement that permits users to install the software on multiple computers,

- vi. Transferring funds called (Electronic Fund Transfer): It allows users connected to a network to transfer money from one bank account to another via telephone lines,
- vii. Share same language.
- viii. Reducing on cost by sharing hardware like printers and software.
- ix. It allows for tight control over who has access to what data.
  - x. It enables online learning and collaborative research
  - xi. It allows access to free common databases and databanks like free software, as in banks like ATM.
- xii. It allows for advertising tools for products and services
- xiii. It allows access to more entertainment, leisure, clubs e.g. e-zoos.
- xiv. Has enabled improved travel service through e-books and e-reservation.
- xv. News updates can be got on climate, weather, politics, and sports. Provides for online employment e.g. telecommuting.

**ii). Mention six disadvantages of computer networking.**

- i) Insecurity of Information: If a computer is on a network, a computer hacker can get unauthorized access of information by using different tools.
- ii) Rapid Spread of Computer Viruses: If any computer system in a network gets affected by computer virus, there is a possible threat of other computers getting affected too.
- iii) Expensive Set Up: The initial set up cost can be high depending on the number of computers to be connected. Devices like switches, routers, hubs, etc are always expensive.
- iv) Failure of the Server: In case the main File Server of a computer network breaks down, the whole system becomes useless.

**a). Mention and explain six requirements needed to connect to the network.**

- i. Hub / switch: This is a central device that provides a common connection points for nodes on a network.
- ii. Communication media (Wireless, wire-twisted pair)
- iii. Computers
- iv. Router: this is a communication device that connects multiple computers together and transmits data to its correct destination on the network.

- v. Computers with a Network Card (NIC)
- vi. Networking Operating System software.
- vii. Power to run the system.
- viii. Repeater: Allow a cabling system to extend beyond its maximum allowed length by amplifying the network voltages.
- ix. Bridges: operate in the Data Link layer of the OSI model. They join similar topologies and are used to divide network segments. Bridges keep traffic on one side from crossing to the other

**b). Differentiate between a server and a standalone computer on a network**

A server is sometimes called a host computer. Is a computer that actually responds / services the requests of other computers

A server is the central computer that manages resources on a network

While

A standalone computer is a computer not connected to a network or connected to another computer,

**ii). List four examples of servers**

- i. File server: Stores and manages files on a network.
- ii. Print server: Manages printers and print jobs
- iii. Database server: stores and provides access to databases.
- iv. Network server: Manages network traffic
- v. Webpage server: Distributes web pages.

**iii). Differentiate between a client – server and a peer –peer model of networking.**

A peer to peer is a type of network in which each workstation has equivalent capabilities and responsibilities

**While**

A client/server network has one or more computers acting as a server while the other computers (i.e., clients) on the network can request services from the server.

**iv). Mention four advantages and disadvantages of a peer-peer network model.**

**Advantages**

- A peer-to-peer network is simple to setup i.e. does not require too much configuring
- It is not expensive to set up
- It does not require a dedicated server to control the network

- It is perfect for home and small business users.
- The right choice for small companies that don't expect future growth
- Setting up a peer-to-peer resource model simply because it is cheap and easy to install could be a costly mistake

### **Disadvantages**

- + No centralized administration or control
- + Every station has unique control over the resources the computer owns
- + Lack of centralized control can make it difficult to administer the network
- + The network isn't very secure
- + May not be easy to locate resources
- + Users need more training

### **Advantages of a Client/Server Network**

- All Resources are centralized and easier to access.
- Easy management and administration of the network.
- More data security since all network access is controlled through the server.
- The network is flexible, because changes and new technology can be easily included into system.

### **Disadvantages of a Client/Server Network**

- It is expensive to set up as compared to a P2P network.
- It requires an extra computer to serve as a dedicated server.
- Maintenance – large networks will require an administrator staff to ensure efficient operation
- Dependence – When the server goes down, operations will cease across the network
- Server can get overloaded since all the processing is controlled at one point.

### **c). Differentiate between and Intranet and extranet**

An Intranet is an internal computer network that belongs to an organization and is accessible only by that Organization's members.

#### **While**

An extranet is a computer network that allows controlled access from the outside for specific business or educational purposes.

### **ii). Give three advantages and disadvantages of an extranet over an intranet**

#### **Advantages**

- Exchange large volumes of data using Electronic Data Interchange (EDI)
- Share product catalogs exclusively with trade partners
- Collaborate with other companies on joint development efforts
- Jointly develop and use training programs with other companies
- Provide or access services provided by one company to a group of other companies, such as an online banking application managed by one company on behalf of affiliated banks.
- Share news of common interest exclusively

### **Disadvantages**

- Extranets can be expensive to implement and maintain within an organization (e.g., hardware, software, employee training costs)
- Security of extranets can be a concern when hosting valuable or proprietary information.

### **3. a). What is meant by the term network topology?**

This refers to the layout of computers (nodes) in a communication network.

Or

A network topology is the physical arrangement of the devices in a communications network.

### **(ii) Mention any four factors considered in choosing a network topology.**

#### **Factors to consider When Choosing a Topology:**

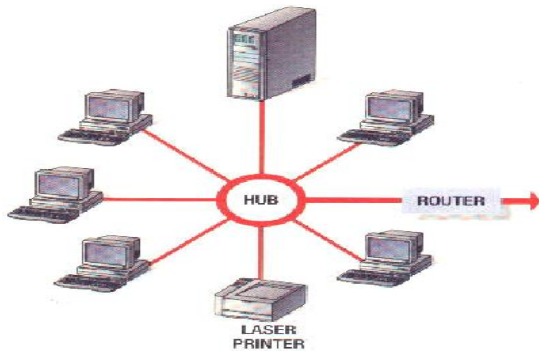
- Cost of installing the network topology.
- Future growth of the company:
- Length of cable needed.
- Number of computers to be connected
- Level of security required

### **b). Explain the following network topologies giving advantages and disadvantages.**

#### **i. Star network topology**

Definition: This is a type of network where all the computers and devices (nodes) on the network connect to a central hub or switch.

Illustration



### **Advantages of a Star Topology**

- Easy to install and maintain.
- Better performance: The star topology prevents the passing of data packets through an excessive number of nodes.
- Computers and devices can be added to or removed from the network with little or no disruption to the network.
- Reliable because each device connects directly to the hub, if one device fails, only that device is affected

### **Disadvantages of a Star Topology**

- If the hub fails, the entire network fails
- Lots of cable required so that the installation cost is expensive.
- Network size is limited by the number of connections that can be made to the hub.
- Performance for the entire network depends on the capabilities of the hub.
- Set up of the system can be very complex.

### **ii. Ring network topology**

Definition Ring network consists of a cable forming a closed ring, or circular loop, with all the computers and devices in a network.

Illustration



### **Advantages of Ring Topology**



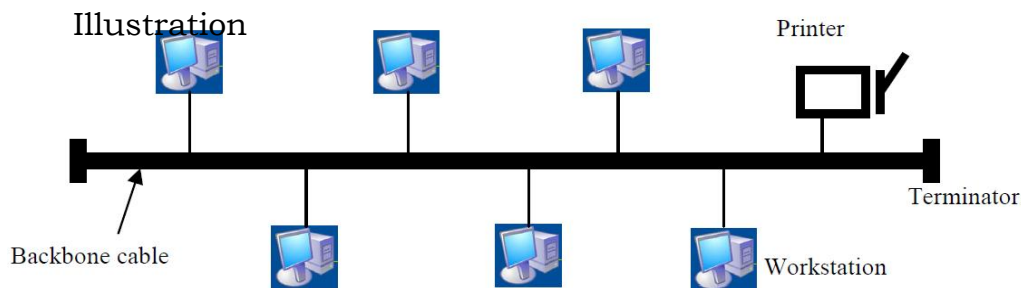
- Ring topology Can cover a larger distance as compared to a bus network and is commonly used in wide area networks (WAN)
- No collisions occur because data takes one direction only
- Very orderly network where every device has access to the token and the opportunity to transmit
- The speed of data transmission is faster than in a bus topology.

### Disadvantages of a Ring Topology

- Ring Topology Network is more difficult to establish.
- If the cable fails, the whole network goes down.
- Data messages travel in only one direction from device to device around the entire ring
- If a node on a ring network fails, all nodes after the failed nodes cannot function.
- There is no central host computer to control the network.  
Moves, adds and changes of devices can affect the network

### iii. Linear / line network topology

Definition A bus or linear network topology consists of a single central backbone cable (the bus) that connects all computers and devices together.



### Advantages

- Easy to implement and extend (quick setup)
- Cheaper than other topologies.
- Computers and devices can be attached and detached at any point on the bus without disturbing the rest of the network.
- Failure of one device usually does not affect the rest of the bus network.
- Data, instructions, and information in a bus network can be transmitted in both directions.
- Cable faults are easily identified.
- Weight reduction due to less wires

### Disadvantages

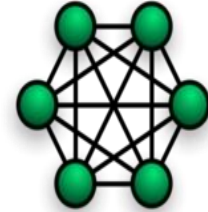
- i. If there is a problem with the cable, the entire network goes down.
- ii. There is no central host computer to control the network.
- iii. Only one device can transfer items at a time.
- iv. If many computers are attached, the amount of data flowing along the cable increases, data collisions occur and the network slows down.

- v. Limited cable length and number of stations.
- vi. Performance degrades as additional computers are added or on heavy traffic.(shared bandwidth)
- vii. It is slower than the other topologies.

### **Mesh network topology**

**Definition:** This is the type of network topology in which each of the nodes of the network is connected to each of the other nodes in the network.

Illustration



### **Advantages of Mesh Topology**

- Data will always be delivered.
- All of the data that is transmitted between nodes in the network takes the shortest path between nodes.
- In the case of a failure or break in one of the links, the data takes an alternate path to the destination.

### **Disadvantages of Mesh Topology**

- Mesh topology is generally too costly and complex for practical networks, and very hard to setup.
- Lots of cable required so that the installation cost is expensive.
- Network size is limited by the number of interconnections that can be made between the computers.
- It requires that the nodes of the network possess some type of logical 'routing' algorithm to determine the correct path to use at any particular time.

### **iv. Tree network topology**

**Definition** The type of network topology in which a central 'root' node (the top level of the hierarchy) is connected to one or more other nodes that are one level lower in the hierarchy (i.e., the second level).

**Illustration**

### **Advantages**

- i. Error detection and correction is easy.
- ii. If one segment is damaged, other segments are not affected.

- iii. Each segment is provided with dedicated point-to-point wiring to the central hub.
- iv. Expansion of Network is possible and easy.
- v. Network is divided into segments, which makes it easy to manage and maintain.

### **Disadvantages**

- i. Scalability of the network depends on the type of cable used.
- ii. As more and more nodes and segments are added, the maintenance becomes difficult.
- iii. The network relies on the main bus cable, if it breaks whole network is crippled.

### **4. (a). Define the term transmission media**

The transmission medium is the physical path between transmitter and receiver

#### **(i). Differentiate between guided transmission and unguided transmission media**

Guided media, or cable communication, is the transmission of data or information through using physical conductors termed as cables.

#### **While**

Unguided media, or wireless communication, is the transmission of data or information without using a physical conductor.

#### **iii). Mention three types of cable data transmission.**

- i. Coaxial Cables
- ii. Fiber Optic Cables
- iii. Twisted Pair Cables

#### **iv). Give three advantages and disadvantages of each of the cable media**

##### **i. Media: Coaxial Cables**

This consists of a single copper wire surrounded by at least three layers

#### **Advantages**

- ❖ Coaxial cable is insulated more heavily than twisted-pair cable. So it is highly resistant to signal interference.
- ❖ Used for longer distances (300 – 600 meters)
- ❖ Transmits faster than UTP

#### **Disadvantages**

- ❖ Heavy & bulky

- ❖ Needs booster over longer distances

### **Media: Fiber Optic Cables**

This is a type of cable where a cable is surrounded by an insulating glass cladding and a protective coating.

#### **Advantages**

- Capability of carrying significantly more signals than wire cables
- Faster data transmission
- Less susceptible to noise (interference) from other devices such as a copy machine.
- Better security for signals during transmission,
- Small size (much thinner)

#### **Disadvantages:**

- Expensive as compared to other media
- Harder to install and modify.

### **Media: Twisted Pair Cables**

It consists of several pairs of wire twisted around each other within an insulated jacket,

#### **Advantages**

- It is of low cost
- small in size
- easy to install
- It is the most popular and generally the best for schools

#### **Disadvantages**

- Subject to interference
- It covers a limited distance, usually less than 100 meters

### **b). Mention four examples of wireless data transmission media.**

#### **Infrared (IR)**

Infrared is a wireless transmission medium that carries data via light beams.

**Radio wave:** is a wireless transmission medium that carries data via radio frequency signals.

**Microwaves:** are high-frequency radio waves.

**Satellite Microwave:** Similar to terrestrial microwave except the signal travels from a ground station on earth to a satellite and back to another ground station.

**Bluetooth:** Bluetooth technology uses short range radio waves to transmit data between two Bluetooth devices.

ii). **Give two advantages and disadvantages of wireless data transmission media**

### **Advantages**

- i. Wireless network is relatively cheaper than wired since they require no cables between computers.
- ii. No need for physical cables.
- iii. The laptop or device can work anywhere within range of a WAP
- iv. Can work through walls and on different floors as long as the radio signal is not too weak.

### **Disadvantages**

- i. There is limited data privacy so it requires data encryption
- ii. Requires Wireless Access Point (WAP) to be present
- iii. Any obstacle may weaken the radio signal or signal transmission.
- iv. Wireless is slower than cable data transmission because they have limited bandwidth.

**C. (i). With examples explain the following data transmission direction.**

- **Simplex**

Simplex transmission: Where by data can travel in only one direction at all times. e.g. radio stations and TV

- **Half duplex**

A half-duplex system allows communication in both directions, but only one direction at a time (not simultaneously). e.g radio call

- **Full-duplex**

A full-duplex system allows communication in both directions, and unlike half-duplex allows this to happen simultaneously. Example: Telephone, Mobile Phone, etc.

**5. Mention and explain four network protocols (04 marks)**

- **Simple Mail Transfer Protocol (SMTP)** - an internet protocol for transferring of e-mails.
- **File Transfer Protocol (FTP):** It allows files containing text, programs, graphics, numerical data, and so on to be downloaded off or uploaded onto a network.
- **Internet Protocol (IP)** - does the packet forwarding and routing.
- **Transmission Control Protocol/Internet Protocol (TCP/IP)** is a network standard that defines how messages (data) are routed from one end of a

network to the other, ensuring the data arrives correctly.

- **Transmission Control Protocol (TCP)** - responsible for delivery of data over the network.
- **Hypertext Transfer Protocol (HTTP)**: It allows Web browsers and servers to send and receive Web pages.
- **Simple Network Management Protocol (SNMP)**: It allows the management of networked nodes to be managed from a single point.
- **Telnet Protocol**: It provides terminal emulation that allows a personal computer or workstation to act as a terminal, or access device, for a server.
- **Sequential Packet Exchange (IPX/SPX)** - works with the Novell's internet work' packet / sequential exchange; responsible for delivery of sequential data over the network

## **COMPUTER PROGRAMMING**

### **27. a). Define the term computer programming?**

The process of developing and implementing various sets of instructions to enable a computer to do a certain task.

Is the craft of writing useful, maintainable, and extensible source code which can be interpreted or compiled by a computing system to perform a meaningful task?

### **(ii) What is a programming language?**

A programming language is a set of commands used to write computer software.

#### **(b) Outline any two Characteristics of a programming language;**

- **Simplicity**: A good programming language must be simple and easy to learn and use.
- **Efficiency**: - Programs written in a good programming language are efficiently translated into machine code, are efficiently executed, and acquire as little space in the memory as possible.
- **Structured**: - Structured means that the language should have necessary features to allow its users to write their programs based on the concepts of structured programming.
- **Compactness**: - In a good programming language, programmers should be able to express intended operations concisely.

#### **(c) List any three examples of programming languages.**

- **COBOL**: This language (Common Business Oriented Language) was developed for use in business applications.
- **FORTRAN**: This language (Formula Translation) is best used for scientific calculations.
- **PASCAL**: Named after Pascal who built the first successful mechanical computer.
- **BASIC**: The simplest interactive language to learn and use. (Beginner's All-Purpose Symbolic Instruction Code), it was developed to make programming computers easier for an average user.
- **JAVA**: This was developed initially for internet applications.

C, C+, C++, C#, PHP, PYTHON

**(d) List down three disadvantages of using machine code in programming;**

- In machine languages, instructions are written as sequences of 1s and 0s, called bits, that a computer can understand directly.
- These programs run extremely fast because no interpreter is required for them.
- It is very easy to make mistakes.
- It is very hard to find mistakes once you realize the mistakes have been made.
- It is time consuming
- It is machine dependent
- Difficult to decipher (requires the aid of a reference manual to decipher the meaning of each code)
- Programming becomes more difficult as the complexity of the program increases.
- It is hard to program in.
- It is not easy to understand.
- It is difficult to modify.

**(a). State two advantages of using high level programming language over using low level programming language**

- i. It is close to human being
- ii. It is easy to understand
- iii. It consists of English language like structure
- iv. It does not depend upon machine
- v. It is easy to modify
- vi. They are more flexible hence they enhance the creativity of the programmer, increasing productivity
- vii. High-level languages are easier to read, write, and maintain than low level language.
- viii. They also permit faster development of large programs.
- ix. High level language is easily understood by programmers because it is closer to human language.
- x. High-level programming languages are problem oriented; therefore they enable the programmer concentrate on solving the problem.
- xi. Since high-level languages reflect the logic and procedures used in a human algorithm, the programmer is able to concentrate on developing task algorithms.
- xii. The words and grammar of high-level languages are English-like and this makes the programs more readable and easy to write.

**b). Distinguish between a compiler and an interpreter**

Compilers-these translate a program written in a high level programming language into a machine code or into an assembly code program.

- The entire program is translated into machine code at compilation time.

Interpreters- translates the source program line by line while the program is running. This is done each time the program is executed.

c). Give four advantages of compilers over interpreters

- i. Compilers can produce much more efficient object code than interpreters thus making the compiled programs to run faster.

**d). Briefly explain the meaning of the following programming phrases**

- i. Code generation**  
This refers to the process of making a program or designing instructions.
- ii. Compilation**  
This is the process of translating a source program from High Level Language to machine code where it translates before it runs
- iii. Execution**  
This refers to the process of carrying of instructions given to the C.P.U to turn data into meaningful format.
- iv. Source code**  
A source code is the Program instructions in their original form, as written (coded) by the programmer in a particular programming language.
- v. Object code**  
The object code is the code produced by a compiler from a source code. Object code is often the same as or similar to a computer's machine language.
- vi. Syntax**  
These are the grammatical rules that govern the way in which words, symbols, expressions and statements may be formed and combined.
- vii. Loader**  
Combines object files and resolves cross-references to create an executable
- viii. Code generation**  
The object code is the code produced by a compiler from a source code. Object code is often the same as or similar to a computer's machine language.
- ix. Integrated development Environment**  
Software package combining a word processor, compiler, and tools for finding errors
- x. Program structure**  
Form in which program components are constructed, organized and interrelated.
- xi. Code**



A set of symbols for representing something. For example, most computers use ASCII codes to represent characters.

**xii. Assembler**

A computer program which translates assembly language to an object file or machine language format.

**xiii. Debug**

Helps to remove errors in a program code

**xiv. A bug**

Is a programming error

**xv. Algorithm**

This is a well-defined procedure that allows a computer to solve a problem.

**e). Define the term assembly languages.**

This is a language that uses a group of letters to represent a whole group of words instead of presenting a binary operation of zeros and ones (0' & 1')

**ii). List three advantages and disadvantages of assembly languages**

**Advantages**

- i. It has closer control of the computer hardware and executes efficiently
- ii. It is useful for writing operating systems and game programs which require the fast and efficient use of the Central Processing Unit (CPU)

**Disadvantages**

- i. Execution may be too slow since the language has to be translated into machine code which can easily be understood by the computer.
- ii. It is designed for a specific machine and specific processor thus not compatible with every machine.
- iii. It is user friendly

**28. (a). Mention and explain the two types of programming languages**

- **COBOL:** This language (Common Business Oriented Language) was developed for use in business applications.
- **FORTTRAN:** This language (Formula Translation) is best used for scientific calculations.
- **PASCAL:** Named after Pascal who built the first successful mechanical computer.
- **BASIC:** The simplest interactive language to learn and use. (Beginner's All-Purpose Symbolic Instruction Code), it was developed to make programming computers easier for an average user.
- **JAVA:** This was developed initially for internet applications.

**b). Mention four advantages and disadvantages of High level programming languages.**

**Advantages**

- i. It is close to human being
- ii. It is easy to understand
- iii. It consists of English language like structure
- iv. It does not depend upon machine
- v. It is easy to modify
- vi. They are more flexible hence they enhance the creativity of the programmer, increasing productivity
- vii. High-level languages are easier to read, write, and maintain than low level language.
- viii. They also permit faster development of large programs.
- ix. High level language is easily understood by programmers because it is closer to human language.
- x. High-level programming languages are problem oriented; therefore they enable the programmer concentrate on solving the problem.
- xi. Since high-level languages reflect the logic and procedures used in a human algorithm, the programmer is able to concentrate on developing task algorithms.
- xii. The words and grammar of high-level languages are English-like and this makes the programs more readable and easy to write.

### **Disadvantages**

- i. They are executed much slower than low-level programming languages
- ii. They have to be translated into machine code before execution
- iii. It need language translator to translate into program in to machine language.
- iv. It does not execute directly on computer

### **c).i). Mention and explain two types of low-level languages.**

#### **Machine Language:**

- In machine languages, instructions are written as sequences of 1s and 0s, called bits, that a computer can understand directly.
- These programs run extremely fast because no interpreter is required for them.

#### **Assembly Language:**

With assembly language a programmer writes instructions using symbolic instruction codes.

Symbolic instruction codes are meaningful abbreviations and codes. With an assembly language, a programmer writes codes such as A for addition, C for compare

**d). (i). Mention four advantages and disadvantages of machine languages**

**Advantages**

- Fastest to execute because it is already in the language that the computer can understand
- It consists of binary digits and some symbols.
- It depends on machine.
- Machine language directly executes on computer.
- No need of language translator for machine language.
- Program written in low level language is called object code
- Disadvantages of machine language

**Disadvantages**

- In machine languages, instructions are written as sequences of 1s and 0s, called bits, that a computer can understand directly.
- These programs run extremely fast because no interpreter is required for them.
- It is very easy to make mistakes.
- It is very hard to find mistakes once you realize the mistakes have been made.
- It is time consuming
- It is machine dependent
- Difficult to decipher (requires the aid of a reference manual to decipher the meaning of each code)
- Programing becomes more difficult as the complexity of the program increases.
- It is hard to program in.
- It is not easy to understand.
- It is difficult to modify.

**29. (a). Define the following terms as used in computer studies**

**i. Program**

Is a list of instructions that tell a computer what to do. Everything a computer does is done by using a computer program.

**ii. Object Oriented Programming**

Programmers use an Object – Oriented Programming (OOP) language to implement an object – oriented design. A major benefit of OOP is the ability to reuse and modify existing objects.

### iii. Visual programming languages

Is a language that provides visual or graphical interface for creating source codes.

### b). List four features of a programming language

- i. **Portability:** Portability refers to the ability of an application to run on different platforms (operating systems) with or without minimal changes
- ii. **Readability:** The program should be written in such a way that it makes other programmers or users to follow the logic of the program without much effort.
- iii. **Efficiency:** Every program requires certain processing time and memory to process the instructions and data.
- iv. **Flexibility:** A program should be flexible enough to handle most of the changes without having to rewrite the entire program.
- v. **Generality:** Apart from flexibility, the program should also be general. Generality means that if a program is developed for a particular task, then it should also be used for all similar tasks of the same domain.
- vi. **Documentation:** Documentation is one of the most important components of an application development.

### (c). Mention four programming languages

- **COBOL:** This language (Common Business Oriented Language) was developed for use in business applications.
- **FORTRAN:** This language (Formula Translation) is best used for scientific calculations.
- **PASCAL:** Named after Pascal who built the first successful mechanical computer.
- **BASIC:** The simplest interactive language to learn and use. (Beginner's All-Purpose Symbolic Instruction Code),it was developed to make programming computers easier for an average user.
- **JAVA:** This was developed initially for internet applications.

### d). Mention five characteristics of a good programming language.

- **Simplicity:** A good programming language must be simple and easy to learn and use.
- **Efficiency:** - Programs written in a good programming language are efficiently translated into machine code, are efficiently executed, and acquire

as little space in the memory as possible.

- **Structured:** - Structured means that the language should have necessary features to allow its users to write their programs based on the concepts of structured programming.
- **Compactness:** - In a good programming language, programmers should be able to express intended operations concisely.
- **Readability:** A good high-level language will allow programs to be written in some ways that resemble a quite-English description of the underlying algorithms.
- **Portability:** High-level languages, being essentially machine independent, should be able to develop portable software.
- **Generality:** Most high-level languages allow the writing of a wide variety of programs, thus relieving the programmer of the need to become expert in many diverse languages.
- **Brevity:** Language should have the ability to implement the algorithm with less amount of code. Programs expressed in high-level languages are often considerably shorter than their low-level equivalents.
- **Error checking:** Being human, a programmer is likely to make many mistakes in the development of a computer program.
- **Cost:** The ultimate cost of a programming language is a function of many of its characteristics.
- **Familiar notation:** A language should have familiar notation, so it can be understood by most of the programmers.
- **Quick translation:** It should admit quick translation.
- **Efficiency:** It should permit the generation of efficient object code

**e). Write the following in full**

- i. COBOL**  
Common Business Oriented Language
- ii. FORTRAN**  
Formula Translation
- iii. BASIC**  
Beginner's All Symbolic Instruction Code
- iv. OOP**  
Object Oriented Programming
- v. JIT**  
Just In Time
- vi. VPE**  
Visual Programming Environment

### **Give three differences between compiler and interpreter**

Converts the entire source program into a machine language / object program  
while an interpreter one line of the source program is converted into a machine language

With a compiler if it encounters any errors, it records them in a program file. While if an interpreter encounters an error while converting a line of code, an error message is immediately displayed on the screen and the program stops.

The main difference between an interpreter and a compiler is that compilation requires analysis and the generation of machine code only once, whereas an interpreter may need to analyse and interpret the same program statements each time it meets them

### **QUESTIONS AND ANSWERS.**

1. (a) During data processing, computer systems perform a machine cycle; mention the first three steps of the cycle which takes place before storing of the results. **(3 marks)**

.i **fetching**                      ii. **Decoding**                      iii. **Execution**

**(b) Briefly explain the second and third steps of the information processing cycle (machine cycle) mention in (a) above. (2 marks)**

**Decoding** is the process of transferring the instructions into commands understood by the computer.

**Execution** is the process of turning data into meaningful information.

3. In computing storage refers to the ability of computers to keep data and information in various locations. Give some examples of storage devices depending to the explanations given below.

(a) One example of volatile memory. **RAM chip, virtual memory** (1 marks)

(b) Two examples of nonvolatile memory. (2 marks)

- i. **ROM chip**                      ii. **CMOS**

(c) One example of optical storage device. **Compact disc, DVD** (1 mark)

(d) One example of solid state storage device. **Flash disc, memory card.** (1 mark)

3. (a) Distinguish between impact and none impact printers? (1 mark)

**Impact printers print while their print heads physically torching the print media while none impact printers are the ones which do print while their print heads do not physically torching the print media.**

(b) Mention any two advantages enjoyed by people using impact printer rather than those of none impact printer. (2 marks)

- i. **They are cheap to buy**  
ii. **They are good for printing multi continuous forms**  
iii. **They are durable**  
iv. **They withstand harsh conditions.**

(b) Name any two output devices used to produce hard copy information. (2 marks)

- i. **printer**    ii. **Plotter**

4. Name any two things that must be put in place in order to ensure that the computer users' healthy in the computer lab is safe. (2 marks)

- i. **Air conditioner**    iii. **Anti-glare screens to protect the eyes**  
ii. **Ergonomic keyboards and mouse**    iv. **Comfortable and adjustable chairs.**

(b) Explain the function of the following devices in a computer lab. (3 marks)

i. wool carpet.

- **To trap dust in the computer lab**
- **Protect the damage of equipment when they fall down**
- **Minimize on electrocution.**

iii. Crimping tool.

**To make network cables by terminating them and fixing RJ-47.**

iii. Form cleaner.

**To clean on the hardware equipment.**

5. (a) Study the file path bellow and answer the questions that follow.

C:\users\Desktop\class lessons\mumbejja.xls

**Mention the file type of the given file. (1 mark)**

**Microsoft office excel file**

Identify the immediate folder in which the file is stored. (1 mark)

**Class lessons**

Name the file name for the above file. (1 mark)

**Mumbejja.**

On which store media is the file located. (1 mark)

**On the hard disk**

(b) Distinguish between a file and a folder. (1 mark)

**This is an electronic piece of data or information stored on a computer, while a folder is an electronic directory/container for storing and organizing different files.**

6. Read the statements given in a table below and write true or false in the space provided.

7. (a) Distinguish between utility and systems software. (1 mark)

**Utility software is the type of software designed to perform a particular task usually related to management of a computer system while system software**

Item	True / False
(a) Image viewer utility displays content of graphics files when you double click.	<b>True</b>
(b) Un installer removes a word document file from the computer system.	<b>False</b>
(c) Disk defragmenter compiles technical information about hardware and software.	<b>False</b>
(d) Disk scanner detects and corrects problems in hard disk or floppy.	<b>True</b>



(e)	Antivirus utility protects the physical access to the computer system.	<b>False</b>	<b>is the</b>
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**software responsible for the general operation of the computer.**

(b). Give and explain any two examples of application software commonly used in your school for study purpose.

(2 marks)

**i. Word processing software which is used for creating, editing, formatting and printing documents.**

**ii. Spreadsheet software which is used organizing data into rows and columns and performing calculations on the data.**

(c). write short note on the following terms as applied in computer software.

(2 marks)

i. shareware.

**This is copyrighted software distributed for free usually on a trial or test for a given period of time and payment is required after a trial period.**

ii. Software suite.

**This is a package of software which contains a variety of related applications sold or distributed together.**

8. Read the statements given bellow and carefully fill in the gaps with the most correct programming language you know.

(5 marks)

- i. A.....**machine code** ..... Consists of binary numbers that represent instructions, memory locations and data. It's also known as the **1GL**.
- ii. ...**assembly**.. This is the only kind of low level language which uses English – like tags such as –ADD| or –SUB| for the codes to add or subtract values.
- iii. **FORTTRAN (Formula TRANslation)** .... This was developed in 1956 by IBM to provide an easier way of writing scientific and engineering applications because of its simplicity, conciseness, standardization, efficiency and numerical precision.
- iv. **PASCAL**. This was named in remembrance of the inventor of the mechanical adding calculator and it was developed to teach the concepts of structured programming.
- v. **ADA**. This was developed and named in honor of Lady Augusta Lovelace, and developed for the U.S department of defense to improve software reliability, portability and maintainability.

9. (a). Distinguish between asynchronous and Synchronous data transmission modes.

(2 marks)

**Asynchronous is a mode in which data is transmitted one byte at a time over a media at random intervals while synchronous is a mode of transmission in**

**which data is transmitted as groups of bytes simultaneously at regular intervals.**

(b). Write short notes on the following as applied in data transmission.(3 marks)

- i. Simplex transmission.  
**This is where data flows in only one direction from the sending device to the receiving device**
- ii. Half duplex.  
**This is the mode in which data can flow in either directions from the sending device to the receiving device and back but not simultaneously**
- iii. Full duplex.  
**Data can flow in both directions from the sending device to the receiving device and back simultaneously**

10. What do you understand by the term Telecommuting? (1 mark)

**This is a work arrangement in which employees may work away from the standard workplace of a company, but communicate with the office using some kind of communications technology**

(b). Give any two advantages of telecommuting. (2 marks)

- i. **Reduces time and expenses for travelling to and fro work.**
- ii. **Eliminated travelling during bad weather conditions.**
- iii. **Allows flexibility in the work schedule.**
- iv. **Reduces air pollution by vehicles driven to and fro work.**
- v. **Employers reduce costs due to less office space and furniture required.**
- vi. **Favors the disabled employees.**

(c). In modern technology we are experiencing extensive use of the **GPS** by different organizations and more commonly used by the military in different countries. As a computer student give any two uses of the **GPS** in your society.

- i. **It is used to locate different people like criminals**
- ii. **It's used to locate shortest distance between two points.**
- iii. **It's used to track different items.**
- iv. **To get weather information**
- v. **Used by cars and ships to provide directions**

11.(a). In the table provided bellow fill in the gaps with an appropriate requirement for someone to gain access to the internet. (4 marks)

Description	The requirement
Must have registration from	<b>Internet service provider</b>

Well installation of computer with the operating system known as.	<b>Networking operating system</b>
There must be an application software known as	<b>Web browser</b>
In the system unit on the motherboard there must be	<b>Network Interface Card</b>

(b). Give one reason as to why one should not do away without the internet. (1 mark)

**To send and receive messages to and from other connected users**

- **To communicate with other uses around the world.**
- **To access sources of entertainment and leisure such as online games, magazines, etc.**
- **To share network resources such as printers, scanners etc.**
- **Getting new information such as news and information**
- **For electronic discussions through teleconferencing.**
- **To enjoy online employment system**
- **To use the online internet library which has a lot of useful academic material**

12. (a). Define the term “**Netiquette**” (1 mark). **This is the code of acceptable behaviors users should follow while on the Internet**

(b). Assuming you have been appointed as the minister of information in your country. Write down any four Netiquette guidelines that must be followed by all citizens. (4 marks)

- i. **Be polite. Avoid offensive language.**
- ii. **Read the message before you send it.**
- iii. **Avoid sending or posting flames, which are abusive or insulting messages**
- iv. **Avoid reading other peoples messages.**
- v. **Avoid sending spam, which is the internet’s version of junk mail**

13. (a). Write URL in full. (1 mark)  
**Uniform Resource Locater**

(b). Give a URL below name the major parts it contains.

**<http://www.youtube.com/ekyalimusabo.mp3>**

- i. **http. This is the protocol**
- ii. **youtube.com this is the domain name**
- iii. **.com. this is the top level domain**
- iv. **Ekyalimusabo. This is the file name.**

14. Digital forensics is one of the fastest growing careers in the field of technology.

- (a) State three tasks that are normally performed by a computer forensic specialist. (3 marks)
- i. **Investigate and uncover evidence of illegal activities conducted via computer**
  - ii. **Investigate and uncover evidence of crimes that weren't directly committed via computer, but for which the accused might have stored evidence on computer data storage devices.**
  - iii. **Detect and close computer system security holes through legal hacking.**
  - iv. **To analyze physical evidences by use of computers**
  - v. **To store and present evidences with help of computers**
- (b). Give two disadvantages of digital forensics. (2 marks)
- i. **It's expensive**
  - ii. **Requires only highly computer specialist**
  - iii. **Some information can be forged**
  - iv. **The privacy of the client may be compromised in some cases**
  - v. **It is also possible that some sensitive data or information to the client may be lost in order to find the evidence.**
  - vi. **There are also chances of introduction of some malicious programs such as viruses or worms in the computer system that may corrupt the data at a later stage of time**
15. Give one responsibility for each of the following specialists in the IT field. (5 marks)
- i. Computer technician.
    - **Troubleshooting computer hardware and software related problems**
    - **Assembling and upgrading computers and their components**
    - **Ensuring that all computer related accessories such as printers, modems, storage media and devices are in a good working condition.**
  - ii. Systems analyst.
    - **Reviewing the current manual or redundant information system and making recommendations on how to replace it with a more efficient one.**
    - **Working with programmers to construct and test the system.**
    - **Coordinating training for users on how to use the new system.**
  - iii. Webmaster...
    - **Developing and testing websites**
    - **Maintaining, updating and modifying information on the websites to meet new demands by the users.**
    - **Monitoring the access and use of internet connection by enforcing security measures.**
  - iv. Switchboard operator.

- **This is the first point of contact for callers to an organization.**
  - **They answer incoming calls, putting them through to the right person or department.**
  - **They also take messages and connect some outgoing calls.**
- v. . Network administrator.
- **This manages and troubleshoots a computer network.**

16. in the statements below fill in with an appropriate word processing feature which is used for a given task. (5 marks)

- i. **Editing** is the process of making changes in the existing text in the document basically for correcting mistakes.
- ii. **Formatting** is the process of changing the appearance of the text and entire document to make it more attractive.
- iii. **Thesaurus**, is used to suggest alternative words with the same meaning (synonyms) for use in the document.
- iv. **Character map**, is used to provide a group of symbols not found on the keyboard.
- v. **Macros** Allows a user to record or save frequently used keystrokes and instructions which can be executed later.

17. In a table below there some spreadsheet functions commonly used in day to day calculations. Write the exact use/application of each function.

Function	The application of function
e.g sum	<b>Calculates the of a given rage of cells.</b>
ABS	<b>Returns the absolute value</b>
NOW	<b>Returns the current date and time</b>
LN	<b>Calculates the natural logarithm</b>
SQRT	<b>Calculates the square root</b>
COUNT	<b>Count the number of cells with entries.</b>

18. Explain the main function for each of the following components of the computer system unit. (5 marks)

- i. The power supply.  
**This receives power from the ups or socket and converts the ac to dc and distributes it different components of the computer system.**
- ii. The motherboard  
**The motherboard, is a single circuit board that provides the path through which the processor communicates with memory components, other components, and peripheral devices**
- iii. Expansion slots...  
**They provide space for addition of card adepter to improve on the functionalities of the computer.**
- iv. Ports  
**These provide space for connectivity of peripheral devices.**
- v. Buss

**This is the root or path for transferring data to or from different components of the computer.**

19. Mawuzuumo joram ssembirikundi started experiencing some problems when he was using his computer, when he consulted a technical person he was told that the viruses had invaded the computer.

**(a). as a computer person explain any two ways through which it might have got the viruses. (2 marks)**

- i. Through use of contaminated/affected storage devices on several computers.
- ii. Through using pirated software.
- iii. Through using freeware and shareware from the internet.

**(b). Give any three symptoms that made the technical person to make this conclusion. (3 marks)**

- i. Unfamiliar messages appearing on the computer screen.
- ii. Programs taking longer to load than usual.
- iii. Unusual error messages occurring more frequently
- iv. Reduction in memory than usual
- v. Flickering of the screen.
- vi. Corrupted files
- vii. File sizes becoming too big or too small than usual
- viii. Computer system slows down.
- ix. The whole computer system may fail to start up.

20. (a). Differentiate between a **user name** and a **password**. (2 marks)

**A user name, or user ID, is a unique combination of characters that identifies one specific user of a computer system or its resources, while a password is a private combination of characters associated with the user name that allows access to certain computer resources or to a network**

**(b). Give any three characteristics of a good password. (2 marks)**

- i. **Should be easy to remember but not too obvious.**
- ii. **Should be longer, at least eight characters.**
- iii. **Should have a combination of mixed case letters and digits.**
- iv. **Should be easy to type without looking at the keyboard.**

**UGANDA NATIONAL EXAMINATIONS BOARD  
UCE DRAFT MARKING GUIDE 2015  
COMPUTER STUDIES 840/1**

**SECTION A: 20 MARKS**

1. C	10. A	19. C
2. D	11. D	20. D
3. B	12. A	
4. A	13. C	
5. B	14. D	
6. C	15. D	
7. A	16. B	
8. C	17. B	
9. B	18. C	

### SECTION B: 60 MARKS

21. (a) **Way(basis) of categorizing computer**

- By size (physical, memory or numbers)
- By process (digital, analog or hybrid) or logic or functionality
- Purpose (general or special) or function
- By processor (PI-PIV, iseries)/process/type/power
- How and where used (desktop, palmtop, laptops)
- By Brand (Dell, Acer, Lenovo, Compaq, IBM)
- By generation (1<sup>st</sup> -5<sup>th</sup>)

**(Any 2x1 = 2marks)**

(b) **Stages of data processing cycle**

- Data collection/capture
- Sorting/cleaning/preparation
- Data input
- Data processing (fetching, decoding, executing)
- Data communication or distribution stage
- Output
- Storage

**(Any 3x1 = 3marks)**

(c) (i) **Distinction between legal and ethical issues**

Legal issues relate to a system of rules/laws and principles backed by sanctions governing computer system acquisition, usage and disposal.

## **While**

Ethical issues are general moral guidelines of conduct or behavior for computer systems acquisition, usage and disposal.

**(both must be correct = 2marks)**

### **(ii) Ethical issues**

- Respect of computer ownership without recourse to laws.
- Guarding against computer misuse
- Systems safety (Hardware, software, Data and users safety)
- Systems privacy
- Environmental protection
- Respect for human dignity
- Usage with permission
- Shutting down the computer properly after use
- Virus alerts
- Polite tone

**(Any 3x1 = 3marks)**

### 22. (a) (i) **Ports through which computer peripherals are connected**

- Serial
- Parallel
- USB
- PS2
- RJ45 LAN port
- PCMCIA port
- ESATA port
- IEEE1394
- TRS audio/port jacks
- HDMI port
- SCSI port
- IRDA port
- Hot Swappable/plug and play
- Micro ISD
- Game port
- Port A and Port B

**(Any 2x1 = 2marks)**

### **(ii) Components inside a computer which can be replaced or upgraded when the computer is slow**

- RAM
- Hard Disk
- CPU
- VGA Card/Video card

**(Any 2x1 = 2marks)**

### **(b) Uses of computer system control panel**

- System and security management
- Network and internet management
- Hardware and sound management
- Systems programs



- User accounts and family safety
- Appearance and personalization
- Clock, language and regional settings
- Ease of access
- System configuration

**(Any 2x1 = 2marks)**

**(c) (i) Explaining what a computer system interface is**

Systems or mechanisms or tools through which a user interacts with a computer system (which can be graphical tools, menus, command programs, voice and touch recognition tools. Remote control interfaces etc.)

**2marks**

**(ii) Identifying any two features of an application software interface**

- Tool bar
- Title bar,
- Menu bar, formatting bar, standard, drawing bar,
- Status bar
- Ribbon
- Scroll bars
- Work area
- Interactive icons, buttons
- Ruler
- Cursor
- Tabs
- Key tips
- Help
- Office buttons
- Task pane
- Update function
- Dialog boxes

**(Any 2x1 = 2marks)**

23. (a) **Explaining the functions as used in spreadsheets**

(i) **IF**

- Checks whether a conditions is met and returns one value if true and another value if false.
- Is a logical test used to conduct conditional tests on values and formulas.
- Used to assign grades to marks.
- Assigning general comments

**2marks**

(ii) **MAX**

Is a function which returns the largest/highest value in a set of values and ignores logical values and text.

**2marks**

(b) **When an absolute cell referencing is necessary.**

An absolute cell reference is necessary when there is need for referring to a specific/fixed cell location in relation to different cell reference entries.

**Or**

Avoids referring to different cells when there is need to refer to a specific cell.

- When grading
- When positioning
- Creating default labels/values
- Charting/graphing

**2marks**

(c) **Functions of the following field properties in database.**

(i) **Default value**

It automatically assigns a predetermined value whenever a new record is created in a table. **2marks**

(ii) **Validation rule**

It qualifies or allows data entered in a specific field to values that only meet a predetermined rule or criteria. **2marks**

24. (a) **Defining a peer-to-peer computer network**

(i) It is a LAN model or a network architecture where all the networked computers are of the same status. i.e. there is no computer assigned a responsibility of managing others, resources and activities on the network.

Or networked computers with similar characteristics or features.

Or no main computer/server

**2marks**

(ii) **Examples of communication media in a computer network**

- Coaxial cable
- Twisted pair cable
- Optic fibre cable
- Infrared
- Blue tooth
- Microwave
- Radio waves including pagers
- WiFi
- Satellite
- Broadband

**Any 3x1=3 marks**

(b) (i) **Defining a webpage**

A webpage is a single electronic document about a specific topic on a website with links to other pages. **2 marks**

(ii) **Stating three benefits of a school having a website.**

- Platform form for communication
- Platform for advertising/marketing.
- Face lifting as well as boosting schools corporate image.
- A teaching tool through posting notes, videos and exercises to students and getting feedback/e-learning tool
- Skills building like online publishing, conferencing, sharing of ideas
- Cloud computing and storage for backup of school data.
- Pride of ownership
- Platform for getting donations
- Offering an opportunity for a wider audience. **Any 3x1=3 marks**

25. (a) **Factors considered for a professional presentation**

- Appropriate Timing
- Appropriate Number of slides or themes to talk about

- Minimal Animation effects
- Minimal Transition effects and links
- Appropriate Background/font colours
- Capitalization and character utilization/appropriate case variation
- Most appropriate layout and space utilization
- Speaker notes
- Audio/visual tools
- Presentation software to use
- Content to deliver
- Design template to use
- Nature/composition of the audience
- Appropriate presentation media
- Appropriate Sound effects
- Appropriate/relevant animation and graphical images
- Professional skills of the designer **Any 5x1=5 marks**

(b) **Navigation tools for a word document**

- Scroll bars
- Mouse piece scroll button/wheel
- Cursor control keys (Arrow keys, home, end, page up, page down)
- Joystick
- Go to commands
- Touch pad
- Hyperlink
- Trackball
- Light pen
- Touch screen sense

**Any 2x1=2 marks**

(c) **Effects of the following word processing features**

(i) **Indentation**

Indentation determines the distance of the paragraph from either the left or the right margin.

**Any 1x1=1 mark**

(ii) **Superscript**

A superscript positions a number or text slightly higher than the number or text on the line.

Or number/text slightly above the normal typing line.

Or a power/exponent/index/raising a character to a power

**Any 1x1=1 mark**

(iii) **Line spacing**

Line spacing determines the amount of vertical space/gap/distance between the lines of text in a paragraph. **Any 1x1=1 mark**

26. (a) Defining the term **off-the-shelf** software

Off-the-shelf software is ready made and standardized software which any user can buy from the software vendors to use.

Or prewritten software which any user can buy from the software vendors to use. **2 marks**

(b) Table categorizing given programs

<b>SYSTEM SOFTWARE</b>	<b>APPLICATION SOFTWARE</b>
(i) Windows 2000	(iii) AutoCAD
(ii) Disk defragmenter	(iv) Publisher

**Any 4x1=4 marks**

(c) Explaining the following computer programming tools

(i) **Compiler**

A compiler is a programming tool that translates the whole text file or source codes into machine readable codes at once. **2 marks**

(ii) **Interpreter**

A programming tool that translates an instruction into machine language and executes it before proceeding to the next instruction.

**2 marks**

### **SECTION C: 20 MARKS**

27. (a) **Describing how to assemble the given computer hardware parts.**

- Connect the UPS to the AC mains socket outlet using the **UPS power cable**.
- Connect the monitor to the UPS using power the **monitor power cable**.
- Connect the system unit to the UPS using the **system unit power cable**.
- Connect the monitor to the system unit using **VGA cable**.
- Connect the **mouse** to the **system unit**.
- Connect the **keyboard** to the **system unit**.

NB: Accept a well labeled drawing of a computer system

**Each correct connection**

**x2**

**(i.e. 6x2=12 marks)**

(b) Outlining the logical order of switching on a computer system assembled in (a)

- (i) Turn on the AC main socket outlet.
- (ii) Turn on the UPS power supply switch.
- (iii) Turn on the monitor power switch.
- (iv) Turn on the system unit power switch.

**Each correct in order for (i) to (ii) above, x 2 =4 marks  
(iii) and (iv) irrespective of the  
order @x2=4 marks  
Total Marks 12+08=20 marks**

28. (a) **Describing any services that are provided by the internet**

**E-mail**

E-mail refers to electronic sending and receiving of messages on internet. It requires a user to have an address, email software and a message to sent to the recipient.

**News group**

A forum in users can post electronic messages to the subscribed members on a common topic.

**File Transfer Protocol**

A protocol that enables upload and download of files on the internet. It addresses the specific IP address.

**Chat rooms**

A service that enables users to exchange views in text or voice or video through a ISP either through subscription or anonymous

**Video Conferencing**

A service on the internet that enables geographical separated users to exchange text, voice and video feeds. It requires a web camera and conferencing hardware and software.

**World Wide Web**

A feature on the internet that contains multimedia documents that users can access, download from a website.

**Online learning/distance education**

**Financial services**

**Reservations**  
**Tracking locations and devices**  
**Weather updates**  
**Mailing list**  
**Entertainment (online games)**  
**Collaboration/social networking**  
**Software updates (antivirus, drivers)**  
**Telnet**  
**Telecommuting**  
**Internet telephony (Skype/VoIP)**  
**Bulletin board services**  
**Discussion forum services**  
**Internet relay chat services**  
**Gopher**  
**Information**  
**e-banking**  
**e-shopping**  
**tele-medicine**

**Mention 1 mark**  
**Explanation 1 mark**  
**Any 4x2 marks**  
**=8marks**

(b) **Explaining the functions of devices that can be used to connect to the internet.**

**Hub/switch**

Provides a central point on a network

**Repeater**

Accepts signal from a transmission medium, amplifies it and retransmits it over the medium

**Gateway**

Is a combination of hardware and software that connects networks that use different protocols.

**Router**

Is an intelligent communication device that sends (routes) communication traffic to the appropriate network using the fastest path.

**Modem/dongle**

It modulates and demodulates transmission signals.

**Smart phone**

**NIC**

**Radio/parabolic antenna**

**Desktop Computer, laptops, Ipads, tablets**

29. **Writing a program to multiply two numbers**

Selected programming language is C program

**However accept any other programming language (2 marks)**

The syntax would be as follows.

```
#include <stdio.h>
```

```
#include <conio.h> (2 marks)
```

```
Void main() (2 marks)
```

```
{ (1 mark)
```

```
    Int n1, int n2, p; (3 marks)
```

```
    Clrscr(); (2 marks)
```

```
    Print("\n Enter two number\n");  
    Scanf ("%d%d", &n1,&n2); (3 marks)
```

```
P=n1*n2 (2 marks)
```

```
Printf("\n The product of numbers is::%d",p); (2 marks)
```

```
getch();
```

```
} (1 mark)
```

**Total marks (20 marks)**

**ICT UNEB GUIDE 2015**

1. (a) Distinguish between Random Access Memory (RAM) and Secondary Storage.

RAM is volatile and ROM is non volatile

RAM is temporary and ROM is secondary

(b) Give an example of secondary storage

Flash memory

Compact disc

2. Explain each one of the following database features.

(a) Field name

Title for a column in a database table.

(b) Field properties

Specifies how data in a table should be stored/handled/displayed.

(c) Data type



Defines the nature of data to be entered in a given field of the database table.

**3. (a) Differentiate between computer servicing and computer repair**

Computer servicing is process of maintaining the computer in good working conditions while computer repair is the process of fixing a problem that disrupt the proper functioning of the computer system.

**(b) Write one reason for having the following items in the computer**

(i) Woolen carpet

Prevent damage of devices when they fall down.

Trap dust

Absorb moisture

Prevent electric shock

(ii) Blower

Remove dust from hardware components of a computer.

(III) CCTV cameras

Surveillance

Play back for reference purposes

**4. (a). Don is a new computer user. As an ICT| student advise don on which tool to use:**

(i) To trace files he cannot locate.

Ava find

Search everything

Search tool

(ii) To trace a word from an open document

Ctrl+F

Find and replace

**(b) A student is typing a document using Microsoft word. Write down three steps the student will use to shut down the computer.**

i. Save the document

ii. Close program

iii. Go to start menu

iv. Select shut down

**5. State five activities that can be performed when using a mouse.**

i. Scroll

ii. Drag and drop

iii. Highlight

- iv. Move a folder
- v. Double click
- vi. Create a folder

**6. Identify five ICT related employment opportunities in Uganda.**

- (a) Database administration/mgt/designing
- (b) Teaching of ICT
- (c) Programming
- (d) Secretarial bureau
- (e) Web site designing
- (f) System analysis

**7. (a)What is multi-processing**

It is a process of using two or more processors to process the same piece of data into information at the same time.

**(b) Give two advantages of each of the following operating systems.**

- (i) Windows

User friendly  
 Enable networking of computers  
 User support is readily available online and offline  
 Multi-tasking  
 Support plug and play

- (iii)

Linux  
 More resistant to viruses  
 Multi-tasking  
 Open source  
 Portable  
 Compatible with other programs  
 Machine independent

**8. (a) Name two examples of application software.**

Ms Word  
 Ms excel  
 Ms Access  
 Ms Power point

**(b) State three problems associated with usage of packaged application.**

Limited to perform what they were designed for

Can easily be pirated

Vulnerable to virus

They make you to pay for many applications when you are to use a few.

- 9. (a) What is the world wide web

It refers to a collection of hyperlinked web pages that can be access Via the internet.

(b) Show three ways in which the internet can facilitate trade and business.

On line shopping

ETF

Remitting taxes

10. **Show one way in which internet can be a danger to:**

**(a) Morality**

Pornography

Juvenile delinquency

Poor code of dress

UN healthy relation ships

**(b) Labour**

Loss of man hour

UN employment

Loss of craft man ship

Personal research at the expense of the organization duties

**(c) System security**

Hacking

Spread of viruses

Phishing

Tapping

Spamming

**(d) Human security**

Identity theft

Defaming

Cyber terrorism

Cyber bullying

**(e) Information**

Information theft

Tapping

Hacking

11. **Explain the following attributes of computers which make them dependable and reliable tools**

(a) Diligence

Ability of computers to perform related tasks repeatedly without getting tired or bored.

(b) Versatility

Ability of a computer to handle different tasks at the same time or different time

(c) Accuracy

Ability of a computer to rarely make mistakes as this largely depends on the quality of input hence the saying garbage in garbage out.

12. **(a) Describe the term Computer Literacy.**

It refers to knowledge and ability to use computers and related technology effectively.

- (b) **Outline any three ways in which ICT can improve the quality of education.**

Computer Aided Assessment  
Computer Aided Learning  
Computer Aided teaching  
E- Learning  
Research  
Use of projectors and smart boards.

- 13. (a) Differentiate between copy a file and move a file.**

Copy a file means duplicating a file while move a file means transferring a file.

- (b) Study the file path below and answer the questions that follow:**

F:\account\bursar\fees.xls

- (i) Identify the file name  
Fees  
(ii) On what drive is the file located?  
F:  
(iii) In which sub folder is the file located?  
Bursar

- 14. (a) List any three input devices.**

Key board  
Mouse  
Digital Camera  
Joy stick

- (b) Give a function of any two input devices listed in (a) above.

Feed data into the computer

Issue out instructions to the computer.

15. Identify the following from the email address Robert@yahoo.com

- (a) (i) Domain name yahoo.  
(ii) User name Robert  
(iii) Top level domain .com

- (b) (i) Which type of the organization does the domain name of the email user above, subscribe to?

Commercial organization

- (ii) Give any other example other than the one you have stated in (b) above.

Military organization.

16. (a) Define the term computer network

It is an interconnection of computers in order to share resources. like files and printers.

(c) Give three disadvantages of networking computers.

- Hacking
- Spreading of viruses
- Breakdown of the system
- Need for skilled personnel that is costly to maintain
- Expensive to set up and maintain.

17. (a) Differentiate between a server and a client computer.

A server is a centralized computer that controls the shared resources on the network while a client computer is a computer that sends requests to the server and it is dependant on the server.

(b) What is the function of each of the following network devices?

(i) Bridge

Connects multiple network segments together.

(ii) Switch

Joins multiple computers to the network.

(iii) Router

Directs data packets to a secure path to the final destination.

18. The table below shows a worksheet which Nabirye was working on.

Use it to answer the questions that follow.

	A	B	C	D	E
1	ID Number	Name	Item1	Item2	
2	100000	Akello	990	34	29.1
3	100002	Nambi	660	56	11.8
4	#####	BHusingye	880	-	#DIV/0!
5			#NAME?		
6					

(a) (i) Suggest a reason why the entry in cell A4 appeared as shown.

The calculated value is too big to fit in the cell

Cell not big enough to accommodate the calculated value

(ii) How do you rectify the error in cell A4?

Enlarge the size of the cell

(b) What does the error in cell E4 mean?

The number was divided by zero(0)

(c) How do you correct the error in cell C5?

Remove the piece of text that is not recognized by Ms excel from the formula

19. (a) Tick the three Utility programs from the list below.

	√
Web browser	
Data compressor	√
Disk defragmenter	√
Operating system	
Anti virus	√

(b) State the function of any two utility programs you ticked in (a) above.

Reduce the size of the file

Removes and prevent viruses

20. (a) Explain the following terms giving an example in each case.

(i) Simplex

Data flow in one direction only. TV and radio broadcast, TV remote etc

(ii) Half duplex

Flow of data in one direction at a time. Radio call communication

(b) Identify one non-physical data transmission media.

	Tick here
Optic fibre	
Bluetooth	√
Twisted pair	

### **SECTION B (60 Marks)**

21. (a) Define the following terms

(4 Marks)

**(i) Artificial intelligence**

- Artificial intelligence (AI) is the human-like intelligence exhibited by machines or software.
- Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans.
- Artificial intelligence is the branch of computer science concerned with making computers behave like humans.

## **(ii) Expert systems**

- An expert system is a computer system that emulates the decision-making ability of a human expert.
- An expert system is a computer program that simulates the judgement and behavior of a human or an organization that has expert knowledge and experience in a particular field.

(b) List three advantages and disadvantages of using computers to society

### **Advantages**

- Increased interaction / collaborations through e-mails, chat rooms, video conferencing, etc
- Increased sharing and access to common databases within and outside organizations through networking.
- Increased access to information through DBMS. Huge amounts of material on all subjects now exist – ease research.
- Increased inventions and innovations.
- More and more technology in management fields.
- Improved and sustained quality goods and services.
- Increased efficiency and effectiveness' leading to increased productivity (Hence less wastages & more efficient use of resources).
- Increased investment opportunities in commercial tele-centers, Internet cafes, chart rooms, etc.
- More leisure as people get shorter working hours. Increased use of ICTS implies higher standards of living.
- Highly skilled jobs are being created like programming, systems analysis.
- Software engineering, etc.
- Many IT products for the disabled.
- Reduced costs of production through less demanding ICTs
- Improved corporate image.

### **Disadvantages**

- Widens the gap between the rich and the poor as the rich producing with the help
- of ICTs produce faster and flood the markets.

- Isolate older people since it is not very easy for them to cope with the many IT changes.
- Bombards (internet) people with too much information- (good and bad)
- Increased instability as people get compelled to learn new things every now and then.
- Health problems e.g. eye sight losses, repetitive strain injury, etc
- Moral problem through access of pornographic materials on the net.
- Erosion of individual privacy as more data about people is stored on databases and can be accessed any time.
- Unemployment as less skilled people get retrenched and their roles taken over by more effective ITs.
- Addictions to computer games plus surfing by young people.
- ITs isolate man and also erode the social aspect of work as some people opt for executing their office duties from their homes.
- Initial, maintenance and on-line IT costs are very high segregative.
- Virus threats make data stored on computers very insecure.
- Increased crime through forgeries, piracy, etc

**22. (a) Define the term Computer generations.**

**( 2 Marks)**

- A computer generation refers to the development of computers today.

(b) List the generation and mention the distinguished characteristic there in.

(4 Marks)

- |   |                |   |
|---|----------------|---|
| ➤ First Generation                      | (1940-1956)    | Vacuum Tubes                            |
| ➤ Second Generation                     | (1956-1963)    | Transistors                             |
| ➤ Third Generation                      | (1964-1971)    | Integrated Circuits                     |
| ➤ Fourth Generation                     | (1971-Present) | Microprocessors/Large scale Integration |
| ➤ Fifth Generation (Present and Beyond) |                | Artificial Intelligence                 |



(c) Differentiate between the first and fourth generation computers

First Generation computer	Fourth generation computers
They used punched cards and paper tape for input.	<b>L</b> arge scale integrated and very large-scale integrated circuits were developed and contained hundreds and millions of transistors on a tiny chip.
They used magnetic drums for memory.	Memory increased to hundreds of megabytes (100Mb)
They had memory size of approximately kilobytes of RAM	They had ram of up 2 Gb
Speed was about 10,000 instructions per second	Speed increased from 1 GIGA to tera instructions per second
consumed a lot of power	Consumed less power
They produced a lot of noise.	Very little or no noise
Very big in size	Smaller in size.eg Phones

23. (a) Give two advantages of LCD monitor over CRT monitor (2 Marks)

<b>CRT</b>	<b>LCD</b>
Bulky, the back size is proportionate to the size of the monitor	LCDs are much slimmer than their CRT counterparts. This slimness brings along a host of advantages such as space saving and portability.
The viewable area is always about 0.9 - 1.1 inch smaller than the size specified on paper. This is due to the frame around the glass screen.	A 15 inch LCD always has a same size of viewable area as the specifications say.
Many manufacturers tout true flatness for their CRT monitors, but the sad truth is that most are fake.	100% ninety degrees true perfect flat screen

CRTs emit electromagnetic radiation.	LCDs emit a very small amount of radiation compared to CRTs.
CRTs weigh heavier, especially in their front (the display area)	LCDs are very light, hence being portable.
Higher power usage, more than 200% to an LCD of equivalent size.	Considerably lower power usage.
Glare is reduced by the use of special filters and treated glass.	Little or no glare
Slightly less sharp images - but it is noticeable when comparing with LCDs	Sharp (when used at native display resolution)

(b) Define a printer.

(2 Marks)

- A printer is a device that accepts text and graphic output from a computer and transfers the information to paper, usually to standard size sheets of paper.
- It is an Output device that transfers a softcopy into a hard copy

(c) Distinguish between Impact printers and non-impact printers (2 Marks)

- Impact printer - Produces text and images when tiny wire pins on print head strike the ink ribbon by physically contacting the paper while as Non-impact printer - Produces text and graphics on paper without actually striking the paper.

**(d) What are the advantages of non-impact printers over impact printers?**

Impact printer	Non-impact printer
Limited color printing	Capable of printing in strong clear color, good for printing pictures
Ideal for printing multipart forms because they can easily print through many layers of paper	Cannot print multipart forms
-Poor graphics or none at all	- Can handle graphics and often a wider variety of fonts than impact printers

Generally noisy because of the striking activity	Generally much quieter than impact printers because there is no striking mechanism
Reliable, durable (lasting for a long time)	Print head is less durable, inclined towards to clogging and damage
Less expensive	More expensive
Dot-matrix printer	Inkjet printer, laser printer and thermal printer
Low printing speed	Reasonably fast
Print <b>quality lower</b> in some types	<b>High quality</b> of output, capable of printing fine and smooth details

**24. (a) What is a computer spreadsheet?**

**(1 Mark)**

- A spreadsheet is a document that stores data in a grid of horizontal rows and vertical columns.
- A spreadsheet is a table of values arranged in rows and columns.
- A spreadsheet is an interactive computer application program for organization and analysis of data in tabular form.

**(b) What is the difference between value data and label data? (2 Marks)**

- A label most often refers to a text entry such as a heading used to identify a column of data while A normal number entered into a cell.

**(c) Give two examples of spreadsheet software**

**(2 Marks)**

- Open Office Calc
- Microsoft Excel
- Zoho Sheet
- Spread 32
- Gnumeric
- LibreOffice Calc
- NeoOffice

**(d) Name three types of data that can be placed in a spreadsheet (cell)**

**(3 Marks)**

- labels
- value
- Formulae

**(e) Describe any two advantages of using an electronic spreadsheet instead of the manual traditional spreadsheet**

- ease of calculations—numerical calculations are performed quickly and

- accurately
- ease of editing of data—mistakes can be corrected before printing, and data can be moved and copied
- recalculation—if one item of data is changed, all other data that depends on it is recalculated, which allows users to try out different ‘what if?’ options
- ease of storage—large amounts of data can be stored and retrieved as required
- display options—data can be presented in many different ways using tables and charts.

**25.(a)Distinguish between a website and web page. (2 Marks)**

- A webpage is an individual page design using html tags while as website is a collection of related web pages.

**(b) Outline two advantages of the internet. (2 Marks)**

- Information on almost every subject imaginable. Powerful search engines.
- Ability to do research from your home versus research libraries.
- Information at various levels of study. Everything from scholarly articles to ones directed at children.
- The internet provides the ability of emails. Free mail service to anyone in the country.
- Platform for products like SKYPE, which allow for holding a video conference with anyone in the world who also has access.
- Friendships and love connections have been made over the internet by people involved in love/passion over similar interests.
- Things such as Yahoo Answers and other sites where kids can have readily available help for homework.
- News, of all kinds is available almost instantaneously. Commentary, on that news, from every conceivable viewpoint is also available.

**(c) Define the following terms (2 Marks)**

**(i) Data communication**

- Refers to the process of transmitting data signal from one point to another through the network.

**(ii) Multiplexing**

Is the process of sending multiple data signals over the same medium.

**(d) Give and explain any two types of Computer networks (4 Marks)**

- Local area network is a computer network that spans a relatively small geographical area like in one building or a school.
- Metropolitan area network is a network that covers a metropolitan area like a town or city.

- Wide area network is larger than a metropolitan area network and covers a large geographical area such as country, a continent or the whole world.

**26. (a) What is a utility program?**

**(2 Marks)**

Are programs developed to improve, expand or support or enhance performance of other existing programs in the computer system.

**(b) Outline any four functions of utility programs**

**(4 Marks)**

- Back-up utilities: Help in making duplicate copies of every file on either internal or external media as security files for reference in case the original copy is destroyed. e.g. Colorado scheduler
- Data Recovery utility: Used to “undelete” or resurrect a file or information that has been accidentally deleted e.g. - Recycle bin for windows, Norton un-erase wizard, etc.
- Defragmentation utility or “Defragger” Used to find all scattered portions of files on the hard disk and reorganize them as contiguous files. Excessive file fragments slow down their from the storage media. E.g. Norton speed disk.
- Disk Repair Utility. Checks your disk drive for defects and make repair on the spot or mark the bad area. E.g.
- Antivirus software. Is a utility program that scans storage media (hard disks, diskette and memory) to detect and destroy virus.
- Data Processing Utilities. Utility programs which remove redundant elements, gaps, and unnecessary data from computer storage space.

**(c) Distinguish between primary and secondary memory**

**(2 Marks)**

- Primary memory is faster to access because it is wired directly to the processor. It is used by the system to perform operations while programs are running. Examples are cache, RAM, and ROM while as Secondary memory is usually somewhat slower and is used for permanent storage of information. Examples are hard disks, floppy disks, CDs, DVDs, flash memory, etc

**(d) Write the following in full**

**(2 Marks)**

**(i) ROM**

Read only memory.

**(ii) EPROM**

**Erasable programmable read only memory**, is a type of memory chip that retains its data when its power supply is switched off.

### **SECTION C (20 Marks)**

**27. (a) What is a programming language? (4 Marks)**

- These are coded instructions which are used when designing computer programs.
- They can also be defined as artificial languages used by programmers to write instructions (computer programs) that can be run by the computer.

**(b) Outline any two Characteristics of a programming language;**

- **Readability:** A good high-level language will allow programs to be written in some ways that resemble a quite-English description of the underlying algorithms.
- **Portability:** High-level languages, being essentially machine independent, should be able to develop portable software.
- **Generality:** Most high-level languages allow the writing of a wide variety of programs, thus relieving the programmer of the need to become expert in many diverse languages.
- **Brevity:** Language should have the ability to implement the algorithm with less amount of code. Programs expressed in high-level languages are often considerably shorter than their low-level equivalents.
- **Error checking:** Being human, a programmer is likely to make many mistakes in the development of a computer program.
- **Cost:** The ultimate cost of a programming language is a function of many of its characteristics.
- **Familiar notation:** A language should have familiar notation, so it can be understood by most of the programmers.
- **Quick translation:** It should admit quick translation.
- **Efficiency:** It should permit the generation of efficient object code.

**(d) List down three disadvantages of using machine code in programming;**

**(Any 3X2 mention, explain) 6 Marks**

- Programs had to be written using binary codes unique to each computer.
- Programmers had to have a detailed knowledge of the internal operations of the specific type of CPU they were using.

- Programming was difficult and error-prone.
- Programs are not portable to other computers

**28. (a) Define the following terms; (4 Marks)**

**i. Computer repair**

- A computer repair refers installing and updating software packages, and creating and maintaining computer networks and computers which are in a state of non-functional

**ii. Computer servicing**

- Computer servicing is the practice of keeping computers in a good state of maintenance.

**(b) Outline six functions of the system administrator (6 Marks)**

- Install patches
- Review system logs
- Report malicious or suspicious activity on systems to ISO immediately
- Report sensitive information stored on systems to ISO
- Maintain user access administration
- Disaster recovery planning
- Physical security
- Disable unnecessary services on servers
- Generate/Retain system backups
- Identify secondary system administrator(s)
- Comply with password requirements
- Access control
- Environmental protection (i.e., protection from possible exposure to water damage, excessive heat, etc.)
- Security training will be required every three (3) years
- System audit logging
- Maintain minimum security standards for systems
- Monitoring of system activity
- Designate a secondary administrator

**(c) Give any ten safety/security rules or measures that should be followed in a Computer laboratory. (10 Marks)**

- Clean up after yourself.
- Be considerate of other lab users -- this is a study area. In consideration of others, do not talk on cell phones in the lab. Please step outside the lab to conduct your phone call.
- NO FOOD or BEVERAGES in the computer lab.

- Do not waste our limited resources by printing extra copies you do not need. If you do print something, be sure to pick it up from the printer. Don't waste paper!
- Please limit your printing. If you need to print from the Internet and don't know how long a document is, download it to your disk first and check to see how long it is. Those who print excessively will be asked to refrain. After a third infraction, printing privileges may be revoked.
- Only print items that are school related. The free printing is not for club flyers, or other personal use.
- If other SSS students are waiting to use the computer and you are not doing school related work, please let them use the computer. The primary purpose of the lab is to assist with school-related work.
- Do not install or download any software or modify or delete any system files on any lab computers.
- CD-ROMs and other multimedia equipment are for school work only. Do not use them for playing music or other recreational activities.
- Respect the equipment. Don't damage, remove, or disconnect any labels, parts, cables, or equipment.
- Do not read or modify other users' files.
- If you leave the lab, do not leave your personal belongings unattended. We are not responsible for any theft.

**29. (a) What is a virus?**

**(2 Marks)**

- A computer virus is a deviant program that attaches its self to the computer system and destroys or corrupts data.

**(b) Define software Piracy**

**(2 Marks)**

- Software piracy is the unauthorized copying, reproduction, use, or manufacture of software products.

**(c) As a student of computer studies give six symptoms which indicates the presence of a virus in your computer.**

**(6 Marks)**

**Any 6 X 1)**

- Annoying messages e.g. Your Pc is stormed, not secure or infected.
- Adding garbage to files
- Computer switching its self-off and on.
- Unnecessary variations in computer processing speeds.
- Deletion of saved file or obliteration of the functioning of the
- Computer system or software.
- Boot failure.
- Unprecedented screen colour changes.
- Hard disk crash



- Reformatting of the hard disk which is typical of World concept virus.

(d) List Precautions that should be taken to guard against computer viruses.

**(Any five explain X 2)**

- Buy software from Authentic/legal vendors
- Avoid running unchecked/scanned files
- Avoid running files with attachment from unknown sources on the network.
- “Back-up your file plus folder regularly”
- Use Netware with strong validation checks and in-built firewalls (e.g. Linux). i.e.
- Hardware and software which can limit unauthorized data through Networks to reach your work station.
- Disable Auto macros functions for Macro viruses.
- Use anti-virus programs. Utility programs used to scan files and programs in
- order to detect, destroy or quarantine virus-infected files e.g. McAfee

**1. (a). Distinguish between cold and warm booting.**

**(02 marks)**

*Cold booting refers to the initial starting of the computer that involves loading the operating system into RAM, or*

*Cold booting means that starting of a computer that was previously off,*

*While,*

*Warm booting refers to the starting a computer that was previously on.*

**(b). Give two reasons for backing up data by an organisation.**

- Data can easily be transported from one place to another on a storage device.*
- To enable one to have a fallback position in case of data loss.*
- To enable one to interchange file from one computer to another easily.*
- To enable offsite storage of irreplaceable data e.g. using the online backing storage*
- To increase data security for an organisation.*

**(c). Give one example of devices that can be used to output information.**

- *Monitor.*
- *Projector.*
- *Printer.*
- *Light emitting diode.*
- *Graphical plotter.*
- *Speakers.*

**2. (a). State three editing features in a word processor. (03 marks)**

- *Copy.*
- *Paste.*
- *Find and replace.*
- *Grammar and spelling.*
- *Pasting.*
- *Setting language options.*
- *Auto complete.*

**(b). How is formatting and editing different as related to data processing. (02 marks)**

*Editing means removing mistakes and making a document error free, while ; formatting means to change appearance of a document that it stands out or look professionally attractive.*

**3. Use the following words to complete the statements in (a) to (e);**

- |                       |                       |
|-----------------------|-----------------------|
| - Diagnostic Utility. | - Disk Space Analyser |
| - Screen saver        | - Network utility     |
| - Merging Utility     | - Uninstaller         |

(a) **Screen saver** is a utility that automatically makes the monitor display a present selected image after a given period of time if there is no keyboard or mouse activity is going on.

(b) **Uninstaller** is a utility that removes a piece of software and any associated files in the system files.

(c) **Merging utility** combines different files in one.

(d) **Diagnostic utility** program used to quickly examine and locate problems within software, hardware in a system or network connection.

(e) **Disk space analyser** used to get the size for each folder/subfolders and files in a folder a drive showing the distribution of the used space.

**4. (a). State one function to each of the following as used in the Central Processing Unit.**

**(i). Arithmetical logical unit (ALU) (01 mark)**

- *Performs the arithmetic, comparison, and logical operations. Arithmetic operations include addition, subtraction, multiplication, and division.*

**(ii). Buffer (01 mark)**

- *Memory used temporarily to store output or input data while it is transferred.*

**(iii). Control Unit (CU) (01 mark)**

- *Directs and coordinates most of the operations in the computer.*

**(b). Give two uses of virtual memory during data processing. (02marks)**

- *You can run more applications at once.*
- *You can run larger applications with less real RAM.*
- *You don't have buy more memory RAM*

**5. (a). Explain how the following are done:**

**(i). Copying a file. (01 mark)**

- *Right – click a file and select copy.*

**(ii). Creating a folder. (01 mark)**

- *Right – click, select new, folder*

**(b). Write short notes on the following:**

**(i). Footer. (01 mark)**

*Is text that is separated from the main body of text and normally in the bottom margin and appears on each page.*

**(ii). Footnote. (01 mark)**

*Footnotes are notes or citations at the bottom foot of the page.*

**(iii). End note. (01 mark)**

*Endnotes are collected under a separate heading at the end of a chapter, volume, or entire work.*

**6. (a). State two examples of instruction input hardware devices.**

Mouse  
Keyboard

**(b). In relation to a computer's keyboard, give one function to each of the following:**

**(i). Space bar.**

**(01 mark)**

- *Provide a gap between words while typing text.*
- *Used to bring text to the default font style and size (Ctrl+Space bar).*
- *Used to resize minimise and close a window (Alt+space bar).*
- *Used to align pictures in Office 2003.*
- *Used to pause music.*
- *Used to play music.*
- *Used to play computer games e.g. pinball.*
- *Usually allows the user to page down or to page up when the space bar is used with the shift key.*

**(ii). Enter key.**

**(01 mark)**

- *Used to create a new paragraph.*
- *Used to come to a new line while typing.*
- *Used to confirm a command e.g. in Ms. DOS*
- *Used to move through cells in a spreadsheet application.*
- *Used to create a new row in a table (Ms. Word).*
- *Used to create a new record in Ms. Access.*
- *Used to execute a formula in a spreadsheet.*

**(iii). Escape key.**

**(01 mark)**

- *To stop an action or activity like stopping a presentation.*
- *It takes the user to the start button of the windows machine (Ctrl + Esc).*
- *It cancels a dialogue box.*
- *It brings the game to its menu interface.*
- *Used to switch computer mode (Alt+Esc)*
- *Enables the user to go to the windows task manager (Ctr+Shift+Esc).*

**7. (a). State the two factors to consider before buying a software program.**

**(02 marks)**

- *System requirements.*
- *User friendliness of the software.*
- *Cost of the software.*
- *Availability of the software.*

- Degree of compatibility with the available hardware components.
- Cost involved training users.
- It should be error free with a proven track record.
- Adds on services provided like support, updates, documentation, help, e.t.c.
- Type of user licence provided.
- Purpose of the software.
- Degree of software productivity.

**(b). List two ways computer users obtain software legally. (02 marks)**

- Through buying from authorised software vendors.
- Through creating own software.
- Through buying software licences from software manufacturers.
- Through downloading open source software programs.

**(c). What is a software suite? (01 mark)**

*Is a collection of computer programs (usually application software or programming software) of related functionality, often sharing a more-or-less common user interface and some ability to smoothly exchange data with each other.*

**8. (a). Define the term computer communication. (01 mark)**

*Refers to the sending of messages, data and signals between two to more computers in a network.*

**(b). Give two components of a computer communication channel.**

- Sending device.
- Communication device.
- Receiving device.
- Communication software.
- Communication channel..

**(c). State the difference between a simplex and a full duplex channel.**

*A simplex channel is the one whose direction of transmission is unchanging and in one direction, while; is a single physical channel in which the direction may be reversed.*

**9. (a). Give two characteristics of impact printers. (02 marks)**

- They create the characters by striking the paper.

- *They print on most types of paper.*
- *Multiple (carbon) copies may be printed at once.*
- *They produce a lot of noise.*
- *They are very slow.*

**(b). State the difference between a hardcopy and a softcopy. (01 mark)**

*Hard copy is a copy of work printed on a physical printing medium, while; softcopy is a copy of work displayed on a computer's screen.*

**(c). Mention two ways you can care for a printer. (02 marks)**

- *Keep your printer clean – Be sure to clean the printer regularly inside-out and close the paper feed trays when not in use.*
- *Keep it covered - When not in use, cover the whole printer unit with a cloth or a plastic cover.*
- *Turn it off - When the printer is not in use, press the Power button on the printer to shut it down and turn off the mains.*
- *4. Use it frequently - Use your printer at least once every two weeks to ensure that it is in a proper working condition.*
- *Maintenance Mode - Every printer features a maintenance mode that self checks the entire unit to make sure everything is working well. So carry out the printer maintenance every 1 or 2 months.*
- *Avoid cheap/refilled ink cartridges and toners - Not only can they be messy, but they also stand to affect the printer's performance and the quality of your prints. Always use original cartridges as recommended by the manufacturer.*
- *Avoid cheap paper - Using cheap, low quality papers with your printer can affect the print quality and cause paper jams. Manufacturers generally specify the type of paper you need to use.*
- *The paper - Try not to use papers that are bent, folded, torn or previously used, as they will affect the final print output. Always store papers in a low humidity environment.*
- *Refer to the manual - Printers generally vary in terms of functionality, operation and maintenance across different manufacturers. So always refer to your printer's user manual or service manual to see what is recommend for your printer.*

- *Replacing cartridges and handling - As printers get smaller and more functional, they use the latest technologies and electronics to keep them going. So when you need to replace the cartridges or check something inside the printer, make sure you are as gentle as possible, so as to not affect any components inside the unit or use excessive force during this process.*

**10. (a). List two ways ICT is used at home. (02 marks)**

- *Pay bills through the Payment by Phone Services (PPS).*
- *With a PPS account, bills can be paid either by phone or on the Internet.*
- *Budgeting and personal financial management.*
- *Balance a cheque book.*
- *Buy and sell stocks online.*
- *Prepare taxes.*
- *Manage investments and family budgets.*

**(b). State three advantages of using electronic spreadsheets.**

- *Produces neat and accurate work.*
- *Stores a lot of work since each worksheet can store a lot of data.*
- *It makes calculations easy to manipulate through auto filling.*
- *Easy to make changes and corrections to data on the worksheet.*
- *The rest of the worksheet is recalculated whenever data on a worksheet changes.*
- *Operation is fast with the help of built-in functions and macros.*
- *Calculation is always accurate, provided that data and formulae entered are correct.*
- *Easy to create different kinds of charts, or to change chart types.*
- *Information on charts is updated automatically whenever related data on the worksheet changes.*

**11. Write True or False against each question (a) to (e) in the table below. (05 marks)**

	Item	True / False
(a)	Ms. DOS is an example of a command line operating system.	<b>True</b>
(b)	A joystick is text input hardware device.	<b>False</b>
(c)	A word processor can carry out simple calculations.	<b>True</b>
(d)	You can cold boot a computer using CTL + ALT + DEL	<b>False</b>
(e)	A chart can only be created using Ms. Excel.	<b>True</b>

**12. (a). Mention two examples of operating system. (02 marks)**

- *Ms. DOS*
- *Windows 3.X 1*
- *Windows 95*
- *Windows NT Workstation*
- *Windows 98*
- *Windows 2000 Professional*
- *Windows ME*
- *Windows XP Home*
- *Windows XP Professional*
- *Mac OS*
- *OS/2 Wrap*
- *NetWare*
- *Windows NT Server*
- *Windows 2000 Server*
- *Windows.NET Server*
- *OS/2 Wrap Server for E-Business*
- *UNIX*
- *Linux*
- *Solaris*
- *Windows CE Embedded*
- *Palm OS Embedded*
- *Pocket PC 2002*

Other examples see:

[http://en.wikipedia.org/wiki/List\\_of\\_operating\\_systems](http://en.wikipedia.org/wiki/List_of_operating_systems)

**(b). List any two functions of utility programs.**

**(02 marks)**

- *Scans for computer viruses and remove them.*
- *Can make a copy of all information stored on a disk, and restore either the entire disk*
- *Output a smaller file when provided with a stream or file.*
- *scans the content of a hard disk to find files or areas that are*
- *Finds files that are unnecessary to computer and can decide to delete.*
- *Transparently compress/uncompress the contents of a disk, increasing the capacity of the disk.*
- *Increase efficiency by moving data to one side of the disk.*
- *Divides an individual drive into multiple logical drives*
- *To get the size for each folder/ sub folders & files in folder or drive. Showing the distribution of the used space.*
- *Ensures that data is stored and files arranged in order of ascending. It also helps the computer to re-arrange data files.*
- *Output a stream or a single file when provided with a directory or a set of files. Archive utilities, unlike archive suites, usually do not include compression or encryption capabilities.*



- Provide a convenient method of performing routine data management tasks, such as deleting, renaming, cataloguing, un cataloguing, moving, copying, merging etc.
- Encrypt and decrypt streams and files.
- Directly modify the text or data of a file.
- Check for memory failures.
- Analyzes the computer's network connectivity, configure network settings, check data transfer or log events.
- Clean and optimize the Windows registry by removing old registry keys that are no longer in use.
- Were desired to prevent phosphor burn-in on CRT and plasma computer monitors. Modern screensavers are used primarily for entertainment or security.
- For monitoring resources and performance in a computer system.
- Provide detailed information about the software installed and hardware attached to the computer.
- For organizing files in any choose order
- Merges or combines different files in one.
- Compiles technical information about a computer's hardware and certain system software programs and then prepares a report outlining any identified problems.
- Helps the computer to find out the error and fixes it.
- Enables the user to get back all the data that might have been deleted or lost by virus from a computer.K2
- It enables the user to get back to the last best known configuration settings of a computer.
- It enables the user to remove an application program and its associated attributes from the system.

**(c). Define the term firmware.**

**(01 mark)**

*A computer program placed in a computer at a time of its manufacture.*

**13. You are provided with the following database structure. Use it to answer questions (a) to (e).**

StudentID	First_Name	Last_Name	Sex	Telephone_No.	Age
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**(a). How many fields does this structure have?**

**(01 mark)**

*6 fields.*

**(b). Give the possible data types for:**

**(i). Sex.**

**(01 mark)**

*Text data type.*

**(ii). Telephone\_No.**

**(01 mark)**

*Text data type.*

**(c). Why is Number not a good data type for Age?**

**(01 mark)**

*Age varies every time and number cannot give the required accuracy and precision for decision making.*

**(d). Suggest a field that can be used as a primary key.**

**(01 mark)**

*StudentID.*

**14. (a).Mention two services provided by the internet.**

**(02 marks)**

- *The World Wide Web.*
- *E-mail.*
- *FTP (File Transfer Protocol).*
- *Newsgroups.*
- *Message boards.*
- *Mailing lists.*
- *Chat rooms.*
- *Instant messaging.*
- *Internet telephony.*
- *Videoconferencing.*
- *E-commerce.*

**(b). List two requirements for setting up internet.**

**(02 marks)**

- *ISP.*
- *Computer or communication device.*
- *Browser.*
- *Operating system.*
- *Modem.*

**(c). Give one danger of using the internet at home.**

**(01 mark)**

- *It allows access to a wealth of information, such as news, weather reports, and airline schedules.*
- *It enables one to download files, listen to music, and watch movies free of charge.*
- *Access sources of entertainment and leisure.*

- *It has powerful search engines that enable users locate specific data in a short time.*
- *It provides the ability for a user to do research from your home versus research libraries.*
- *It provides message boards where people can discuss ideas on any topic.*
- *The internet provides the ability of e-mails.*
- *It enables one to shop for goods and services online i.e. e-commerce.*

**15. (a).State the difference between hardware and software. (02 marks)**

*Hardware is a physical / touchable / tangible / part of a computer, **while**; software is a collection of coded instructions that enable a computer to work.*

**(b). Give one reason for servicing a computer. (01 mark)**

- *To protect the computer from damage.*
- *To keep the computer is sound and running condition.*
- *To update computer parts and software.*
- *To ensure that the computers' security is update.*
- *To replace non functional parts.*

**(c). State two ways data loss can be minimized in a computer laboratory. (02 marks)**

- *Frequently updating the antivirus programs.*
- *Setting up passwords.*
- *By encrypting data.*
- *Frequently carrying out data backups.*
- *Keeping a log of people that enter and use computer resources.*
- *By sensitising users about dangers of data loss.*
- *By scanning devices before they are used.*
- *By not allowing devices from external places in the laboratory.*
- *By activating firewalls.*
- *By installing UPS terminals on every computer set.*
- *By switching of the computer correctly.*
- *By threading printed but not wanted materials.*
- *By penalising people that are found deleting peoples work intentionally.*

**16. (a). Give two ways you can control intruders into a computer laboratory. (02 marks)**

- *By burglar proofing of the computer lab.*
- *By employing the use of possessed objects so as to gain entry.*

- *By use of passwords.*
- *By introducing the use of computer locks.*
- *By activating computer firewalls.*
- *By maintaining a log of people that enter the computer laboratory.*
- *By penalising intruders found in the compute laboratories.*
- *By use of call back systems.*
- *Through installation of CCTV cameras.*
- *By installation of alarm systems.*

**(b). What is the primary function of a recycle bin? (01 mark)**

*To keep data (files and folders) temporarily that has been deleted.*

**(c). State two circumstance under which a user can double click a file.**

- *When a user wants to open a file or folder.*
- *When a user wants to run an installation of a program.*
- *Double-click executes the function associated with that object.*
- *When the user wants to select the entire word.*

**17. (a). Give the difference between a file and a folder. (02 marks)**

*A file a collection of related data as a single unit, **while**; a folder is a directory where files are collected.*

**(b). State the file extension of a database file. (01 mark)**

- *.mdb*
- *.accdb*

**(c). Mention two reasons for restarting a computer by the user. (02marks)**

- *When a computer frequently freezes.*
- *After installing a new software program.*
- *After un installing a software program.*
- *After installing a new hardware component e.g. a flash disk.*
- *After un changing CMOS and system settings.*
- *When a computer has an irrecoverable errors.*

**18. (a). What is a password? (01 mark).**

*A password is a word or string of characters used for user authentication to prove identity or access approval to gain access to a resource.*

**(b). State two advantages of having a secure password for your computer resources. (02 marks)**

- *It makes computer resource safe and secure for users.*
- *It is difficult to hack or crack says a long password hence, giving the user freedom to use the computer resources with confidence.*
- *Third parties will have difficulty while accessing your resources in your absence.*

**(c). Give two guidelines for creating a secure password. (02 marks)**

- *Use length to your advantage.*
- *Form a random sequence of words and figures.*
- *Add numbers to base two combined with letters to make it more secure.*
- *Use punctuations and symbols to make it further difficult.*
- *Create complexity with upper and lower cases of your password.*
- *Generate similar by altered passwords.*

**19. (a). Given the file path C:\User\Desktop\Abdu\Letter.Doc, identify the following:**

**(i). File name (01 mark)**

*Letter.doc*

**(ii). File type (01 mark)**

*Word processor*

**(iii). The subfolder in which the file is located. (01 mark)**

*Abdu*

**(iv). The drive on which the file is located. (01 mark)**

*Drive C:*

**(b). State the file extension for an Ms. Excel file. (01 mark)**

*.xlsx  
.xls*

**20. State the function for each of the following computer hardware. (05 marks)**

**(i). RAM Chip**

*Hold data that the computer is currently working with.*

*Enable the computer at a time of booting to provide space for loading of the kernel.*

**(ii). Hard disk**

*It keeps computer files, software and other resources for a computer.*

**(iii). ROM Chip**

*It stores instructions, or information, which is recorded permanently by the manufacturers are known as firmware.*

**(iv). CPU**

*Co-ordinates all activities and hardware components under its care.*

**(v). CMOS battery**

*It powers the CMOS Chip.*

**SECTION B (60 Marks)**

21. (a) Briefly explain the following terms in relation to websites

**(i) Uploading**

It refers to transferring of an electronic document to the web server for storage

**(ii). Web hosting**

It is an internet service that enables websites to be available on the internet for internet users to access it.

**(iii). Hyperlinks**

Is a piece of text or an image that enables you to navigate through a website.

**(iv). Web master**

Is an individual responsible for updating and maintaining a website.

(b) Identify any three qualities of a good website (3 Marks)

- Well communicated content
- Clear identity
- Visible contact information
- Well hyperlinked to facilitate easy navigation
- Use of strong password
- Good use of color:
- Text that is easily read
- Meaningful graphics

- Simplicity

(c) Outline three advantages of using a website to your school. (3 Marks)

- Collaboration with other teachers and students
- On line registration
- Online contact address
- Advertising
- On line assessment
- Seeking financial assistance through networking
- Keeping all stake holders well updated

**22.(a) Explain the following mouse techniques. (5 Marks)**

**(i) Clicking (single click)**

Pressing the left-hand Button of the mouse once.

**(ii) Double clicking**

Pressing the left-hand Button of the mouse twice rapidly.

**(v) Dragging**

Selecting an object, press and hold the left-hand Button of the mouse then you move t the desired location,

**(iv) Right clicking**

Pressing the right hand Button of the mouse once.

**(v) Scrolling**

Moving through pages of a document using scroll button.

**(b) Define the term “Keyboard” (2 Marks)**

Is an input device that facilitates feeding of data into a computer.

**(c) List three functions of the key board (3 Marks)**

- Feeding data into the computer
- Selecting columns in that are not next to one another in a spreadsheet.
- Navigating through a document using arrow keys.
- Editing content of a document

23. (a) Differentiate between imaging input devices and biometric input devices (2 Marks)

**Input imaging devices** are used to digitize images or video from the outside world into the computer **while Biometric devices** translates a biological personal characteristic into a digital code that is stored or compared with a digital code stored in the computer. Such devices may be found at airports, government buildings, and law enforcement agencies.

- (b) Give any four examples of imaging input devices and four examples of **Imaging input devices** (8 Marks)

- Bar code reader
- Web cam
- Digital camera
- Microsoft Kinetic sensor
- Laser range finder
- Eye gaze tracker

**Biometric input devices**

- Finger print scanner
- Iris scanner
- Hand/body scanner
- Voice recognition scanner
- Signature verification systems
- Face Recognition systems

24. (a) Describe the initial procedure for starting up a computer(5 Marks)

- Connect the computer to the power source
- Turn on the UPS/stabilizer
- Turn on the power button of the system unit
- Turn on the power button of the monitor.
- Give it time to initialize

- (b) Give the comparison between cold booting and warm booting (2 Marks)

Cold booting refers to starting of the computer from the power off status while warm booting is the restarting of the computer when it has been on.

- (c) List any three situations that may necessitate warm booting (3 Marks)

- Installing a computer program
- Freezing of a computer
- Attaching a new device to the system unit

25. (a) Describe the following

**(i) Spooling**

Refers to the process of putting tasks that need to be done into a buffer until they can be executed.

**(ii) Buffer**

*Buffer* is a region of a physical memory storage used to temporarily store data while it is being moved from one place to another.



**(iii) Utility**

Is system software that optimizes, analyze and configure the computer system in order to maintain a computer in its normal working conditions.

**(b) Mention any three common utilities (3 Marks)**

- Sorting Utility
- Backup Utility
- Debugger Utility
- Diagnostic Utility
- Antivirus Utility
- Data compression Utility
- Defragmenter Utility

**(c) What is antivirus program (1 Mark)**

Is a Utility program that detects, prevents and removes malware programs (computer viruses) from the computer or storage device.

**(d) List three examples of antivirus software (3 Marks)**

- Dr. Solomon anti virus
- Panda anti virus
- Eset nod 32 anti virus
- Penicillin ant virus
- A vast anti virus
- Avira anti virus
- F secure ant virus
- AVG anti virus
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**26. (a) Distinguish between a DBMS and a database (2 Marks)**

**DBMS** is a collection of computer programs that facilitate creation, editing, updating, storage and retrieval of huge amount of information relating to a particular subject **while a database** is a collection of organized data that facilitate easy access, storage, update and retrieval as may be required by the user.

**(b) Outline two example of data base management software (2 Marks)**

- Fox pro
- DBASEIV
- Ms Access
- Oracle
- File maker

- MySQL
- Lotus Approach

**(c). Identify three ways word processors have been used for the smooth running of school. (3 Marks)**

- Setting of exams
- Typing of circular
- Designing of memos for inter personal communication
- Designing of demand notices to school fees defaulters.
- Typing of minutes for meeting held
- Typing of requisition forms.

**(d) The following terms are used in word processors. Define them**

**(i) Type face.**

A design or shape for a set of characters. Popular typefaces include Times Roman.

**(ii) Text alignment.**

Is the way lines of text are arranged relative to the block of text. Such as centre, left, right or justified

**(iii) Justification.**

Is a process of aligning text in a document to both the left and right margins at the same time.

### SECTION C (20 Marks)

**27. (a) Distinguish between a CPU and system unit. (2 Marks)**

CPU is sometimes regarded to be the processor that executes instructions and transforms data into information while a system unit is metallic box that comprises of processing devices attached to the mother board.

**(b). State the three components that make up the processor and give the**

function of each (6 Marks)

Function of each (6 Marks)

- Control Unit- directs and co-ordinates most of the computer operations
- Arithmetic Logic Unit- Performs arithmetic, comparison and logic operations.
- Registers- these are temporary storage locations used to hold data & instructions being processed.

**(c) Briefly explain the use of the following hardware components.**

**(8 Mark)**

- (i) VGA adapter-is the device in a computer that outputs visual information to the monitor.
- (ii) Mother board- the main circuit board onto which all the

- Hardware devices in the system unit are connected.
- (ii) Sound card- it facilitates input and output of audio signals (sound) to and from a computer

Or

The sound card is an expansion card that allows the computer to send audio information to an audio device like speakers or a pair of headphones.

**(d) State four ways of proper handling of a CD (4 Marks)**

- Do not expose the CD to excessive heat or sunlight
- Store the disc in a jacket when not in use
- Do not touch or write on the underside (data side) of the CD
- A soft felt-tipped pen should be used when writing labels on the disc.
- Handle the disc from outer edge or the disc hole

**28.(a) Define the following terms in relationship to data communication**

**(i) Data signal**

A pulse or frequency of electricity or light that represents **data** as it travels over a network, a computer channel or wireless. (10 Marks)

(ii). Multiplexing- transmission of multiple data signals over a single medium.

(iii). **Bandwidth**- the amount of data that can be carried from one point to another in a given time period.

Or

Capacity of the communication channel.

(iv). Modem- **Modem**, short for **modulator-demodulator** is an electronic device that converts a computer's digital signals into specific frequencies to travel over telephone or cable television lines. At the destination, the receiving modem demodulates the frequencies back into digital data. Computers use modems to communicate with one another over a network.

(v). **Router**- A router is a networking device used to connect two or more logically or physically different networks.

**(b) List three types of bounded transmission media (3 Marks)**

- ✓ Twisted pair
- ✓ Coaxial cable
- ✓ Optical fiber
- ✓ Pair wires

(c) Give two advantages and two disadvantages of wireless communication (4 Marks)

**Advantages**

- ✓ It is fast to connect the device to the network.
- ✓ Can move longer areas with the device i.e. allow mobility.
- ✓ Can connect many devices cheaply

**Disadvantages**

- ✓ It requires one to have a password or security key to connect to a network.
- ✓ It may be only accessible at a given range/ distance.
- ✓ Signals can be interfered with by bad weather and other noises
- ✓ Can be easily hacked.

**(d).List three examples of wireless devices**

**(3 Marks)**

- Wireless router
- Wireless network card/ wireless adapter
- Bluetooth
- Infrared
- Cellular phones
- Pagers
- Global position system

**29. (a).Distinguish between expert systems and artificial intelligence**

**(2 Marks)**

A computer application that performs a task that would have been performed by a human expert like doctors, engineers (they are programmed to make decisions in real life situations)

While

Artificial intelligence is a branch of computer science concerned with making computers that behave like humans i.e they take on human behaviors that humans consider intelligent.

**(b) For any 4 four career opportunities in ICT, explain any 4 four roles of each.**

**System administrator**- installs, configures and maintains organizations network, and enforce policies and procedures.

**Web developers**- specializes in the development of a website including the design, structure and layout

**Database designer**- design databases for companies to store their records.

**System analyst**- plan, implement, modify or coordinate systems, such as electronic data processing, systems analysis, information systems and computer programming to meet users business needs.

**Software engineer**- developing softwares for different companies.

**(c) Describe any 5 five application areas in ICT.**

**(10 Marks)**

**Education:** computers are a major boost in the education sector since students use them to do research and also institutes can link up and share educational information thus improving the quality of research.

**Health and Medicine:** ICTs are used in diagnosing diseases and employing of expert systems as well as facilitate research between different medical institutions about diseases.

**Business:** They are used in E-commerce to facilitate on-line transactions as well as market goods and services through websites.

**Recreation & Entertainment:** computers can be used for leisure and relaxing by playing games at Game stations, playing music in Discotheques.

**Defense:** to control unmanned aircrafts and intercontinental ballistic missiles controlled by a Geographical Positioning System (GPS)

**Homes:** for communication and carrying out some household tasks like typing simple documents

**a) Differences between a word processor and a mechanical typewriter in printing text**

- A word processor types and prints all characters at a time while a mechanical typewriter can print only one character at a time.
- A word processor can print multiple copies of a document while a mechanical typewriter can print only one copy each time.

**b) Examples of word processor document.**

- Letters
- Memos
- Reports
- Mailing reports

**c. Functions provided by a word processor but not mechanical typewriter.**

- Word wrap
- Find and replace
- Spelling checker
- Mail merger

Any 4X1= 04 marks

**d.**

- The original text remains in its old place when it is copied and pasted to a new location of the document.
- The original text is removed from its old place then it is removed to another location of the document when cut. 1X1= 01 mark.

22

- i) Cell is the intersection of a column and row.
- ii) Value is a number used for calculations in a spread sheet.
- iii) Label is the text used to identify information in a spread sheet.
- iv) Macro is a sequence of keystrokes and instructions that is recorded and saved.

04 marks.

**b (i) Uses of spread sheets.**

- They help to collect and calculate data
- It helps to create lists.

- It helps in accounting
  - It helps in chart creation
- (ii)
- Pie charts
  -
- 23 (a) (i) Optical storage device.
- CD
  - DVD
  - VCD
- (ii) Magnetic storage device.
- Hard disk
  - RAM
  - Diskettes
  - Memory cards
  - Flash
- b) i) Storage hardware refers to computer peripherals used to store data e.g. Hard disks, Diskettes etc. (02 marks)
- ii) Processing hardware refers hardware that help to manipulate date e.g. CPU. (02 marks)
- (iii) Communication hardware refers to hardware that helps in communication. (02 marks)
- c) **Mechanical mouse** operates by use of a ball while optical mouse operates by use of infrared.
24. a) **Data validation** is a process to ensure that the data is correct while Data verification is a process of checking if the data entered is consistent to the source.
- (ii)
- This is checking alphabets / text before processing.
  - Nemical check is checking number before processing
  - Range check determines if the values entered fall within specific ranges. (03 marks)
- b) i) Classmates
- ii)  $30+5+1+2+7+60=1$  or 5 (02 marks)
- (iii) The field name is not unique more storage space is required to store data. (02 marks)
- 25.
- a. (i) Stand alone computer is one that is independent or not on any network.

- (ii) Network corruption is one linked to another / other computers to share resource
  - b. Star computer devices are connected to a central computer
    - While**

Computers are connected to Central cable that connects all of them together.
  - c. Advantages of star over ring topology.
    - Easy to install and maintain
    - Reliable
    - Devices can be added and removed easily
  - d. Resource sharing
    - Easy accommodation
- 03 marks.

26 (a)

- i) Unauthorized access is the use of a computer with out permission while  
Unauthorized use is use of computer for illegal activities
- ii) An employee sending personal emails on a company computer.  
Performing unauthorized transfer.

(b)

- Use at least 8 characters.
- Use of digits and mixed case letters
- Use password that are easy to remember but difficult to guess
- Password that can be type easily.
- Finger print scanner
- Hand geonesty system
- Face recognition system
- Voice recognition system

27.

- Computers are versatile
- They simplify work
- They store a lot of data
- Government influence / policy
- Entertainment industry
- Liberalization
- Health
- Education
- Research
- Police
- Communication

28.

- a) Virus is a program that duplicates itself while a bug is an error.
- b) Use of inflected storage

- Share ware which is inflected
- Down loading freeware.
- Booting a computer with an infected floppy.

c)

- Avoiding free software.
- Use of original.
- Use of anti-virus software.
- Regulating access to unauthorized persons.

29.

- Learning aids.
- Students can learn by themselves.
- Rich education resources.
- Feed back is quick.
- Assignments are possible.
- Teacher can explain at latter hour.
- Help in demonstration.

**Demerits.**

- Face to face is reduced.
- Expensive to set up.
- Needs trained manpower
- Does not benefit the blind.
- Health effects.
- Moral degeneration
- Facilities forgery

SECTION B

Attempt all the questions in this section.

**21.(a). Mention any three ways data can be entered into a computer.**

- Text data can be entered using a keyboard
- Sound can be entered using a microphone
- A mouse is for giving instructions and making selections
- A sound card
- A video card
- A scanner
- A microphone
- etc

**(b). (i). What is a computer peripheral?**

**(01 mark)**



**These are auxiliary parts which are externally connected to the motherboard and when disconnected, the computer continues working. Or they are hardware components which are not very important for the computer to work.**

(ii). Give two examples of computer peripheral devices. **(02 marks)**

- **Mouse**
- **Keyboard**
- **Monitor**
- **Printer**
- **Joystick**
- **etc**

(c). Distinguish between plug and play and hotspot as used in connecting computer peripheral device. **(02 marks)**

**Plug-and-Play is an ability of a computer to detect and configure a new piece of hardware automatically, without the requirement of the user to physically configure the hardware device whereas Wi-Fi hotspot or wireless hotspot is a location that enables users to connect to a network or the Internet with their wireless adapters.**

(d). Mention any two tasks carried out by a network administrator in an organization. **(02 marks)**

- **Networks computers**
- **Distributes resources and even controls the resources on a network**
- **Allocates user privileges to the computer users.**

22. (a) Define the following terms

(i) Hyperlinks **(02 marks)**

**A hyperlink is an icon, graphic, or text in a document that links to another file, page or object.**

(ii) Webpage **(02 marks)**

**This is an electronic document in a website that contains information about a particular topic.**

(b) State three factors that slow down the speed of internet download.

- **Band width**
- **Computer specifications**
- **Traffic congestion**
- **Data transmission methods**

(c) (i) State two requirements for setting up a network. **(02 marks)**

- **Computer**
- **Switch/hub**
- **Nic/network interface adapter**

- **Cables**
- **Network software**

(ii) Define the term search browser in computer communication. (01 mark)

**This is an application software which views the contents of the webpage/website. Or an application software for exploring or discovering the internet.**

23. (a) Define the term computer virus. (02 marks)

**A malicious software which has the ability of replicating itself and aims at causing irregular behavior in a computer system. Or a software which aims at spoiling a computer system.**

(b) Show three symptoms of computers infected with viruses. (03 marks)

- **Quizzical messages.**
- **Low/slow speed**
- **Files start disappearing**
- **Storage devices become inaccessible**
- **The browser may start directing you to a different URL**
- **The keyboard buttons may start behavior in a very strange way.**
- **Access lights start getting on an off without any request sent in.**
- **Programmes get damaged**
- **Programmes may start opening themselves.**
- **Files and folders may duplicate themselves. etc**

(c) Give three ways computer viruses can be controlled and prevented.

- **Use antiviruses**
- **Activate firewalls**
- **Avoid external storage devices whose source you are not sure of**
- **Carry out route scanning**
- **Only open attachments whose sources you are sure of.**
- **Mind about the websites you visit and in addition, avoid clicking pop up messages which claim to be carrying valuable messages like “you have won”**
- **etc**

(d) Outline two examples of antiviruses utility programs. (02 marks)

- **E-set Nod 32 anti-virus**
- **Avira anti-virus**
- **F secure anti-virus**
- **Panda anti-virus**
- **Avast anti-virus**
- **AVG anti-virus**
- **Kaspersky anti-virus etc**

24.(i.) What do you understand by the terms below in reference to presentation software. **(3mks)**

Master slide

**A tool in presentation programme which controls the background, formatting and fonts of all other slides at once.**

Notes page view

**A provision on a slide where the user/presenter makes his private notes not to be viewed by the audience during presentation.**

Looping

**A feature in a presentation which makes the slides to run continuously until escape button has been placed.**

ii). Give three data types used in database management programs. **(3mks)**

- **Text**
- **Number**
- **Autonumber**
- **OLE**
- **Currecny**
- **Date/time**
- **Yes/no. etc**

b). What are the four features that make use word processing software preferred to ordinary typewriter **(4mks)**

- **It has formatting features like font variations whereas the typewriter does not have them**
- **Produces neat work unlike the type writer**
- **Has tools like mail merge where one message can be addressed to several recipients at a go unlike a typewriter**
- **Graphics can automatically be inserted in a document unlike a writer.**
- **A document can be edited with ease unlike a typewriter**
- **Ease of sending or sharing a document on line unlike a typewriter**
- **Spell check in word processor unlike in typewriters.**
- **Etc**

25. (i) Give two uses of primary memory in a computer. **(02 marks)**

- **Holds data temporary during data processing e.g registers**
- **Helps to load programmes e.g RAM**
- **Helps to keep data which is frequently accessed by the CPU e.g Cache memory**
- **Helps to keep a computer settings and the starting procedure e.g ROM**

- (ii) Give two examples of high level languages ( 03 marks)
- **COBOL**
  - **LISP**
  - **BASIC**
  - **FOTRAN**
  - **VISUAL BASIC**
  - **FOTRAN**

(ii). State one advantage of using binary numbering in computers.(02 marks)  
**The process becomes so fast since the processor can interpret the command very fast without conversion.**

(c). State three biometric devices that are used in physical access control.

- **A finger print scanner, which captures curves and indentations of a finger print.**
- **A hand geometry system, which can measure the shape and size of a person's hand.**
- **A face recognition system, which captures a live face image and compares it with a stored image.**
- **A voice recognition system, which compares a person's live speech with the stored voice pattern.**
- **A signature verification system, which recognizes the shape of a handwritten signature of a person.**
- **An iris recognition system, which reads patterns in the tiny blood vessels in back of the eye, which are as unique as a finger print.**

26. (a) What is the difference between **Firmware** and **Shareware**?  
(2marks)

**Firm ware refers to Software (programs or data) that has been written onto read-only memory (ROM). Firmware is a combination of software and hardware. ROMs, PROMs and EPROMs that have data or programs recorded on them are firmware Where as shareware is a copy of the software availed to the public for a limited period of time after which they are asked to pay for a full version.**

(b) Write the following computing acronyms in full: (3 marks)

- i. **HTTP: HYPER TEXT TRANSFER PROTOCOL**
- ii. **CLI: COMAND LINE INTERFACE**
- iii. **TCP: TRANSMISSION CONTROL PROTOCOL**

(c) (i) Define the term server. (02 marks)  
**A computer which controls the resources of computers on a network**

(ii) Give three advantages of networked computers over stand-alone computers. (03 marks)

- **Sharing of hardware**
- **Sharing of data**
- **Sharing of software**

- **Control is enhanced unlike stand-alone computers**
- **Communication is fast**
- **Productivity of work on a network increases etc**

### SECTION C

This section consists of only three questions.  
Attempt only one question from this section.

27. (a) Internet is one of the richest worlds' innovation. With examples, explain at least five resources that make it a very useful tool in the world. (10 marks)

- Communication
- FTP for uploading and downloading
- www
- e commerce
- research
- Telnet
- Gopher
- ETC

Any 05 points X 02 = 10 marks

Mentioning 01mark

Explaining 01 mark

Any five well explained points 02 X05 = 10marks

(b) Explain at least five disadvantages of internet to our society today.(10 marks)

- Spamming
- Pornography
- Theft of Personal Information
- Social Disconnect
- Outdate material
- Piracy
- etc

Any 05 points X 02 = 10 marks

Mentioning 01mark

Explaining 01 mark

28. (a) What is a computer laboratory. (02 marks)

(b) Describe four good practices that should be observed in a computer a laboratory. (08 marks)

(c) Write down five health and social problems causes by computers. (10mrks)

(a) A computer laboratory refers to a room set aside where computers are kept for use. ( 02 marks)

(b) Good practices in the computer laboratory

- Always cover the computers after use
- Carry out regular servicing of computers
- Install fire extinguishers and air conditioners.
- Ensure proper wiring
- Put bugler proofing in place
- Put laboratory rules in place
- Install CCTV cameras to strengthen security
- Install antivirus on computers to keep computers safe.

c)

- Causes isolation and digital divide
- Backache
- Headache
- Injuries around the wrist
- Stress
- Erodes cultural values by watching pornographic literature
- RSI

29. (a). A new computer system is comprised of hardware components like a mouse, a keyboard, a monitor and software components like operating system, application programs and device drivers.

**(a). State five functions of the operating system. (10 marks)**

- Provides user interface
- Booting the computer
- Configuration of devices
- Management of memory
- Controls software and hardware from improper use
- Spooling of print jobs
- Platform where application programmes are loaded
- Processor management where several tasks are carried out at the same time i.e multitasking.
- Time sharing where many people can use one computer at a time.

Any 05 points X 02 = 10 marks

**(b). Explain why the peripheral drivers are also needed. Give two reasons. (04 marks)**

- Peripheral drivers provide an interface for the user to use the device/component
- They enable operating system to communicate with the device

**(c). State three advantages of off shelf application programs over customized programs. (06 marks)**

- They are cheaper than customized programs
- They are error free unlike customized programmes
- They are easy to learn since they are made for public consumption
- The authors of off shelf programs provide online/ready help

**SECTION B (60 Marks)**

21.(a) Briefly explain the following terms in relation to websites (4 marks)

(i) Uploading

It refers to transferring of an electronic document to the web server for storage

(vi) Web hosting

It is an internet service that enables websites to be available on the internet for internet users to access it.

(vii) Hyperlinks

Is a piece of text or an image that enables you to navigate through a website.

(viii) Web master

Is an individual responsible for updating and maintaining a website.

(b) Identify any three qualities of a good website (3 Marks)

- Well communicated content
- Clear identity
- Visible contact information
- Well hyperlinked to facilitate easy navigation
- Use of strong password
- **Good use of color:**
- **Text that is easily read**
- **Meaningful graphics**
- **Simplicity**

**(c) Outline three advantages of using a website to your school. (3 Marks)**

- Collaboration with other teachers and students
- On line registration
- Online contact address
- Advertising
- On line assessment
- Seeking financial assistance through networking

▪ Keeping all stake holders well updated

**22.(a) Explain the following mouse techniques. (5 Marks)**

- (i) Clicking (single click)  
Pressing the left-hand Button of the mouse once.
- (ii) Double clicking  
Pressing the left-hand Button of the mouse twice rapidly.
- (ix) Dragging  
Selecting an object, press and hold the left-hand Button of the mouse then you move t the desired location,
- (iv) Right clicking  
Pressing the right hand Button of the mouse once.
- (v) Scrolling  
Moving through pages of a document using scroll button.

(b) Define the term “Keyboard” (2 Marks)

Is an input device that facilitates feeding of data into a computer.

**(c) List three functions of the key board (3 Marks)**

- Feeding data into the computer
- Selecting columns in that are not next to one another in a spreadsheet.
- Navigating through a document using arrow keys.
- Editing content of a document

**23. (a) Differentiate between imaging input devices and biometric input devices (2 Marks)**

Input imaging devices are used to digitize images or video from the outside world into the computer while Biometric devices translates a biological personal characteristic into a digital code that is stored or compared with a digital code stored in the computer. Such devices may be found at airports, government buildings, and law enforcement agencies.

(b) Give any four examples of imaging input devices and four examples of **Imaging input devices (8 Marks)**

- Bar code reader
- Web cam
- Digital camera
- Microsoft Kinetic sensor
- Laser range finder
- Eye gaze tracker

**Biometric input devices**

- Finger print scanner



- Iris scanner
- Hand/body scanner
- Voice recognition scanner
- Signature verification systems
- Face Recognition systems

24. (a) Describe the initial procedure for starting up a computer(5 Marks)

- Connect the computer to the power source
- Turn on the UPS/stabilizer
- Turn on the power button of the system unit
- Turn on the power button of the monitor.
- Give it time to initialize

**(b) Give the comparison between cold booting and warm booting**  
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**(c)List any three situations that may necessitate warm booting(3 Marks)**

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**(iii) Utility**

Is system software that optimizes, analyze and configure the computer system in order to maintain a computer in its normal working conditions.

**(b) Mention any three common utilities** **(3 Marks)**

- Sorting Utility
- Backup Utility
- Debugger Utility
- Diagnostic Utility
- Antivirus Utility
- Data compression Utility
- Defragmenter Utility

**(c) What is antivirus program**

**(1 Mark)**

Is a Utility program that detects, prevents and removes malware programs (computer viruses) from the computer or storage device.

**(d) List three examples of antivirus software**

**(3 Marks)**

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- Panda anti virus
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**26. (a) Distinguish between a DBMS and a database**

**(2 Marks)**

DBMS is a collection of computer programs that facilitate creation, editing, updating, storage and retrieval of huge amount of information relating to a particular subject while a database is a collection of organized data that facilitate easy access, storage, update and retrieval as may be required by the user.

**(b) Outline two example of data base management software (2 Marks)**

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- MySQL
- Lotus Approach

**(c) Identify three ways word processors have been used for the smooth running of school. (3 Marks)**

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- Typing of circular
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- Designing of demand notices to school fees defaulters.
- Typing of minutes for meeting held
- Typing of requisition forms.

(d) The following terms are used in word processors. Define them

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A design or shape for a set of characters. Popular typefaces include Times Roman.

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Is the way lines of text are arranged relative to the block of text. Such as centre, left, right or justified

**(iii) Justification.**

Is a process of aligning text in a document to both the left and right margins at the same time.

**SECTION B: (60 MARKS)**

**21(a) Define information technology (IT)**

**(2 marks)**

Information technology is the use of computers and software to manage information. Information technology is the use of computers and software to manage information.

**(b) Give the examples of computer application in health care. 2mks**

- ❖ Hospitals and clinics depend on computers for administrative and financial functions and for providing access to clinical data.
- ❖ Most physicians have been exposed to the powerful available systems for searching the biomedical literature by computer.
- ❖ Modern imaging techniques depend on computers for image generation, small computers have become mandatory elements in the research laboratory, and information systems are becoming vital topics for medical education
- ❖ A scheme to connect healthcare professionals in different hospitals by means of 'secure' internet links.
- ❖ The use of computers for long-distance consultation and diagnosis.

Scanners

**(c) Explain six characteristics of modern computers.**

**2mks**

- ❖ Speed: A computer is a very fast device. It can perform in few seconds, the amount of work that a human being can do in an entire year. The speed of a computer measure in microseconds ( $10^{-6}$ ), nanoseconds ( $10^{-9}$ ) and picoseconds ( $10^{-12}$ ). A powerful computer is capable of performing several billion arithmetic operation per second.
- ❖ Accuracy: Computer is very accurate device. The accuracy of a computer is principle high. The degree of accuracy of a particular computer depends upon it's design. Computer done very calculation with same accuracy. Errors can occur in a computer, However, these problem are mainly due to human rather than technological weaknesses.
- ❖ Automatic(Automation): A machine is no sooner than done to be automatic if it, works by itself without human intervention. Computer are automatic machines, because one started on a job, they carry on, until the job is finished, without any human assistance. However, computer being machines cannot start themselves. They cannot go out find their own problems and solutions. They have to be instructed.

- ❖ **Diligence:** Computer has unlike human beings. A computer is free from dullness and lack of concentration. It can continuously work for hours without creating any error human beings in doing regular types of jobs, which requires great accuracy. Computer can perform the number of calculation with exactly the same accuracy and speed as the first one.
- ❖ **Versatility:** Versatility is a most important characteristic of computer. It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills. A computer is capable of performing almost any task, if the task can be reduced to series of logical steps.
- ❖ **Memory(Power of Remembering):** Computer has a brain, but unlike human (Man) beings. A computer can store data and information. And recalled as long as you require it, for any numbers of years. Because of it's secondary storage capability. A data and information can be retrieved as long as desired by the user and can be recalled, as when required. The information recalled would be as accurate as on the day when it was fed to the computer.
- ❖ **No. I.Q.(Intelligence Quotient) :** A computer is not a magical device. It is no intelligence of it's own. User can determine, what tasks will the computer perform. So a computer cannot take its own decision as you can. (A computer can not take it own decision in this regard.).
- ❖ **No Feelings:** Computer has no feelings. They have no emotions, because they are machine. Computer is not like human heart and soul. Computer cannot make such judgments on their own. Their judgment is based on the instructions given to them in the from of programs, that are written by us

22(a) Give one function of each of the following tool bars in Ms Word software  
3mks.

**i) Scroll bars.**

A **scrollbar** is an object in a graphical user interface (GUI) with which continuous text, pictures or anything else can be scrolled including time in video applications, i.e., viewed even if it does not fit into the space in a computer display, window, or viewport.

**ii) MENU BAR**

Menu bar is a region of a screen or application interface where drop down menus are displayed.

**ii) Status bar**

A computer's status bar is the bar found at the bottom of the browser window. When the Internet is in use, the main function of this bar is to show the computer's progress in loading the website, so it can be referred to as the

(b) Explain when do we use save and save as option in word processors. 2mks

- ❖ We use save as when we are saving the document for the first time and save when we are saving an already saved document where some changes have been made

**(c) Define Mail Merge**

**2mks.**

- ❖ Mail merge is a software function describing the production of multiple (and potentially large numbers of) documents from a single template form and a structured data source.

**(d) In relation to the word processor, explain the following terms. 2mks**

**(i) Formatting a document**

- ❖ Formatting refers to enhancing the appearance of a document. You format text, paragraphs, pages or the entire documents

**(ii) Editing a document**

- ❖ Refers to making necessary changes to an existing document tools for editing include spelling and grammar checkers thesaurus, undo and redo, find and replace etc.

**(e) What is word wrap?**

**1 mk**

- ❖ Word wrap is the additional feature of most text editors, word processors, and web browsers, of breaking lines between and not within words, except when a single word is longer than a line.

**23.(a) Differentiate between database and DBMS**

**4mks**

- ❖ The database holds the records, fields, cells. with data. The DBMS is the "tools" used to manipulate the data in the database. An example of a DBMS is SQL Server.
- ❖ Database is basically a collection of data which is stored in a computer in a structured manner. A database model is utilized for organization of such data and its structuring. There are many different types of these models such as relational model, hierarchical model and network model etc.
- ❖ On the other hand, a DBMS or Database Management System is software which is used for management of different databases. A DBMS makes use of these structural models and implement them on their networks. The structure of a Database is provided by the DBMS. It has helped in storage and retrieval of data

(b) Mrs. Mukasa is a dentist; she keeps her patients' records on a computer:

**(i) Which application would be best suited for this task? 1mk**

❖ Ms access

**(c) Samples of the dental records are shown below.**

Firstname	Janat	Robert	Fred	Isaac
Surname	Ndagire	Mugabe	Mpanga	Kiwanuka
Date of birth	17 <sup>th</sup> /10/1990	14 <sup>th</sup> /01/1990	07 <sup>th</sup> /03/1991	14 <sup>th</sup> /07/1991
District	Luwero	Luwero	Mukono	Jinja
Appointment	15 <sup>th</sup> /05/2007	15 <sup>th</sup> /06/2007	26 <sup>th</sup> / 06/2007	30 <sup>th</sup> /10/2007
Town	Wobulenzi	Kasana	Kiyindi	nkokonjeru

**(i) State the number of Fields shown above. 1mk**

❖ 6 fields

**(ii) State the number of records shown above. 1 mk**

❖ 24 records

**(d) At the end of the week, the dentist makes a back up of her patients file.**

**(i) What is a back up? 2mks**

❖ Backup is the activity of copying files or databases so that they will be preserved in case of equipment failure or other catastrophe. Backup is usually a routine part of the operation of large businesses with mainframes as well as the administrators of smaller business computers.

**(ii) State one reason why she keeps a back up? 1mk**

- ❖ Destroyed Files Aren't Always Recoverable. While a skilled computer repair specialist can recover the majority of lost files, there are times when destroyed files or deleted files simply cannot be recovered. When you take the time to periodically backup data, you can easily bring back the files that have been lost.
- ❖ Your Laptop or PC Might Get Lost or Stolen. No one wants to believe they will ever be the victim of theft, but the reality is that there is always the possibility of your PC or laptop getting stolen.

- ❖ Temporary Storage Isn't Meant for the Long Term. You might think it is unnecessary to backup data if you are using temporary storage devices to store your information. .
- ❖ Power Failures and Spikes are Unpredictable. Power failures and spikes can also result in destroyed files that can be difficult to recover. This is because power failure and spikes can completely fry your motherboard or hard drive, making it difficult and often impossible to recover destroyed files.
- ❖ Humans are known to Make Mistakes. Whether you accidentally spilled coffee on your laptop's keyboard, you failed to update your virus protection or you simply pressed the "delete" key at the wrong time, you are human and you will make mistakes on occasion.

24. (a) Define the following.

**(i) Data communication**

**2mks**

Data communication as the transfer of information between two points, either via an analogue (sine wave) electrical signal. or digital (binary ) signal via electrical pulses or optically via light pulses

(ii) Full duplex

2mks

**A duplex communication system** is a system composed of two connected parties or devices that can communicate with one another in both directions. (The term multiplexing is used when describing communication between more than two parties or devices.)

**A full-duplex (FDX)**, or sometimes double-duplex system, allows communication in both directions, and, unlike half-duplex, allows this to happen simultaneously. Land-line telephone networks are full-duplex, since they allow both callers to speak and be heard at the same time. A good analogy for a full-duplex system would be a two-lane road with one lane for each direction.

**(b) Give six advantages of e-commerce.**

**6mks**

- Faster buying/selling procedure, as well as easy to find products.
- Buying/selling 24/7.
- More reach to customers, there is no theoretical geographic limitations.
- Low operational costs and better quality of services.
- No need of physical company set-ups.
- Easy to start and manage a business.
- Customers can easily select products from different providers without moving around physically.

**25. (a) Most computers today have three types of ports.**

**(i) What is a port?**

**2mks**

- ❖ In computer networking, the term *port* can refer to either physical or virtual connection points.
- ❖ Physical network ports allow connecting cables to computers, routers, modems and other peripheral devices. Several different types of physical ports available on computer network hardware include:

**(ii) Give examples of these three ports.**

**3mks.**

- ✓ Ethernet ports
- ✓ USB ports
- ✓ serial ports

**(b) Outline 5 precautions that should be taken in a computer lab.  
5mks.**

- ✓ Pupils are prohibited to enter the lab unless authorized by the teacher.
- ✓ Scan diskettes before using them.
- ✓ Report all problems related to the system to the teacher.
- ✓ Do not attempt to repair or tamper with lab equipment.
- ✓ Be responsible when using equipment, software and facilities in the lab.
- ✓ Do not move any equipment from its original position.
- ✓ Do not remove or load any software into the computer.
- ✓ Do not change the settings in the computer.
- ✓ Save all work in external storage device and not in the computer.
- ✓ Do not bring in bags, food and drink into the lab.
- ✓ Turn off the computer accordingly after use.
- ✓ Switch off all power supplies before leaving the lab.
- ✓ Internet facility is strictly for educational purposes only.
- ✓ Teachers should record the use of computer lab in the lab logbook.
- ✓ All users should record the use of computers in the computer logbook.
- ✓ The Lab should be kept clean and tidy at all times.

**26. (a) Define a file manager.**

**2mks**

**file manager** or **file browser** is a computer program that provides a user interface to work with file systems.

**(b) Give any two functions of a file manager**

**2mks**

- They present the user with a two-panel directory view with a command line below. Either panel may be selected to be active; the other then becomes passive



- They provide close integration with an underlying OS shell via command line, using the associated terminal window that permits viewing the results of executing shell commands entered on the command line (e.g., via Ctrl-O shortcut in Norton Commander).
- They provide the user with extensive keyboard shortcuts.
- The file manager frees the user from having to use the mouse.
- Users can create their own file associations and scripts that are invoked for certain file types and organize these scripts into a hierarchical tree (e.g., as a user script library or user menu).<sup>[citation needed]</sup>
- Users can extend the functionality of the manager via so-called *User menu* or *Start menu* and extensions menu. Norton Commander introduced the concept of user-defined file associations that is now used in all modern file managers.<sup>[c]</sup>

(c) Differentiate between a programming language and a utility program 4mks

**A programming language** is an artificial language designed to express computations that can be performed by a machine, particularly a computer. Programming languages can be used to create programs that control the behavior of a machine and/or to express algorithms precisely while **A Utility program** that performs a specific task related to the management of computer functions, resources, or files, as password protection, memory management, virus protection, and file compression.

**(d) List any four utilities**

**4mks**

Utility software is actually a kind of computer software which is designed to help in management and tuning of computer hardware, operating system and application software. It performs a single task or a number of small tasks. The examples of Utility software are as follows:

- Disk defragmenters
- System Profilers
- Virus scanners
- Application launchers
- network managers
- Encryption utilities.

### **SECTION C:**

**Attempt any one question from this section.**

27. (a) Define the term computer system and give examples of its components. (6 marks)

A system of interconnected computers that share a central storage system and various peripheral devices such as a printers, scanners, or routers. Each computer connected to the system can operate independently, but has the ability to communicate with other external devices and computers.

## Computer Components

Every computer Consists of the following basic components:

- ❖ Computer Case - Where all of the components are stored.



- ❖ CPU - It is basically the brain of your computer. The CPU is a used to process everything from basic to complex functions in a computer.



- ❖ RAM - RAM is memory that attaches to the motherboard. RAM is hardware used to temporarily store and access data.



- ❖ Motherboard - A Motherboard is the most important component in a computer system. All of the other hardware in a computer system connect to the motherboard.



- ❖ Power Supply - A Power Supply is the sends power to all of the other hardware so they can operate.



- ❖ Hard Drive - A Hard Drive is used for permanently storing files and programs.



- ❖ Disk Drives - Disk Drives can be a floppy drive, CD drive, DVD drive or other possible file storage devices that are used in a computer.



- ❖ Video Card - A Video Card is the part of a computer system that converts binary code from the CPU so you can view it on a monitor.



- ❖ Monitor - The part of a computer that allows you to see what the computer is processing.



- ❖ Keyboard - A keyboard allows a computer user to enter text commands into a computer system.



- ❖ Mouse - A mouse allows a computer user to use a point and click interface to enter commands.



- ❖ Using a picture of the inside of a computer, I have labeled where each component is inside the computer. This will be the most helpful if you are looking for information before you repair or upgrade the components in your computer.



(b) Describe six components of computer system.

(12 marks)

(c) Pick any two components and give examples.

(2 marks)

**28. (a) Explain advantages of using computer in society.**

**(10 marks)**

- ❖ Computer never tired (maybe if it's too hot to be damaged),
- ❖ Having a high speed and accuracy in working out its functions,
- ❖ Having a compact storage media and large capacity,
- ❖ Able to process large amounts of data and,
- ❖ It can open new job opportunities as a computer expert.

**(b)What are the demerits of using computers of computers in our society**

**(10 marks)**

- ❖ Humans are increasingly dependent with the help of computers,
- ❖ Reduced labor due to work being replaced by computers,
- ❖ Computers do the work in accordance with the human command, if there are errors, computer still working on these errors.

29. (a) Explain what is meant by volatile and non-volatile when referring to primary memory.

Types of memory that retain their contents when power is turned off. ROM is nonvolatile, whereas RAM is *volatile*. This term often refers to the CMOS memory in PCs that holds the BIOS. **While** "Volatile memory", also known as "volatile storage or primary storage device", is that requires power to maintain the stored information,

(4 marks)

(b) Explain the advantages and disadvantages of using primary and secondary storage devices.

Advantages of using primary memory

- ❖ Permanent Programs. Primary memory in a computer is used to write the permanent programs for the operating system. This is referred to as "read only" memory because a user cannot change the files found there.

Read-only memory allows a computer to perform complicated functions in a short amount of time because the programs are fully integrated into the system, so processor speed isn't affected while the computer is searching for the program's location.

- ❖ Program Access. Another facet of primary memory is known as random access memory, or RAM. This is the dry erase board of primary computer memory---users can write and store files with it. RAM provides the computer with a dedicated amount of power to access nonessential programs like games and retrieve files that have been saved using other computer programs.
- ❖ Rewrite Abilities. Programs stored using RAM may be uninstalled and reinstalled at the user's discretion. This allows a computer owner to customize desktop programs as he sees fit without having to worry about preserving the functionality of his computer because essential components are protected in read-only memory. Should a computer game be taking up too much room on the hard drive, it's no problem to uninstall the program and regain that data space for use with another file or program because the data is accessed through RAM.

Advantages

- ❖ Very large volumes of data kept
- ❖ Data stored in them is more stable and permanent

Disadvantages of secondary memory

- ❖ Some are very slow
- ❖ Capacity of storage is also limited

(16 marks)

**SECTION B**

21. A sports shop owner uses a spreadsheet to calculate his profits. This is part of the spreadsheet:

	A	B	C	D	E	F
1	ITEM	SELLING PRICE (Shs)	COST PRICE (Shs)	PROFIT PER ITEM (Shs)	NUMBER IN STOCK	OVERALL PROFIT
2	Flask	4500	4000	500	126	
3	Golillos	4400	3800	600	145	
4	Milk	7800	6500	1300	104	
5	Ice Cream	5100	4200	900	56	
6	Blue Band	4000	3200	800	101	
7	TOTAL PROFIT					

(a) Give the reference of the cell that contains Shs. 4200. (1 mark)

.....C5.....

(b) How many columns are shown in this part of the spreadsheet?

.....6 columns.....(1 mark)

(c) Write down the formula which was entered in cell D2. (1 mark)

.....=B2-C2.....

(d) When the spreadsheet was created a similar formula to cell D2 had to go in cells D3 to D6. Describe how to enter these formulae without typing them. (2 marks)

.....To copy the required formular from C2 to other cells, activate Cell D2, click and drag its fill handle (black square dot at bottom right corner of cell) over the cells D3 to D6.....

(e) Write down the formula which should be entered in cell F2 to calculate the overall profit got after selling all the 126 flasks in stock. (1 mark)

.....=D2\*E2.....

(f) Write down a function that can be entered in cell F6 to calculate the total profit for the shop owner. (1 mark)

.....=SUM(F2:F6).....

(g) Which spreadsheets feature was used to join the cells F1 to F5 into one combined cell?

(1 mark)

.....Merge cells.....

(h) Apart from performing calculations, mention any other two other tasks that spreadsheet software can perform for the shop owner.

- Performing *What-if Analysis* on data
- Creating charts and graphs.
- Sorting text (Alphabetically or otherwise)
- Acting as a small database, etc.

22. (a) With examples, distinguish between Custom-made applications and Off-shelf applications (04 marks)

**Off the shelf software;** it is a form of application programs that are sold by software vendors ready for use.e.g Microsoft office application programs.

**Customized software;** this is a form of software that is created by programmers on user's request to perform specific function.e.g school fees management software or supermarket sales management application.

(c) Define a keyboard shortcut as used in word processing program  
A shortcut is a combination of keys on the keyboard pressed together or in succession in order to issue a command to the computer.

(d) What is the function of the following shortcuts? (03 Marks)

i. Ctrl+p

Displays print dialog box for you to select the desired option before printing.

ii. Ctrl+Z

Undo the recently effected command.

iii. Ctrl+V

Paste copy of information from the clipboard.

Iv Ctr+]

Increase font size by 1 pt.

**23. (a) Give two examples of presentation software (02 Marks)**

- King soft presentation
- Ms Power point
- Apple keynote
- Harvard graphics
- Open office.org Impress
- Corel presentation

(b) Define the following terms as applied to presentation software(03 Marks)

i. Slide

Is a single page in a presentation.

ii. Place holder

It is an attribute that specifies and describes the expected value of n input field.

or description of the expected format

iii. Action button

It is feature under presentation software that links you to various slides in a presentation with a lot of ease.

**(c) State any two factors considered to create a good presentation. (02 Marks)**

- i. Simplicity in design
- ii. Consistency in design
- iii. Font size clarity
- iv. Suitable Background
- v. Font color (good color contrast)

- vi. Relevant images
- vii. Suitable animations
- viii. Suitable transitions

**(d) (i) Define the term multimedia as related to presentations(01Marks)**

Refers to use of computer program to integrate text, graphics, audio, sound and video into a single file or medium of communication.

**(ii) Give the difference between slide and handout mode of Printing.**

(02 Marks)

Slide option enables the use to print each page of the presentation independently while handout option enables you to print multiple pages of a presentation on a single page.

**24. (a) (i) Define booting of a computer (01 Marks)**

Refers to starting or restating of a computer system.

Or Loading of an operating system into memory or resetting it.

(ii) List and explain two types of booting (02 Marks)

(i) **Cold booting** refers to stating of a computer from power off status

(ii) **Warm booting** refers to restating of a computer when it has been on.

(b) Differentiate between system configuration and trouble shooting

(02 Marks)

System configuration is a tool that can help to identify problems that might prevent operating system from loading while trouble shooting is a process of fixing technical problem that has failed the computer to operate normally.

**(c) (i) What is software installation?**

**(01 Marks)**

It is the act of making a computer program ready for execution.

**(ii) Mention two devices on which software can be installed**

(2 Marks)

Phones

I Pads

Laptops

Tablets

**(iii) Explain two factors you would consider before installing software on a computer. (02 Marks)**

- Hard disk free space
- Amount of RAM
- Compatibility with the computer basic design
- Processor speed
- Compatibility with the OS

**d). Why are device drivers too important during operating system software installation? (02 marks)**

It facilitates detection of attached hardware devices.

It activates wireless network.



It provides an interface between hardware and software  
It controls the use of the attached device on the computer.

**25. (a) Define a printer? (01 Marks)**

Is an out put device that transforms a soft copy of information into a hard copy on a physical media like a paper.

(b) State two advantages of LaserJet printers over dot matrix printers (02Mrks)

- i. They produce better quality output
- ii. They are faster in printing
- iii. Some can print colored output.
- iv. They are relatively quiet when printing

(c) (i) What is a Central processing unit (CPU) (01 Marks)

Is the brain of the computer where data is processed into meaningful information

(ii) Describe any three components of the CPU (03 Marks)

**ALU:**

It is a component of the processor that performs arithmetic and logical operations including calculations

**Control Unit:**

This is part of the processor that coordinates and manages other parts of the computer system.

**Registers**

Is the part of the processor that hold piece of data and instruction one at a time during processing.

**(c).(i) What are pointing devices? (01 mark)**

Pointing devices are input computer hardware used to control the cursor on the computer display screen. Or: devices that input *special* data into the computer.

**(ii) State any three pointing devices you know. (03 marks)**

- Mouse
- Track ball
- Touch pad
- Track Point
- Joystick
- Digitizing tables and Stylus pen,
- Touch screen etc.

26. Babirye owns a company which has a small LAN of computers.

**(a) Give two advantages of having computers networked. (2 marks)**

- Only one printer is needed, Only one scanner is needed (Sharing of hardware)
- Data can be shared between computers/data can be accessed by one computer from another more easily
- Software can be shared/updated more easily
- All computers can access the internet through one connection

**(b) She wants to connect the LAN to the internet. Name the device he would need to be able to do this. (2 marks)**

- Router / Modem

(c) Give two benefits and two drawbacks of connecting to the internet.

**Benefits:**

- Can communicate with other companies by email
- Can use the internet to place orders
- Can use the internet to buy materials
- Can hold video conferences
- Can create own website to publicise company

**Drawbacks:**

- Workers may access undesirable sites
- Workers may waste time playing games/going on social network sites/updating their blog/
- online shopping/banking
- Viruses/malware could be downloaded
- Could make the company susceptible to hackers

**(c) (i) Different between a website and webpage (01 Marks)**

A website is a collection of related web pages while a web page is an electronic document about a particular subject stored on the World Wide Web.

**(ii). Explain two benefits Babirye will realize if she creates a website for her company. (02 marks)**

- It provides an online presence for her company
- It advertises services and goods offered.
- It facilitates communication
- It facilitates online registration
- It facilitates on line assessment in case of a school
- It facilitates collaborative research

## SECTION C

**27. (a) Differentiate between a computer virus and a bug**

Is a computer program which attaches its self to the system and alters the normal functioning of the computer while a bug is an error in a computer program.

Or

A malicious program that replicates files and result into loss of data or malfunction of the computer while a bug is an error in a computer program.

(b) Discuss the various ways which can be adopted to protect computers from virus infection.

**Explain ten ways how the internet is used to commit illegal activities.**

- i. Writing malicious codes to infect computers i.e. viruses
- ii. Accessing of computer resources illegally (hacking)
- iii. Using software without license (piracy)
- iv. Phishing
- v. Spamming (sending unsolicited messages)
- vi. Cyber terrorism.
- vii. Cyber bullying
- viii. internet fraud

**Broadcasting immoral material /literature (pornography and slander)**

- Forgery
- Changing the source code
- Plagiarism
- Cracking
- Eavesdropping
- Tapping
- Vandalism

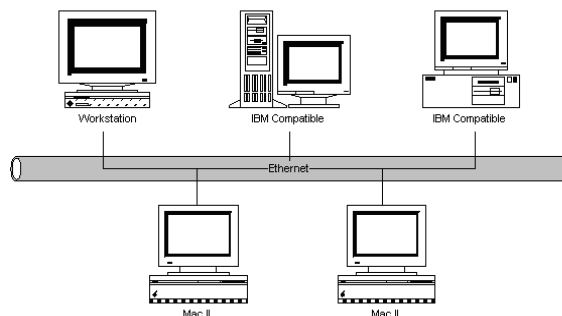
**29.(a) Define the term network topology.**

Is an arrangement of computers or other communicating devices to facilitate communication in a network.

**(b) With illustrations explain four network topologies.**

Bus topology

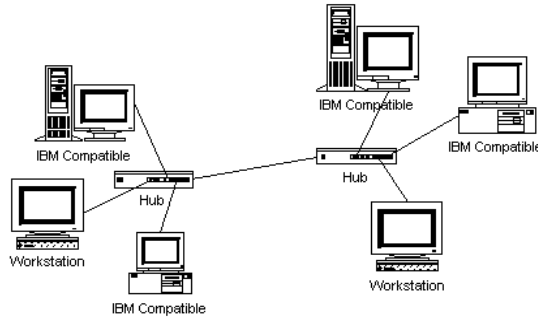
This is a LAN topology which consists of single central cable that connects all computers and devices together.



Star topology is a LAN topology in which all the computers and devices are connected to a central computer thereby forming a star structure.

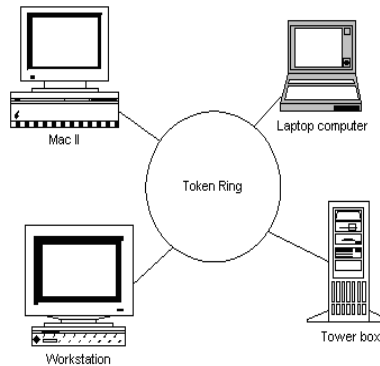
Or

A network configuration where all communication to workstations on a network go through a common hub or switch.



### Ring Topology

Is a LAN which consists of cables connecting communication devices forming a closed ring or a loop.



### Mesh/Highbrid

Is a network topology which combines the bus, star and ring network to form one network.

## SECTION B (60 MARKS)

1. a) What is a **device driver**?

**(2 marks)**

***Is a small program that tells the operating system how to communicate with a device.***

b) Give **two** devices that may require the installation of a device driver

- **Keyboard**
- **Mouse**
- **Scanner**
- **Digital camera**
- **Flash disk**

**(Any 2x1=2 marks)**

c) Name **two** kinds of information normally requested to log on to a multiuser operating system

**(2 marks)**

- **Username**
- **Password**

d) Name **four** functions that are normally carried out by an operating system

- **Starting up the computer**
- **Managing memory**
- **Managing programs**
- **Monitoring print jobs**
- **Managing security**  
(Any 4x1=4 marks)

2. a) (i) What is a **primary key**?

- **An attribute selected to act as the unique identifier for each occurrence of an entity or relationship.**
- **Is a candidate key to uniquely identify each row in a table.**
- **A set of one or more columns in a database table whose values, in combination, are required to be unique within the table.**

(Any 1x2=2 marks)

ii) Give **two** examples of database management programs

- **Microsoft Access**
- **FileMaker Pro**
- **Lotus Approach**
- **dBase**
- **Paradox**  
(Any 2x1=2 marks)

(ii) Mention **four** merits of using electronic databases

- **Data Integrity** – By having one location for the data, it is more convenient and easier to make sure that the stored data is correct. A database can also be set up to verify that input data is correct for the type of field.
- **Data sharing** – Computerized databases can be easier to share between a large of group of people over vast locations. For example, the counters at the banks all share the same customer accounts information.
- **Data security** – The computerized database can be shared with everyone, and only allow authorized people to make changes or look at confidential reports in the database.
- **Editing / keeping the Data Current** – By making changes in a single location all available data is kept up to date. Instead of having to change attendance records in different files (class roll, duty roll, etc) changing it in one location means all information is current.
- **Tables** – Tables can be created to store data. When new relevant information needs to be included in a database tables can be easily modified to include new files.
- **Queries** – Queries can be used to create custom views of data. Custom views allow you to limit the data to only those items you want to see. You can even sort the information so it is easier for you to find items.
- **Reports** can be generated to display the information in a prettier format.

3. a) (i) What is a **browser**?

– **A computer program for viewing web pages.**

**- Is a software application which enables a user to display and interact with text, images, videos, music, games and other information typically located on a Web page at a website on the World Wide Web or a local area network**

**- A sophisticated software program which allows the user to search for information available electronically on the World Wide Web.**

**- A program (software) that is used to look at various kinds of Internet resources.**

(ii) Give **two** examples of browsers

- **Opera**
- **Google Chrome**
- **Mozilla Firefox**
- **Internet Explorer**
- **Safari**
- **Netscape**
- **K-Meleon**
- **SeaMonkey**
- **Galeon**
- **Konqueror**
- **Camino**
- **iCab**
- **Mozilla Suite**
- **Sunrise**  
(Any 2x1=2 marks)

b) Mention **three** advantages of using email as a means of communication

- **You can communicate quickly with anyone on the Internet.** Email usually reaches its destination in a matter of minutes or seconds.
- **You can send letters, notes, files, data, or reports all using the same techniques.** Once you learn how to use your email program, everything is sent the same way.
- **You don't have to worry about interrupting someone when you send email.** The email is sent and delivered by one computer system communicating with the Internet. Although it is put into someone's mailbox, the recipient isn't interrupted by the arrival of email.
- **You can deal with your email at a convenient time.** You don't have to be interrupted when email arrives, and you can read it or work with it when you have the time. Also, you can send it at a convenient time. It doesn't have to be written or sent at a time when you know the recipient will be available. This is what we mean by the term **asynchronous communication**.
- **You don't have to be shy about using email to communicate with anyone.** Email isn't anonymous-each message carries the return address of the sender-but you can write to anyone with an Internet address. All the messages appear the same to the person who gets the email. The messages are generally judged on what's in them, not where they're from.
- **The cost to you for email has nothing to do with distance, and in many cases, the cost doesn't depend on the size of the message.** Most Internet access charges are based on the number of hours per month you access the Internet, or you pay a flat monthly fee.

c) Outline **three** limitations of using email as means of communication. (3 marks)

- **Email isn't necessarily private.** Since messages are passed from one system to another, and sometimes through several systems or networks, there are many opportunities for someone to intercept or read email.
- **Some email systems can send or receive text files only.** Even though you can send and receive images, programs, files produced by word processing programs, or multimedia messages, some folks may not be able to properly view your message.
- **It's possible to forge email.** This is not common, but it is possible to forge the address of the sender. You may want to take steps to confirm the source of some email you receive.
- **It's difficult to express emotion using email.** The recipient doesn't have the benefit of seeing your facial expressions or hearing your voice. You have to be careful with humor or sarcasm, since it's easy for someone to take your message the wrong way.
- **You can receive too much or unwanted email.** You can receive "junk" email in the same way you receive other types of junk mail. On the Internet,

junk mail is called **spam**. You may have to take active steps to delete the email you receive and try to stop it from being sent to you in the first place

- **You may not know about the person with whom you are communicating.** The communication is often all in text and it's possible for us to get an incorrect impression of the person sending us email. Also, some people misrepresent themselves.

4. a)(i) Differentiate between a **cold boot** and a **warm boot** (2 marks)

**A cold boot is the process of turning on the computer after it has been powered off completely while a warm boot is the process of restarting, or resetting, a computer that is already turned on.**

(ii) Name **two** kinds of information stored in the CMOS of a personal computer

- **Amount of memory installed**
- **Current date and time**
- **Type of disk drives**
- **Type of keyboard, mouse and monitor**

b) Give **two** examples of secondary storage devices

- **Floppy disk drive**
- **Hard disk drive**
- **Compact Disk drive**
- **Tape drive**

c) Give **four** examples of secondary storage media

- **Floppy disk**
- **Hard disk**
- **Compact Disk**
- **Tape**
- **Flash disk**

5. a) Name any **four** output devices you

- **Plotter**
- **Monitor/Visual display unit**
- **Projector**
- **Smart Board**
- **Speakers**
- **Headphones**

b) Suggest **one** suitable input device for each of the following tasks.

1. To enter instructions in a CLI – **Keyboard**
2. To move the pointer in a GUI – **Mouse**
3. To input text/graphics from hard copies into electronic format – **Scanner**
4. To read the barcodes of products in a supermarket – **Barcode reader**



5. To record human voice into the computer – **Microphone**
  6. To control a video game – **Joystick/game controller**
6. a) What is a **computer network**?
- **Two or more computers that are connected together to share resources such as hardware, data, and software.**
  - **Connection between two or more computers through a cable or some type of wireless connection.**
  - **A collection of a series of computers that are connected to each other.**
- b) Mention **three** network types you know
- **Local Area Network (LAN)** – Connects network devices over a relatively short distance – building, school or home.
  - **Wide Area Network (WAN)** – Spans a large physical distance. The Internet is the largest WAN, spanning the Earth. In short, it is a geographically-dispersed collection of LANs.
  - **Metropolitan Area Network (MAN)** – A network spanning a physical area larger than a LAN but smaller than a WAN, such as a city. A MAN is typically owned by a single entity such as a government body or large corporation.
  - **Personal Area Network (PAN)** – A network used for communication among computer devices (including telephones and PDAs) close to one person.
  - **Storage Area Network, System Area Network, or Server Area Network, or sometimes Small Area Network (SAN)** – Links high-performance computers with high-speed connections in a cluster configuration.
  - **Wireless Local Area Network (WLAN)** – A LAN based on WiFi wireless network technology. WiFi (“Wireless Fidelity”) technology is one that uses radio waves to provide wireless high-speed Internet and network connections.
  - **Campus Area Network, Controller Area Network, or Cluster Area Network (CAN)** – A network spanning multiple LANs but smaller than a MAN, such as on a university or local business campus.
- c) List any **two** network media
- **Unshielded Twisted Pair cable**
  - **Shielded Twisted Pair cable**
  - **Coaxial cable**
  - **Fibre Optic cable**
- d) Write the following in full: **(3 marks)**

1 **IRC- Internet Relay Chat**

## 2 **FTP - File Transfer Protocol**

## 3 **NIC- Network Interface Card**

### **SECTION C (20 MARKS)**

Attempt only **ONE** question in this section. Answers to the question **must** be done in the answer sheet provided.

7. a) Explain any **five** features of a spreadsheet application.
- **Insert text:** Allows you to insert text anywhere in the spreadsheet.
  - **Delete text:** Allows you to erase characters, words, charts, or worksheets as easily as you can cross them out on paper.
  - **Cut and Paste:** Allows you to remove (cut) a section of text from one place in a spreadsheet and insert (paste) it somewhere else.
  - **Copy:** Allows you to duplicate a section of text.
  - **Page layout:** Allows you to define various page sizes and margins.
  - **Search and Replace:** Allows you to direct the spreadsheet to search for a particular word or phrase. You can also direct the spreadsheet application to replace one group of characters with another everywhere that the first group appears.
  - **Headers, Footers, & Page Numbering:** Allows you to specify customized headers and footers that the spreadsheet file will put at the top and bottom of every worksheet. The spreadsheet automatically keeps track of page numbers so that the correct number appears on each page.
  - **Merges:** Allows you to merge text from one file into another file. This is particularly useful for generating many files that have the same format but different data.
  - **Spell Checker:** A utility that allows you to check the spelling of words in a spreadsheet file.
  - **Print:** Allows you to send a spreadsheet file to a printer to get a hardcopy or many hardcopies as you would like.
  - **Thesaurus:** A built-in thesaurus that allows you to search for synonyms (words with similar meaning) and antonyms ("opposites") without leaving the word processor.
  - **Graphics:** The spreadsheet application permits the addition of various types of graphics, such as bar charts, line charts, clip art, and photographs.
- b) Briefly explain five advantages of using Microsoft Excel.
- **The ability to reuse the data as many times as required**
  - **The ability to automatically recalculate the spreadsheet**
  - **The ability to share the data from one application to another**
  - **The ability to be able to apply different types of fonts and cell formatting to your spreadsheet**

- ***The ability to be able to include drawing objects such as photos, lines, Excel art, cartoons, moving and text and even video***
- ***The ability to spell check the whole spreadsheet in one go or at once***
- ***The ability to add up and apply different formulas to your spreadsheet***
- ***The ability to carryout What If scenarios in “real time”***

**SECTION B: (60 MARKS)**

**1. (a). Outline three characteristics of a good computer.**

- ✓ *Speed*
- ✓ *Accuracy*
- ✓ *Storage*
- ✓ *Diligence*
- ✓ *Artificial intelligence*
- ✓ *Automation*
- ✓ *Versatility*

**(b). State the difference between data and information. (02 marks)**

*Date refers to raw facts entered into a computer while, information refers to processed / summarized / meaningful / organized data.*

**(c). Mention any three ways you can emphasize data in a word processor.**

- ✓ *By bolding.*
- ✓ *By underlining.*
- ✓ *By changing font face.*
- ✓ *By using drop caps.*
- ✓ *By changing font sizes.*
- ✓ *By indenting.*
- ✓ *By using footnotes.*
- ✓ *By using tables.*
- ✓ *By using graphics.*
- ✓ *By using word art.*

**(d). State three features of personal computers. (03 marks)**

- ✓ *It is portable.*



3. You are provided with the following table:

Emp_Id	Name	Sex	Date of Birth
JJEB-001	Mukwaya	M	21-04-1980
JJEB-002	Akullo	F	16-12-1992
JJEB-003	Balinda	M	09-10-1983
JJEB-004	Kamoga	M	11-03-1990
JJEB-005	Mutaka	M	31-12-1978

(a). Which key field contains the primary key? (02 marks)

*Em\_Id*

(b). Which field contains Boolean data? (02 marks)

*Sex*

(c). Write down the input mask for date of birth. (02 marks)

*dd-mm-yyyy*

(d). (i). State the formula that will return a query using a criteria of date of birth for members who are equal or greater than 20 years.

*DateDiff("yyyy",[Date of Birth],Date())>=30*

(ii). State two advantages of using an electronic database by an organization.

- ✓ *It is easy to enter and retrieve data in a short period of time.*
- ✓ *A database stores data that is consistent and reliable since at each stage, it is checked for consistency and reliability.*
- ✓ *A database can store data for a very long period of time say 20 years and so in an archive.*
- ✓ *A database is flexible since it can be redesigned, to hold thousands of data.*
- ✓ *A database can be used by many people at the same time.*
- ✓ *Data is frequently updated after each single entry.*
- ✓ *Data is automatically saved as soon as data is entered into a database.*
- ✓ *Data can be retrieved in different formats e.g query, forms, reports, e.t.c.*

**4. (a). Define the following terms:**

**(i). Freeware**

**(02 marks)**

*Is copyrighted software provided at no cost to users.*

**(ii). Shareware**

**(02 marks)**

*Is copyrighted software that is distributed free for a trial period, and payment is required for using the software beyond that trial period.*

**(b). Outline any three utility programs used in a computer. (03 marks)**

- ✓ *Anti-virus utilities: scan for computer viruses and remove them.*
- ✓ *Backup utilities: can make a copy of all information stored on a disk, and restore either the entire disk*
- ✓ *Data compression utilities: output a smaller file when provided with a stream or file.*
- ✓ *Disk checkers: scans the content of a hard disk to find files or areas that are*
- ✓ *Disk cleaners: finds files that are unnecessary to computer and can decide to delete.*
- ✓ *Disk compression utilities: transparently compress/uncompress the contents of a disk, increasing the capacity of the disk.*
- ✓ *Disk defragmenters: increase efficiency by moving data to one side of the disk.*
- ✓ *Disk partitions: divides an individual drive into multiple logical drives*
- ✓ *Disk space analyzers: to get the size for each folder/ sub folders & files in folder or drive. Showing the distribution of the used space.*
- ✓ *Disk storage utilities: ensures that data is stored and files arranged in order of ascending. It also helps the computer to re-arrange data files.*
- ✓ *Archive utilities: output a stream or a single file when provided with a directory or a set of files. Archive utilities, unlike archive suites, usually do not include compression or encryption capabilities.*
- ✓ *File managers: provide a convenient method of performing routine data management tasks, such as deleting, renaming, cataloging, un cataloging, moving, copying, merging etc.*
- ✓ *Cryptographic utilities: encrypt and decrypt streams and files.*
- ✓ *Hex editors: directly modify the text or data of a file.*
- ✓ *Memory testers: check for memory failures.*
- ✓ *Network utilities: analyzes the computer's network connectivity, configure network settings, check data transfer or log events.*

- ✓ *Registry cleaners: clean and optimize the Windows registry by removing old registry keys that are no longer in use.*
- ✓ *Screensavers: were desired to prevent phosphor burn-in on CRT and plasma computer monitors. Modern screensavers are used primarily for entertainment or security.*
- ✓ *System monitors: for monitoring resources and performance in a computer system.*
- ✓ *System profilers: provide detailed information about the software installed and hardware attached to the computer.*
- ✓ *Sorting utility: for organizing files in any choose order*
- ✓ *Merging and combining utility: Merges or combines different files in one.*
- ✓ *Diagnostic utility: compiles technical information about a computer's hardware and certain system software programs and then prepares a report outlining any identified problems.*
- ✓ *Debuggers: helps the computer to find out the error and fixes it.*
- ✓ *Data recovery: enables the user to get back all the data that might have been deleted or lost by virus from a computer.*
- ✓ *System recovery: it enables the user to get back to the last best known configuration settings of a computer.*
- ✓ *Uninstall utility: it enables the user to remove an application program and its associated attributes from the system.*

**(c). (i). Mention any two examples of software suite. (01 mark)**

- ✓ *Ability Office*
- ✓ *Microsoft office Suite (MS word, MS. PowerPoint, MS Excel, MS Access)*
- ✓ *Adobe Master Collection*
- ✓ ***OpenOffice.org***
- ✓ ***Lotus Smart Suite***
- ✓ ***Apple iWork***

**(ii). State any two factors you will consider before buying computer software. (02 marks)**

- ✓ *Cost of the software.*
- ✓ *Degree of user friendliness.*
- ✓ *Comparability with existing devices and software.*
- ✓ *Level of productivity of the organization.*
- ✓ *Technical support available.*
- ✓ *Willingness of user.*

- ✓ *Number of users for installation(s) allowed.*
- ✓ *Software brand and author.*
- ✓ *Ability to allow updates and upgrades.*
- ✓ *Free from software bugs.*
- ✓ *Availability of the software on the market.*
- ✓ *Type of computer available.*

**5. (a). Distinguish between data processing and word processing. (02 marks)**

*Data processing is the collection and manipulation of items of data to produce meaningful information, **while**,*

*Word processing is a term that means using a computer to create, edit, and print documents.*

**(b). Mention one function of the following parts found in inside a CPU:**

**(i). Control unit. (02 marks)**

*The control unit directs and coordinates most of the operations in the computer.*

**(ii). ALU. (02 marks)**

*The ALU performs the arithmetic, comparison, and logical operations. Arithmetic operations include addition, subtraction, multiplication, and division.*

**(iii). Registers. (02 marks)**

*Are high-speed temporary storage locations used to hold data and instructions.*

**(c). State two differences between RAM and ROM. (02 marks)**

- ✓ *ROM does not require a constant source of power to keep the information stored on it ( i.e. non volatile), **whereas**; RAM does require a constant source of power to retain the information (i.e. volatile).*
- ✓ *Content in RAM can be modified, **while**; content in ROM cannot be modified.*
- ✓ *ROM can also be found in computers, to store the programming needed to begin the initial boot up process when turning on a computer, **while**; RAM does*



*not store programming needed to begin the initial boot up process of a computer.*

- ✓ *RAM is used in computers, as well as other devices, to store information of the programs currently running on the computer, **while**; ROM does not store documents the user is currently working on.*
- ✓ *RAM is fast because it is connected directly to the CPU; **while**; ROM is slow because it is stored slightly far away from the CPU.*
- ✓ *RAM capacity can easily be upgraded using the additional slots provided, while capacity of ROM can be upgraded, it is fixed.*
- ✓ *RAM is high level memory, while, ROM is low level memory.*
- ✓ *RAM stores data temporarily, while ROM stored data for a long time.*

**6. (a). Define the following terms:**

**(i). Hyperlinks.**

**(02 marks)**

*Or link is a reference to data that the reader can directly follow, or that is followed automatically after a click.*

**(ii). Webpage.**

**(02 marks)**

- ✓ *Is a web document that is suitable for the World Wide Web and the web browser.*
- ✓ *Is an individual page found in a website.*

**(b). State three factors that lead to slow download speed of the internet.**

- ✓ *Slow Internet connection*
- ✓ *Nature and structure of the site being visited.*
- ✓ *Downloading while browsing*
- ✓ *Time of day or day*
- ✓ *Server or website location*
- ✓ *Visitors on site*
- ✓ *Network or site maintenance*
- ✓ *Other major event*
- ✓ *Third-party programs and tweaks*
- ✓ *You or your ISP is under DoS or being attacked*

**(c). (i). State two requirements for setting up a temporary network.**

- ✓ *Computer set.*
- ✓ *Network cable.*
- ✓ *Network interface card.*
- ✓ *RJ – 45*
- ✓ *Operating system.*
- ✓ *Clipping tool.*

**(ii). Mention one function of a tag in a webpage.**

**(01 mark)**

- ✓ *Tells the browser on how to display content.*

### **SECTION C: (20 MARKS)**

**7. (a). Define the term computer virus.**

**(02 marks)**

*Is a small software programs that are designed to spread from one computer to another and to interfere with computer operation.*

**(b). Explain four ways computer virus can be transmitted. (04 marks)**

- ✓ *Opening infected e-mail attachments*
- ✓ *Not running the latest updates*
- ✓ *Pirating software, music, or movies*
- ✓ *No antivirus spyware scanner*
- ✓ *Downloading infected software*
- ✓ *Sharing data and devices across computer networks.*
- ✓ *Using Infected Boot disks*

**(c). Outline any five dangers of computer viruses to hardware. (10 marks)**

- ✓ *Changes volume label.*
- ✓ *Create more than one partition.*
- ✓ *Attempts to access the hard disk drive, which can result in error messages such as "Invalid drive specification".*
- ✓ *Cause the system to run slow.*
- ✓ *Logical partitions created, partitions decrease in size.*
- ✓ *Cause Hardware problems such as keyboard keys not working, printer issues, modem issues etc.*
- ✓ *Disable ports such as LPT or COM ports.*
- ✓ *Caused keyboard keys to be remapped.*

- ✓ *Cause system to hang or freeze randomly.*
- ✓ *Cause activity on HDD or FDD randomly.*
- ✓ *Increase disk access times.*
- ✓ *Cause computer to make strange noises, make music, clicking noises or beeps.*

**8. Explain any ten modern trends in computing that are a security threat.**

- ✓ *Internet of Things (IoT)*
- ✓ *Cybersecurity*
- ✓ *Green computing*
- ✓ *Big Data Visualization*
- ✓ *Cloud Computing in Science and Engineering*
- ✓ *Mobile Computing Meets the Cloud*
- ✓ *Internet Censorship and Control*
- ✓ *Interactive Public Displays*
- ✓ *Next-Generation Mobile Computing*
- ✓ *3D Imaging Techniques and Multimedia Applications*
- ✓ *Haptics in Rehabilitation*
- ✓ *Touch computing*
- ✓ *Social gestures*
- ✓ *Beyond the iPad*
- ✓ *TV Everywhere*
- ✓ *Voice control*
- ✓ *Spatial gestures*
- ✓ *Second-screen experiences*
- ✓ *Flexible screens*
- ✓ *HTML5*

**9. (a). Define a computer laboratory.**

**(02 marks)**

*A computer laboratory is a place where students learn practical uses for computers, such as programming or how to use a spreadsheet program.*

**(b). Outline five measures that can be taken to safeguard hardware equipment in a computer laboratory.**

**(10 marks)**

- ✓ *Burglar proofing the room*
- ✓ *Installing fire prevention and control equipment*
- ✓ *Providing stable power supply*
- ✓ *Installing lightening arrestors on the computer room*

- ✓ *The room should be well laid out with enough space for movement.*
- ✓ *Dust and damp proofing the computer room.*
- ✓ *Cables and power sockets should be well insulated and of the correct power rating to avoid short circuits that can damage computer components.*
- ✓ *The users should not eat or drink in the computer laboratory.*

**(c). Explain four ways computers can be physically abused. (08 marks)**

- ✓ *Disconnecting and connecting computer parts without permission.*
- ✓ *Defacing and vandalizing computer parts.*
- ✓ *Eating and drinking close to a computer.*
- ✓ *Handling equipment without care.*
- ✓ *Tilting monitors.*
- ✓ *Smoking in a computer laboratory.*
- ✓ *Arson activities.*

**SECTION B**

21 (a) (i) *What is the main reason for using BIOS by the computer?*

It performs a hardware check and makes sure that certain crucial pieces of hardware are present and functioning properly.

For example, it makes sure there is a video card, a CPU, memory, and a power supply providing proper voltages.

- It performs memory check
- Configure devices as needed,
- Identify the boot drive, and controls the boot sector on the boot drive, which launches the operating system.

(ii) *I saved my documents on the hard drive 5 minutes ago. I have continued to work. Where is the latest copy of my*

- RAM (Random Access memory)

(b) *Mention two types of buses that affect the speed of computer?*

Buses are the set of wires that carry special information to or from the CPU. There are three types of buses

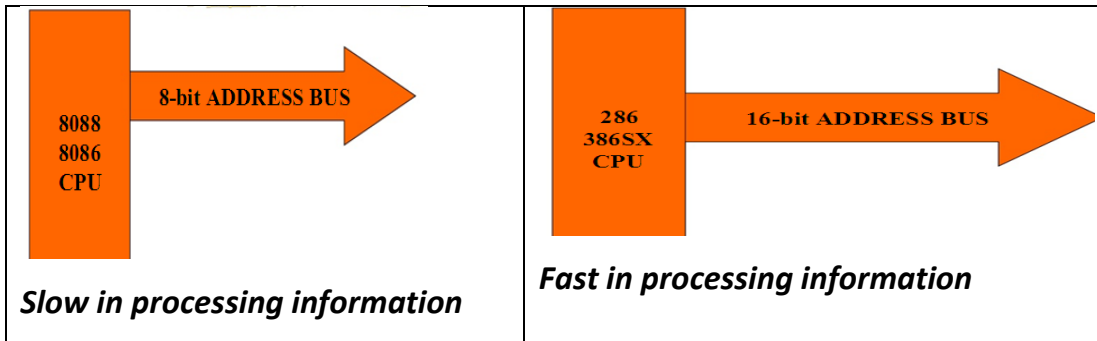
They are:

- Address buses: these buses carry address given by the CPU from one unit to another in the computer.
- Data buses: These buses carry data from one unit to other; it is a bi-directional bus i.e. the data can be carried in both directions.

- Control signal: These buses carry control signal from ALU to memory and from memory to ALU and then to the output unit

The buses that affect the speed of a computer are those ones connected to the CPU

- **Address bus**: the address bus determines the number of individual memory locations the micro processor is capable of addressing.



- Control signal: These buses carry control signal from ALU to memory and from memory to ALU and then to the output unit

**(c) List four instances where a computer will require a warm boot**

- Installation of new hardware
- Installation of new software
- When a computer freezes
- Some components where not connected like the keyboard, mouse etc

**(d) What reason would you give for buying a new video card?**

- Outdated and it is no longer capable of running the latest video games
- Worn out cards

**22. (a) State two ways of keeping data secure for an organization**

- Using passwords
- Data encryption
- Bio metric
- Using screen savers
- Call back systems
- Installation of the antivirus
- Firewalls
- Copy rights and licensing agreement

*(b) Mention three features that make up a font*

- Weight
- Slope
- Optical size
- Metrics
- Letter Case
- Color

*(c) Outline four causes of fire accidents in a computer lab*

- Carrying of water and food in the laboratory
- Short circuits due to poor wiring in the laboratory
- Unstable power supply
- Poor quality power cables
- Unnecessary moving of equipment in the laboratory

*(d) State one function of Light Emitting Diode on a computer's system Unit*

Light emitting Diode (LED) are lights on the system unit that;

- Show that the computer is on
- Show that storage devices like CDROM Drive, Hard disk Floppy disks are installed
- Show that the computer is processing data

23. *(a) Define the following terms as used in spreadsheets applications*

*(i) a cell*

A cell .is the intersection of a row and column

*(ii) Work book*

A work book is a collection of work sheets

*(iii) Auto fill handle*

This a feature in spreadsheet that helps to automatically fill cells by copying the function or formula to the other cells

*(b) State any two features of paint programmes*

The program comes with the following options in its *Tool Box* (from left to right in image):

- Free-Form Select
- Select
- Eraser/Color Eraser
- Fill With Color

- Pick Color
- Magnifier
- Pencil
- Brush
- Airbrush
- Text
- Line
- Curve
- Rectangle
- Polygon
- Ellipse
- Rounded Rectangle

**(c) Mention two practical uses of a screen saver to a computer user**

- **Entertainment** - The most common reason we use screensavers is for the fun of it.
- **Security** - By setting up a screensaver with password protection
- **Uniform look** - Many companies require all employees to use a particular screensaver.
- **Advertisement** - Companies, particularly retail businesses, that have computer in areas accessible to customers will often have a screensaver that promotes their business or product.
- **Information** - A lot of screensavers provide either static or real-time information.

**(d) State any two examples of desktop publishing software programs.**

- Microsoft office Publisher
- Adobe page maker
- Adobe InDesign
- Adobe PageMaker
- QuarkXPress
- FrameMaker, now owned by Adobe
- Greenstreet
- InPage -
- Interleaf
- iStudio Publisher -
- Microsoft Word 2008
- Ovation
- Pages
- PageStream
- Prefis BookMachine

*(ii) What is the meaning of cell merging as used in spreadsheets?*

This is the combination of many cells to make one large cell

**24. (a) Distinguish between a webpage and a website**

A web page is one single page of information designed in HTML language, while a website is made up of a number of different web pages connected by links.

*(b) Write the following in full:*

*(i) BCC: Blind Carbon Copy*

*(ii) HTTPS: Hypertext Transfer Protocol Secure*

*(iii) DNS: Domain Name System*

*(c) List any two ways the internet can be used to improve education*

**Easy Contact: students can contact their friends or teachers via email**

**School / College Projects**

The Internet can be most useful for completing projects in schools and colleges. As the Internet is an ocean of information, covering nearly all subjects known to man

**Encyclopedia**

Sometimes, encyclopedia may not always be available to students and they may have difficulty in gaining access to the books in the library.

**News**

All the latest news are constantly updated on the Internet on different news sites which is one of the major advantages of the Internet in education.

**Online Learning**

Another positive effects of Internet in education is the onset of distance education or online learning.

*(d) Sate any three examples of web authorizing software programs*

- Microsoft front page
- Macromedia Dream weaver
- Note pad
- Netscape composer



**25. (a) Mention any three ways data can be entered into the computer**

- Scanning
- Typing using the keyboard
- Using the mouse
- Using stylus pen to draw maps
- Using microphones

*(b) (i) What is a computer peripheral?*

This is a device that can be attached to the system unit's motherboard e.g. printer, mouse, keyboard

*(ii) Give two examples of computer peripheral devices*

Printers, mice, scanners. Scanners, speakers, external hard disks, flash disks etc

*(c) Distinguish between plug and play and hotspot as used in connecting computer peripherals*

Plug and play is where a device is connected to the motherboard and immediately starts working; it does not require drivers to be installed. While a hotspot is where a device is connected to the computer through other devices or networks e.g. wireless speakers and printers using Bluetooth etc

*(d) Mention any two tasks carried out by a network administrator*

- Installation of new hardware and software on the network
- Managing network traffic
- Testing new network hardware and software
- Advises the organization on items to buy for the network
- Configures the network and provides network usernames and passwords

**26. (a) State why an adult should use internet banking**

- It is fast
- It is reliable
- Prevents security risks
- Withdrawal can be done any time any where
- Money can easily be converted into any currency
- There are interests given to members

*(b) I downloaded MP3s of my favourite pop group from the internet. What software is used to play it on my PC?*

- Windows media player
- Power DVD
- VCL player
- GOM player

*(c) Suppose someone sends you an email when your computer is switched off and disconnected. Will the email be lost?*

No, Email is an electronic message that is stored in the email inbox of your account in space.

*(d) State any two factors that influence the speed access to the network*

- Bandwidth
- Number of computers connected to the network
- Type of net work media used
- Topology
- Location of your computers on the network

21 (A) Characteristics of the 3<sup>rd</sup> generation

- ✓ Integrated circuits
- ✓ Introduction of Operating systems e.g Multics
- ✓ Simple programming languages e.g Basic
- ✓ Low cost compared to 1<sup>st</sup> and 2<sup>nd</sup> generation computers
- ✓ Increased user friendliness.
- ✓ Parallel processing.
- ✓ Small size in size as compared to 1<sup>st</sup> and 2<sup>nd</sup> generation computers.
- ✓ Consumption of low electric power as compared to 1<sup>st</sup> and 2<sup>nd</sup> generation computers.
- ✓ Increased memory compared to 1<sup>st</sup> and 2<sup>nd</sup> generation computers.
- ✓ Introduction of mini computers.
- ✓ Generation of less heat compared to 1<sup>st</sup> and 2<sup>nd</sup> generation computers.
- ✓ Introduction of networking.

(b) (i) Hacking - Gaining illegal (unauthorized) access into computer installations.

**(ii) Computer crime -**

Any illegal actions involving the use of computers or against computers.

(c) Preventing computer crime

- ✓ Physical security e.g bugler proofing, locked key system, security guards, CCTV
- ✓ Cameras.
- ✓ Encryption
- ✓ Passwords and usernames.

- ✓ Recovery plans/back ups
- ✓ Bio-metric devices e.g thumb print readers.
- ✓ Networks especially wireless networking and server – based networks.
- ✓ Call back systems
- ✓ Possessed objects – Items carried to enable the user gain access to the system e.g a card.
- ✓ Anti- virus installation.
- ✓ Activating firewalls.

22. (a) (i) Word wrap. – A feature that automatically moves the cursor, or word/text that doesn't fit in the space left towards the right margin to another line.

(ii) Word processor applications.

- ✓ Ms Word
- ✓ Lotus Word processor
- ✓ Corel Word perfect
- ✓ Word star
- ✓ WordPad
- ✓ Abi word
- ✓ Mac write
- ✓ Ami pro
- ✓ Magic wand etc

b) (i) Booting Refers to the process of loading an operating system into a computers main memory to make a computer ready for use.

(ii) Cold booting – Cold booting refers to turning on a computer after it has been off by loading the operating system.

Warm booting - Resetting the computer when the Operating System is already running by using reset button or ctrl + Alt + Del.

24. (A) (i) **Web page.** - It's a document that uses http on the website covering a particular topic/related topics.

(ii) **Website** – A collection of related web pages. Or world wide web pages maintained by an organization or an individual.

b) (i) **IP Address** - It uniquely identifies each computer/device connected to the network using the internet protocol.

(ii) **ISP** - Internet Service Provider functions:

A company which gives connectivity to the internet.

Electronic mail services

Leasing server space for small businesses.

Web hosting services.

Provision of virtual machines e.g storage space etc

**c) (i) Considerations when choosing a network topology.**

- Cost of installation
- Number of computers and other devices
- Architecture of the building to be used.
- Purpose of the network.
- Distance of connectivity
- Safety provisions of the network
- Personnel provisions/technicalities involved
- Ease in accessing the network.

**(ii) Advantages of star topology.**

- Breakdown of an individual station does not affect other computers on the network.
- It is simple to install and maintain if compared to other topologies like mesh and tree.
- There is less noise (electronic)

**Disadvantages of star topology.**

- Breakdown of the central compute or hub leads to breakdown of the whole network.
- Leads to a “spaghetti” of cables for a large network since each workstation has two cables to and from the hub.

**25. a) Factors to consider when designing a database.**

- Number of tables needed
- Number of fields and field names
- Unique identifiers on fields with unique values.
- Relationships between tables if any
- Practicability of the database.

b) Field - is a name given to a particular/specific piece of data/information about a record.

(iv) Two validation checks.

- Data type check
- Number of characters (Length of sentence)
- Presence check/primary key
- Consistency Check/pattern matching
- Validation rule/range validation rule.

26. a) System software – Programs that start up the computer and manage the general functioning of the system devices and activities.

Application software – Computer programs designed to satisfy specific needs of the user. E.g excel, database, word etc.

b) Functions of operating system

- Provides basic working environment/interface.
- Controlling the use of peripherals.
- Controlling the loading and running of application programs.
- Organizing the use of memory/Memory management
- Booting
- File management
- Protecting hardware and software
- Configuring devices
- Processor management e.g multitasking and time sharing.

(c)(i) A computer virus This is a program which attaches itself to the system and alters the normal functioning of a computer.

(ii) Examples of anti viruses

- Norton Antivirus
- Panda Antivirus
- Avast Antivirus
- MacAfee Antivirus
- AVG Antivirus
- Eset-Nod 32 Antivirus
- Dr. Solomon's tool kit
- Avira Antivirus
- Kaspersky Antivirus
- Escan Antivirus
- F-secure Antivirus
- Netqin Antivirus

## SECTION C

- 27. (i) Utility programs are part of system software which are designed to configure, analyse, optimize and maintain a computer in its working operations.

**(iii) Description of Utility programs.**

- **Anti-virus** utilities scan for computer viruses and remove them
- **Backup** utilities can make a copy of all information stored on a disk, and restore either the entire disk
- **Data compression** utilities output a smaller file when provided with a stream or file.
- **Disk checkers** can scan the contents of a hard disk to find files or areas that are
- **Disk cleaners** can find files that are unnecessary to computer and can decide to delete.

- **Disk compression** utilities can transparently compress / uncompress the contents of a disk, increasing the capacity of the disk.
- **Disk defragmenters** increase efficiency by moving data to one side of the disk.
- **Disk partitions** can divide an individual drive into multiple logical drives
- **Disk space analyzers** to get the size for each folder/ sub folders & files in folder or drive, showing the distribution of the used space.
- **Disk storage** utilities
- **Archive** utilities output a stream or a single file when provided with a directory or a set of files. Archive utilities, unlike archive suites, usually do not include compression or encryption capabilities.
- **File managers** provide a convenient method of performing routine data management tasks, such as deleting, renaming, cataloguing, uncataloguing, moving, copying, merging etc.
- **Cryptographic** utilities encrypt and decrypt streams and files.
- **Hex editors** directly modify the text or data of a file.
- **Memory testers** check for memory failures.
- **Network utilities** analyse the computer's network connectivity, configure network Settings, check data transfer or log events.
- **Registry cleaners** clean and optimize the Windows registry by removing old registry keys that are no longer in use.
- **Screensavers** were desired to prevent phosphor burn-in on CRT and plasma computer monitors Contemporary screensavers are used primarily for entertainment or security.
- **System monitors** for monitoring resources and performance in a computer system.
- **System profilers** provide detailed information about the software installed and hardware attached to the computer.
- Sorting utility for organizing files in any choose order
- Merging or combining different files in one.
- •Diagnostic utility

## **28. Areas in which computers can be applied in society.**

- - Education and training
- - Information and data storage
- - Business – e-business where computers are networked
- - Entertainment and leisure
- - Health and medicine for medical tests, drugs and prescription
- - Transport
- - Communication
- - Accounting and finance
- - Banking
- - Climate and weather

- - Security and military
- - Manufacturing – Robotics, CAD and CAM
- - Hotel and institutional catering
- - General management.
- - Government uses computers to manage the government payroll
- - Space exploration
- - Research

## **28. Functions of word processors.**

- - Allow text to be edited easily e.g insert, delete and move text anywhere in the current document
- - Mailing documents
- - Mail merge.
- - Graphics creating and handling e.g frames, shapes
- - Mathematics formulae especially in tables.
- - Creation of tables
- - Sharing of documents.
- - Comparison
- - Word count
- - Creating web pages.
- - Creation of foot notes and cross references.
- - Creation of letters and document, memos etc
- - Helps in saving on a storage device
- - Helps in formatting and designing of simple office publications.

### **ii). Mention four characteristics of Modern computers (04 marks)**

- Speed: Most computers carry out billions of operations in a single second. The world's fastest computer can perform trillion of operation in one second.
- Accuracy: computers process large amounts of data and generate error-free results provided the data is input correctly and instructions work properly.
- It can process multiple amounts of data.
- Communication: Most computers today can communicate with other computers, often wirelessly. Computers with this capability can share any of the four processing cycle operation (input, process, output and storage)
- Reliability and consistency: the electronic components in modern computers are dependable because they have a low failure rate. The high reliability of computers enables the computer to produce consistent results.
- Versatility: It means the capacity to perform completely different type of work.
- Storage: The computer has an in-built memory where it can store a large amount of

data.

viii. Artificial intelligence

Computers are artificially intelligent. i.e They can be programmed to assume capabilities such as learning, reasoning, adaptation, and self-correction.

b). Mention four measures that should be taken to ensure safety of computers.

(04 marks)

- Always switch on and off the computer in correct order.
- Keep the Laboratory free of dust.
- Avoid making hardware connections when the computer is on.
- Don't bring food and water near the computers to avoid accidental rusting and corrosion
- Computers should be regularly serviced.
- Avoid high temperatures and direct sunlight.
- Use power stabilizers or UPSs to ensure steady power.
- Handle delicate devices with care.
- Don't bring magnetic devices near computers.
- Good aeration and ventilation in computer laboratory.
- Use updated antivirus to guard against viruses and malware.
- Avoid dropping and hardware to the ground as this could cause any of the delicate components to break or be damaged.
- A computer room should have fire extinguishers of carbon dioxide but not water or powder to protect against fires.
- Cables should be placed properly, preferably along walls, avoiding danger of exposing the use to electric shock and displacement.
- Good Security and Burglar proofing to avoid unauthorized access to computer room and theft.
- Standard furniture: The table on which a computer is placed must be strong and wide enough to bear the weight and accommodate all the peripheral devices.

12. (a). State the difference between analogue and digital computers.

Digital Computers carry out computation in form of discrete values or figures e.g.1, 2,

3.....A, B, C

While

Analog computers process data in continuous form or in form of measurement e.g. thermometer

**(b). Mention three classifications of computers.**

**(03 marks)**

- i. Classification by Size
- ii. Classification by process
- iii. Classification by processor power.
- iv. Classification by purpose



**(c). (i). Write the acronym PC in full.**

**(01 mark)**

Personal Computer.

**(ii). Differentiate between data and information.**

**(01 marks)**

**Data** is a collection of unprocessed items, which can include text numbers, images audio and video.

**Data** is raw facts and figures by its self it doesn't provide anything meaningful.

**Information:** Is processed data. It has meaning and is useful to or more people.

**(ii). Mention three stages in the information Processing cycle. (03 marks)**

- i. Input
- ii. Processing
- iii. Output
- iv. Storage

**13. (a). Define the term printer.**

**(02 marks)**

A printer is an output device that produces text on to a physical medium such as a paper or transparent film.

This is a device that transfers a soft copy into a hard copy.

(b). Give two examples of :-

**(04 marks)**

**Impact Printers**

- i. Dot Matrix Printers.
- ii. Daisy wheel Printers.
- iii. Line Printers.

**Non-impact Printers**

- i. Laser jet Printers
- ii. Ink Jet Printers
- iii. Mobile Printers.
- iv. Plotters.
- v. Photo Printers

C. (i). Give two advantages of using LCD monitors than CRT monitors.(02 marks)

- i. They consume less power
- ii. They do not occupy a bigger space.
- iii. They do not emit electronic magnetic radiation.
- iv. They produce little or no glare.
- v. They have a larger viewing angle as compared to CRT

(ii). Apart from printers and monitor list any four output devices that you know.  
(02 marks).

- i. Speakers.
- ii. Headsets
- iii. Head mounted gears.
- iv. Projects
- v. Plotters.
- vi. Fax Machines and Fax modems.
- vii. LED (Light Emitting Diodes.
- viii. Interactive White Board.
- ix. Touch screen.

14. (a). Compact disc –Rom devices are now used to store games. State four advantages of supplying games on the above mentioned device.  
(04 marks)

- i. Compact Discs are cheaper than other storage mediums.
- ii. They keep information permanently.
- iii. They are portable.
- iv. They cannot easily be misplaced like flash disks.
- v. CD cannot easily be affected by a computer viruses
- vi. Almost all system units have CD drives.

b). State two storage media that use: (06 marks)

**(i) Magnetic technology**

- i. Hard disks
- ii. Magnetic tapes
- iii. Floppy diskettes.
- iv. Zip diskettes

**(ii) Optical storage technology**

- i. CD-ROM: (Compact Disc – Read Only Memory)
- ii. CD-R: (Compact Disc –Recordable)
- iii. CD-RW: (Compact Disc –Rewritable)
- iv. DVD: (Digital Versatile Disc)
- v. Blu Ray

**(iii) Solid State technology.**

- i. Flash disk
- ii. Memory Cards

## SECTION B QUESTIONS

21. (a) In each of the **4 generations** what was the cause for the increase of **speed, power, or memory**?

1<sup>ST</sup> Generation .....Vacuum tubes and Magnetic Drums

2<sup>nd</sup> Generation ..... transistor and magnetic core memories

3<sup>rd</sup> Generation .....Integrated Circuits

4<sup>th</sup> Generation .....Microprocessors

**(b) List any the four elements of a computer system. (04 marks)**

- ✓ Hardware
- ✓ software
- ✓ data
- ✓ Procedures
- ✓ People

**(c) List down two examples of embedded computer systems (02 marks)**

- ✓ ATMs
- ✓ cell phones
- ✓ printers
- ✓ thermostats
- ✓ calculators
- ✓ videogame consoles

22. (a) State any two tasks performed by a computer processor chip (02marks)

- ✓ processing instructions of a computer program
- ✓ Carrying out computer operations such as Arithmetic, control and Logical operations

(b) Difference between tower-model desktop computer and desktop model computer.

- ✓ Tower Model desktop computer system is one that Has a tall and narrow system unit that usually sits on the floor with The power supply, motherboard, and mass storage devices are stacked on top of each other in a cabinet.

While

- ✓ Desktop Model computer is a personal computer (PC) in a form intended for regular use at a single location designed in such a way that the system unit, input devices, output devices, and any devices fit entirely on a desk or table.

(c) State any four causes for computer hardware malfunctioning  
(04 marks)

- ✓ Inadequate RAM
- ✓ Inadequate power supply
- ✓ Poorly connected adapters
- ✓ Lack of servicing system components/Poor maintenance policy
- ✓ Faulty power connection cables
- ✓ Low power supply or voltage
- ✓ Damaged slots/ports for Mouse, Keyboard , speakers, monitors etc
- ✓ Etc

23. (a) Explain the meaning of the following type of computer software

(i) Application software (02 marks)  
is a set of computer programs designed to permit the user to perform a group of coordinated functions, tasks, or activities.  
Examples of an application include a word processor, a spreadsheet design and management system, an aeronautical flight simulator, a console game, a drawing, painting, and illustrating system, or a library management system etc

(ii) Middle ware (02 marks)  
is the software that connects software components or enterprise applications.  
Middleware is the software layer that lies between the operating system and the applications on each side of a distributed computer network.  
Examples include Game engine software such as Gamebryo and Renderware are sometimes described as middleware, because they provide many services to simplify game development. The Android operating system uses the Linux kernel at its core, and also provides an

application framework that developers incorporate into their applications

b (i) What type of software produced this message? (01 mark)

✓ Utility software

(ii) List down any three means Kifampa could employ to remove the computer virus. (03 marks)

- ✓ Run virus scan
- ✓ Remove Viruses Manually
- ✓ Reboot into Safe Mode with Networking. Since most viruses attach themselves to startup services, deleting the service while the virus is running will allow it to recreate the entry in your registry. Safe Mode will only load essential startup services, allowing you to safely disable infected ones.

c) Give two examples of any two software programs used to remove computer viruses

(02 marks)

- ✓ Avast Anti-virus software
- ✓ Norton Anti-virus software
- ✓ Karspersky Anti-Virus software
- ✓ Etc

24. XYZ Hospital Management

a) State the primary keys used in the:

(02 marks)

- i. Patient Table : **MedicalNo**
- ii. Doctor Table : **DrId**

b) State the Foreign key used in XYZ Hospital management system. (01 mark)

• **DrId**

c) State the relationship that can be used to relate Doctor Table and Patient table. (01 mark)

• **The relationship is 1:m (one-to-many). One Doctor can diagnose or treat more than one patient.**

d) What is the type of databases used by XYZ hospital Management? (01 mark)

• **Relational Database**

e) Outline any **five** benefits the management and staff of XYZ may get as a result of using this database. (05 marks)

**Benefits:**

- (i) Avoids data duplication
- (ii) Avoids inconsistent records

- (iii)Easier to change data
- (iv)Easier to change data format
- (v) Data can be added and removed easily
- (vi)Easier to maintain security.

25. (a) A **cookie** is a small text file that a Web server stores on your computer

(b) Web sites use cookies for a variety of reasons:

- Allow for personalization
- Store users' passwords
- Assist with online shopping

26. (a) Explain the following programming Languages (04 marks)

- i. **Machine language** is the first generation of programming languages. Only language the computer directly recognizes
- ii. **Assembly language** is the second generation of programming languages. Programmer writes instructions using symbolic instruction codes. A **source program** contains the code to be converted to machine language

(b) Visual Studio is Microsoft's suite of program development tools. Explain any three types of visual studio you know. (06 marks)

- **Visual Basic** is based on the BASIC programming language
- **Visual C++** is based on C++
- **Visual C#** combines the programming elements of C++ with an easier, rapid-development environment

### SECTION C

27. "The role of the Internet can never be under stated again today." State the impact of internet resources on communities in Uganda today (20 marks)

#### POSTIVE IMPACT

(10 marks)

- Avails access to News papers, books and other print publications
- Facilitates 24 hour online services across the globe, for example E-commerce, E-Banking etc
- Provides new forms of human interaction through instant messaging, internet forums and social networking
- Enables online shopping booming the major retail outlets and small artisan and traders

- Enables Business to business and financial services on the internet affect supply chains across entire industries
- Facilitated research, It can be used to search for anything and everything using search engines. The popular search engines are Google and Yahoo searches
- It has eased communication, it helps people to communicate either with the use of social networking websites or through emails.
- Job search, now days many people search for their jobs on line as it is quicker and there is a large variety of job vacancies present
- Hobbies, those who are having certain hobbies can try to improve on it by reading up on many aspects of their hobby
- Online learning /distance education, it has made studying easy as it is a useful tool to learn on the internet. Online education books has reduced the need for a library

#### **NEGATIVE IMPACT**

**(10 marks)**

- Influence on culture. The internet clearly propagates and completely spreads western democratic values
- The internet changes people' minds, influence and changes people's moral perspective and ethical values. The pornography merchants in western countries have opened pornographic websites, massively producing various kinds of sex information. Nude males and females are everywhere, performance by computer prostitutes have also openly entered the internet.
- The internet can be used as a tool for national sovereignty and interfere with other countries internal affairs. Websites of agencies and organizations of foreign Governments publish data, wrong historical backgrounds about certain states, influencing people to accept their views subconsciously, thus shaking people's firm stance of ideological correctness.
- The internet makes it easier to loss and leak secretes, cleared staff can send and receive electronic mail, stealing secretes by people from outside is not all that difficult, as long as one knows the working mechanism and techniques of breaking passwords.
- The internet can also be used to steal new and advanced technologies, economic policies and other classified information is a modality of obtaining enormous benefits at relatively low cost

- The internet poses the potential threat of information warfare. Some countries have applied the internet into military operations, have conducted mock attacks against other countries' networks or have fabricated deceptive information harmful to other countries.
- Internet can be used to commit crimes. The globalised internet provides wider horizon and more numerous technical means to commit computer crimes. Mainly these crimes include illegal intrusion into others computer facilities, stealing and modifying commercial secrets, unlawful transfer of funds, and international destruction of parts of the networks by using computer programs.

28. (a) **System development** is a set of activities used to build an information system. **(05 marks)**

(b) System development phases are: (03 marks for each correctly named phase and discussion)

- i. Planning:
  - Review project requests
  - Prioritize project requests
  - Allocate resources
  - Form project development team
- ii. Analysis:
  - Conduct preliminary investigation.
  - Perform detailed analysis activities such as study current system, determine user requirements and recommend solutions.
- iii. Design:
  - Acquire hardware and software, if necessary.
  - Develop detailed system.
- iv. Implementation:
  - Develop programs, if necessary
  - Install and test new system
  - Train users.
  - Convert to new system
- v. Operation, support and Security:
  - Perform maintenance activities.
  - Monitor system performance.
  - Access system security.



**29. (a) Benefits and challenges of WLANs over LANs are:**

**Benefits: (06 marks for any sixth correct one)**

- i. Enable anywhere/anytime connectivity
- ii. Bring computer communications to areas without pre-existing infrastructure
- iii. Enable mobility
- iv. Easy to install
- v. Works very well in harsh environments

**Challenges: (04 marks for any 4 correct one)**

- i. Disconnection
- ii. Low bandwidth
- iii. High bandwidth variability
- iv. Low power and resources
- v. Security risks
- vi. Interferences

**(b)The mitigation strategies are (2 marks each for any 5 correct points)**

- i. Security Policy to be set to guide users' behaviors.
- ii. Encryption of data during transmission.
- iii. Use of Firewall to control external access to computer networks and devices in our Local area network.
- iv. Authentications: Use of username and strong password for our access points.
- v. Disable all default setting all the access points.
- vi. Clock the signals strengths within the school premises.
- vii. Turn off the Access Point if you are not using