

FORM 2

COMPUTER STUDIES

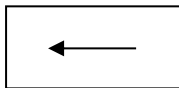
MARKING SCHEME

1. State any two peripheral devices that are powered by the system unit. (1 mark)

-Mouse

-keyboard

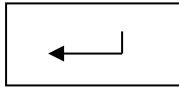
2. The following are symbols of some keys found on the keyboard. Name the keys represented by the symbols. (2 marks)



Back space



Shift



Enter/ Return



Tab

3) Explain any THREE functions of system software in a computer (3 marks)

-Supports the development of other application software.

-Supports the execution of other application software.

-Monitors the effective use of various hardware resources e.g. CPU, memory, peripherals etc.

-Communicates and controls the operation of peripheral devices such as a printer.

-Performs a variety of system utility functions

4. As a computer student you have been asked to assist in buying an input device. State any four factors to consider when buying input devices. (4 marks)

- Type of data to be input

- Speed

- Accuracy of the input device

- Cost of the device

- Availability of the device

5. The arithmetic logic unit, the **control** unit and the main memory use electrical pathways or links called buses. State and explain the three types of buses. (3 marks)

- **control bus**- pathway for all timing and controlling of functions sent by the control unit to other parts of the system
- **Address bus**- used to locate the storage position in memory where the next data to be processed is held.
- **Data bus**- this is where actual data transfer takes place.

6. What is the role of special purpose memories in the microprocessor? (1 mark)

-To enhance its performance

7. Differentiate between primary memory and secondary memory. (3 marks)

Primary Memory	Secondary Memory
Directly accessible by the CPU	Not directly accessible by the CPU
Very expensive	Less expensive
Low capacities	High capacities
Fast access time	Slower access time

8. Citing relevant examples state two advantages of integrated software as opposed to single purpose. (2 marks)

-Takes shorter time to install

-The integrated software are compatible and have common features so easy to learn

9. Explain the following as used in computing (4 marks)

a) Computer system

A computer system is defined as a collection of hardware and software components that work together to process and manage data efficiently.

b) Control Unit

The Control Unit (CU) is a component of the CPU that directs the operations of the computer. It interprets instructions from memory and coordinates the activities of other parts, like the ALU and memory, ensuring they work together efficiently.

c) Arithmetic and Logic Unit

The Arithmetic Logic Unit (ALU) is a key component of the CPU that performs all arithmetic and logical operations. It handles tasks like addition, subtraction, multiplication, division, and logical comparisons (such as AND, OR, and NOT operations).

d) Main Memory

Is the computer's primary storage area that directly interacts with the CPU. It temporarily holds data and instructions that the CPU needs while performing tasks, allowing for quick access and processing.

10. Differentiate between buffers and register special memories (2 marks)

Buffers temporarily store data to manage speed differences between devices during transfers, found in RAM and peripherals. Registers are small, fast storage locations within the CPU that hold data and instructions for immediate access during processing.

11. Write the following in full as used in computing (5 marks)

- (a) HDMI – High definition multimedia interface
- (b) CPU – Central Processing Unit
- (c) CMOS – Complimentary Metal-Oxide semiconductor
- (d) RAM- Random Access Memory
- (e) EPROM – Electrically Programmable Read Only Memory

12. State four tools you might need when setting up a computer (4 marks)

- Tweezers
- Screwdriver
- Antistatic wrist member
- Pliers
- Climpers
- Power tester

13. Distinguish between proprietary and open source software (2 marks)

Proprietary is a commercial software whose source code is hidden from users while open source software is a program whose source code is made available to users.

- 14.
- Scope of cover for example, a year or two
 - Callout response and liability – how long it would take to do the repair
 - Preventive maintenance for example regularity of service at intervals

15. Briefly state and explain four factors you would consider when selecting computer software

- Authenticity
- Documentation

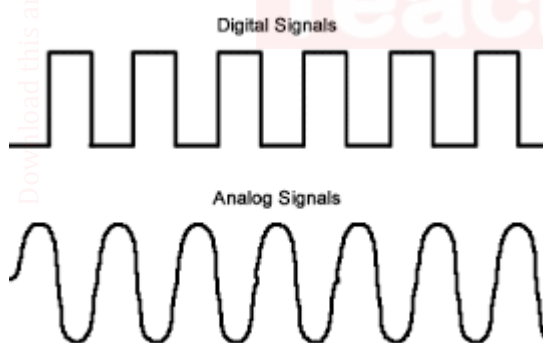
- User requirements
- Data security
- User friendliness
- Cost
- Compatibility
- Portability

16. Explain three characteristics of computers

- Versatile
- Fast
- Reliable
- Memory
- Deligent

17. With the aid of a diagram, explain the difference between analog and digital computers (4 marks)

- Analog data is continuous in nature and is represented as a sign wave form.in while digital data is discrete in nature and is represented in square wave form.
- Analog signals bandwidth is low while the bandwidth of the digital signal is higher.
- The accuracy of the digital signal is better than that of the analog signal.



Award one mark each for the first three differences then award one mark each for the correct labelled diagram.
(Do not award unlabeled diagram)

18. Pixels are tiny dots which are used to form images displayed on the screen.

Roles of pixels in screen displays

1. **Display Clarity:** The quantity of pixels in a given area of the display without delay affects the clarity and sharpness of the displayed content. More pixels suggest that the display can render extra first-rate info, ensuing in a clearer photograph.
2. **Resolution Quality:** Higher screen resolutions with extra pixels offer a higher pleasant viewing experience. This is in particular crucial while showing high-definition content like motion pictures, photos, and snap shots.

3. **Aspect Ratio:** The ratio of the horizontal pixel count to the vertical pixel depend determines the factor ratio of the show. Common element ratios consist of 16: nine and 4:3. Different factor ratios are suitable for one of a kind varieties of content material and applications.

4. **Screen Size:** The bodily length of the display, in inches or centimeters, in aggregate with the display decision, determines the pixel density. A show with a better pixel density (extra pixels in keeping with inch) can render smaller textual content and details more legibly.

5. **Scaling and Compatibility:** Screen resolution affects how the content is displayed. If the content material's decision does not suit the show's native decision, scaling can be vital. This can once in a while bring about much less sharp pix, so it's regularly recommended to use the display's local resolution for the high-quality high-quality.

6. **User Experience:** Screen decision influences the general user revel in. A higher resolution normally allows for greater content to be displayed on the display screen simultaneously, making it useful for duties along with video editing, gaming, and multitasking.

19. Ancient tools of computing

- Slide rule.
- La Pascaline
- Weaving loom.
- Napier's bones.

20. List four devices housed within the system unit.

- Processor
- Heat sink.
- Ram modules.
- Rom chips.
- Power supply unit
- Hard disk
- CMOS battery
- Expansion slot
- Fan
- Speaker
- DVD/CD Drive

21. Describe four disadvantages of using computers in an organization.

- Computers are power dependent. Therefore, it will only process data in the presence of power
- GIGO effect (garbage in garbage out) computer will process data provide so if wrong data is keyed in then it processes and give the wrong output.

- They cause unemployment. Computers have taken the tasks that were being performed by the human beings making them jobless.
- May lead to health problems such as eye strain and other health conditions. Prolonged use of computer may cause some ailments that affect human health.
- May be affected by malicious programs (viruses). Computer viruses usually affect the functionality of the computer which eventually may cause serious data loss.
- Computer breakdown. Organizations that rely heavily on computers for their daily transactions may suffer greatly when the computers are down.
- Setting up a computer platform to support organization activities require a lot of money.

22. Give four ways of ensuring proper ventilation in a computer laboratory.

- Installing air conditioners/Fan
- Avoid overcrowding in the computer laboratory.
- The room should be made with vents for proper air circulation.
- Fitting the room with Standard windows
- The room must have standard doors for air circulation.

23. Briefly describe four problems experienced by users of the first-generation computers.

- They were bulky hence occupy an exceptionally large space.
- They consumed a lot of power. First generation require a lot of energy to process data.
- They generated a lot of heat.
- They were prone to hardware failure as the vacuum tubes would easily break/ unreliable.
- Limited memory. Memory of first-generation computer were too small and therefore could not support many programs.
- Limited programming ability. First generation computer relied heavily on machine language which was difficult to understand and use.
- Input unit was punch card which was not user-friendly therefore posed a lot of challenges during data entry.

24. (a) Identify the device in the diagram above.

- Barcode reader

(Award 1 mark each max 1)

(b) Describe three application areas where the device stated in (a) above is used.

- In supermarket to read information stored using the product code at the point of sell terminal.
- In used by publishers to represent details of the book normally at ISBN

- Learning Institution usually embed barcodes on the student card to restrict access to some areas e.g., the library.

(Award 1 mark each max 3)

c) Mention any other three input devices that capture data through scanning.

- Optical Mark reader
- Magnetic Ink Character Reader
- Optical Character Reader
- Magnetic Stripe Reader/Card Reader
- QR Code Reader
- Camera

25. State how computers are used in the following areas:

(a) Hospital

- Used to view cross sectional section of patients' body by use of MRI and CT SCAN.
- Use of CCTVs for monitoring and surveillance of patients.
- Controlling life support machines like the ICU using computer-based programs.
- Keeping patients records using database and other computer programs in order to provide easy access to patient's diagnostics history.
- Computer services such as telemedicine are used to remind patients of time of taking medicine.
- Settling bills in the hospital using M-Pesa, credit card and other forms of payments
- Communication via email, WhatsApp, skype, messenger etc.
- Research using the internet to study or get more information on the current trends in the health sector.

(Award 1 mark each max 4)

(b) Banking

- Are used for security by installing CCTV cameras.
- Computers are used in banks to store information by use of database.
- Computers can be used to automate cash withdrawal and deposits by use of ATM (automated teller machine)
- Computers are used for cheque clearing by use of MICR.
- Advertisement using smart displays.
- Organize how customers are served in the bank using queue management system.

(Award 1 mark each max 4)

(c) Transport (4 marks)

- Booking and reservation using real time systems
- Advertisement using smart displays
- Navigation using google maps and other navigation software
- Tracking vehicle using Computer based tracking systems for management
- Traffic control using computer based programs
- Making payment using Mpesa and smartcards
- Communication through sms, email, WhatsApp's, telegrams etc.

(d) Education

- Recording student details
- ELearning
- Result analysis in schools
- Printing exam papers

