

COMPUTER STUDIES FORM FOUR

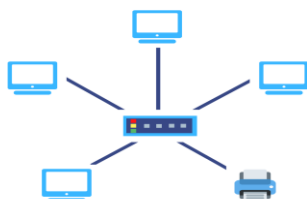
TERM 2 2025

OPENER EXAMINATION

MARKING SCHEME

1. Explain the meaning of following terms as used in networking. (6marks)
 - a. Modulation and Demodulation.
Conversion of an analog signal to digital and vice versa. Award 1 mk if only one part is correct.
 - b. Computer network.
Collection of computers connected together through a transmission medium for the purpose of communication and information sharing.
 - c. Bandwidth.
Maximum amount of data that a transmission medium can carry at a given point.
2. One of the biggest challenges of data transmission in networks is attenuation.
 - i. What is attenuation. (1mark)
The weakening or fading of a signal strength as it travels through a medium.
 - ii. Give any two possible causes of attenuation. (2marks)
 - ✓ **Distance**
 - ✓ **Interference i.e radio signals and walls**
 - ✓ **Wire size**
 - ✓ **Flawed connectors**
 - iii. State two ways through which the effects of attenuation can be reduced. (2 marks)
Use of repeaters.
Use high quality cables.
Avoid obstructions
Regular testing
3. Distinguish between packet switching and circuit switching transmission techniques. (4 marks)
In packet switching a dedicated path which is either physical or logical is set between the sender and the receiver and data is then transmitted through this path while in packet switching a message is broken into small units called packets which are the routed individually to the destination using the best available route decided by routing algorithms.
4. Explain two ways in which computer networks have negatively affected the society. (4 marks)
 - ✓ **Good networks have aided in increase of crime such as drug trafficking**
 - ✓ **Spread of dirty content such as pornography.**
 - ✓ **Cyber terrorism, political incitements.**
5. Give four advantages of using fibre optic cables for data transmissions. (4marks)
 - ✓ **High bandwidths**
 - ✓ **Higher speed of transmissions compared to coax and twisted pairs.**
 - ✓ **Immunity to electromagnetic interference and noise.**
 - ✓ **Small size hence suitable for limited spaces.**

- ✓ **Suitable in highly flammable areas since they don't generate electrical charges.**
6. While downloading news reports from the school resource center, Bahari, BBI group experienced slow page loading from their browser. Their teacher explained that one of the possible causes for this in networks is “**packet loss**”. Explain the meaning of this and state two possible causes of packet loss in networking.
- ✓ **Is a condition that occurs when some data packets are unable to reach their destination.**
 - Possible causes include:**
 - ✓ **Network congestion**
 - ✓ **Faulty hardware**
 - ✓ **Routing inefficiencies**
 - ✓ **Long distances.**
 - ✓ **Denial of Service attacks**
7. The following diagram shows one of the physical network topologies used to set up networks.



- i. Identify the network topology above. (1 mark)
Star topology
 - ii. Briefly explain how data can be transmitted from one computer to another in the above topology. (3marks)
 - ✓ **Data packets are first sent to the central hub or a switch.**
 - ✓ **The switch replicates the message then sends it to the destination using the MAC addresses.**
 - iii. Name any two devices that can function as the device at the center of the diagram. (2 marks)
 - ✓ **Hub**
 - ✓ **Switch**
8. Amplitude modulation (AM) and Frequency Modulation (FM) are two types of multiplexing technologies used for radio broadcasts. What do you understand by the terms multiplexing and demultiplexing? (2 marks)
- ✓ **Multiplexing is the process of sending multiple data signals through the same medium at different frequencies or time slots.**
 - ✓ **Demultiplexing is the process of splitting multiplexed signal back to its original channels.**
9. Explain two ways in which ICT has been applied in then following areas. (6 marks)
- i. Banking systems.
 - ✓ **ATM machines**
 - ✓ **Processing cheques**
 - ✓ **E-banking**
 - ✓ **Mobile banking. Give two marks for every correct explanation. One mark for a point with no explanation.**
 - ii. Transport systems.
 - ✓ **Online travel bookings**
 - ✓ **Traffic light control systems.**
 - ✓ **Air traffic control systems.**

- ✓ **Mobile payments.**
- iii. Education systems.
 - ✓ **E-learning**
 - ✓ **Computer aided learning**
 - ✓ **Computer aided instruction.**
 - ✓ **Simulations**

10. Write the following abbreviations in full. (4marks)

- i. DTE
Data terminal Equipment
- ii. IP/TCP
Internet protocol/Transmission Control Protocol
- iii. LAN
Local Area Network
- iv. OTG
On The GO

11. What is broadcast storm? (1marks)

- ✓ **Is a condition where a network is overwhelmed by broadcast traffic coming from several nodes causing it to breakdown or lag.**

12. Explain the advantage of using switches over hubs in networking. (2 marks)

- ✓ **Switches use packet switching technique which eliminates the problems caused by broadcast storms as in the case of hubs.**

13. Name any two physical transmission media used in networks. (2 marks)

- ✓ **Coaxial cables**
- ✓ **Twisted pair cables**
- ✓ **Fibre optic cables.**

