



Mid Examination – First Semester

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**SECTION A: True/False Questions. [7% of The Total Mark]. Answer SEVEN (7) Questions Only.** Please Answer with **TRUE/FALSE** for each of the following questions. **(1 Mark)** for each Question.

1. **True / False:** LANs cover larger geographical areas compared to WANs.
2. **True / False:** Peer-to-peer networks rely on centralized servers for data storage.
3. **True / False:** Fiber-optic cables are an example of fast network media.
4. **True / False:** WANs are typically confined within a single building or office space.
5. **True / False:** Network media includes only physical mediums like cables.
6. **True / False:** LANs usually have higher data transfer speeds compared to WANs.
7. **True / False:** Client-server networks don't allow multiple devices to share resources.
8. **True / False:** Peer-to-peer networks don't require any form of central administration.
9. **True / False:** Network media selection doesn't impact network performance or bandwidth.
10. **True / False:** WANs are designed to connect devices across vast geographical regions.

**SECTION B: Multiple-Choice Questions. [7% of The Total Mark]. Answer SEVEN (7)**

**Questions Only.** Please **Select the Correct Answer** for each of the following questions.

**(1 Mark)** for each Question.

1. What device connects multiple computers within a local area network (LAN)?
  - a) Router
  - b) **Switch**
  - c) Modem
  - d) Hub
  
2. What does TCP/IP stand for?
  - a) **Transmission Control Protocol/Internet Protocol**
  - b) Transfer Control Protocol/Internal Protocol
  - c) Telecommunication Control Protocol/Internet Protocol
  - d) Terminal Control Protocol/Internal Protocol
  
3. Which layer of the OSI model is focuses on the logical addressing and routing of data packets across networks, (i.e.) utilizing IP addresses to direct packets to their destinations?
  - a) Physical layer
  - b) Data link layer
  - c) **Network layer**
  - d) Presentation layer
  
4. What type of cable is commonly used to connect a computer to a modem for internet access?
  - a) Coaxial cable
  - b) Fiber-optic cable
  - c) **Ethernet cable**
  - d) USB cable
  
5. Which layer of the OSI model is responsible for handling MAC (Media Access Control) addresses?
  - a) Network layer
  - b) **Data link layer**
  - c) Transport layer
  - d) Physical layer

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6. What is the purpose of a MAC address in a network?
- a) To uniquely identify a device on a network
  - b) To manage IP address allocation
  - c) To establish secure connections
  - d) To control network traffic flow
7. Which protocol ensures data is delivered reliably across a network?
- a) TCP
  - b) IP
  - c) UDP
  - d) HTTP
8. Which networking component forwards data based on MAC addresses?
- a) Router
  - b) Switch
  - c) Hub
  - d) Modem
9. Which cable type is typically used for high-speed internet connections and can transmit data over long distances without signal loss?
- a) Coaxial cable
  - b) Fiber-optic cable
  - c) Ethernet cable
  - d) USB cable
10. Which cable category is commonly used for Ethernet connections which supports 1000 mbps?
- a) Cat 3
  - b) Cat 5e
  - c) Cat 6a
  - d) Cat 7

**SECTION C: Essay Questions [5% of the total mark]. Answer TWO (2) Questions Only.**

**Q1\** Explain the significance of **MAC addresses** and their role within local networks.

Describe how MAC addresses differ from IP addresses, their purpose in facilitating communication among devices, and their importance in network operations. Provide examples illustrating scenarios where understanding MAC addresses is crucial for network functionality and management.

**Q2\** Explain the diverse types of **Network Media** used in establishing communication infrastructures. Differentiate between various transmission mediums such as wired (e.g., twisted pair, coaxial cable, and fiber optic) and wireless (e.g., radio waves, microwaves, and infrared). Discuss the advantages, limitations, and specific applications of each type of network media. Provide real-world examples showcasing scenarios where different network media are preferred, considering factors like speed, reliability, and environmental suitability.

**Q3\** Describe the difference between Physical LAN Topology and Logical LAN Topology in networking. Provide examples illustrating how these two types of LAN topologies can differ within the same network infrastructure, emphasizing their roles in efficient data transmission and network management.

**Q4\** Compare and contrast Fiber and Copper cables as networking transmission mediums. Explain the differences in their construction, transmission capabilities, and the advantages each offers in data transfer. Discuss the factors that organizations consider when choosing between Fiber and Copper cables for their network infrastructure. Provide real-world examples showcasing scenarios where the use of Fiber or Copper cables is most suitable based on their respective characteristics and functionalities.

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**SECTION D: Open Questions [6% of the total mark]. Answer TWO (2) Question Only.**

**Please:** Write clearly and try to be as complete as possible without useless digressions. Open questions are “open” but rather precise. The given space should be sufficient. However, if you need more space, you can request for an additional paper. Open questions give different marks. You can find the actual values in the brackets.

**Q1\** Discuss the evolution of networking technologies and their impact on modern communication. Explore the transition from traditional networking approaches to contemporary models like cloud computing and the Internet of Things (IoT). Highlight the key advancements, challenges, and the role of networking in shaping today's interconnected world. Provide examples to illustrate the transformative effects of these technologies on industries, communication, and daily life, specifically on the Intelligent Medical Systems

**Q2\** Explain the role of routers and switches in a computer network. Differentiate between their functions, highlighting how they manage data transmission within a network. Provide real-life examples illustrating situations where routers and switches are deployed and how they contribute to efficient network operations.

**Q3\** Describe the concept and functionality of a Peer-to-Peer (P2P) network. Explain how P2P networks differ from traditional client-server models, emphasizing their decentralized nature and mutual sharing of resources. Provide examples illustrating the advantages and challenges associated with P2P networks, and discuss their relevance in modern computing environments and file-sharing applications.

**Q4\** Discuss the fundamental differences between Local Area Networks (LANs) and Wide Area Networks (WANs) in networking. Describe the **scope, size, and typical applications** of each network type. Illustrate **how LANs and WANs differ in terms of** geographical coverage, transmission speeds, and their respective functionalities. Provide examples demonstrating scenarios where each network type is most suitable and the key considerations in deploying LANs and WANs in various organizational settings.

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