

Paper Code: A02-04
Subject: Concept of Networking

PART-A

Q.1. Fill in the blanks:

1. _____ is the process of combining multiple signals into one signal over a shared medium to maximize the utilization of available bandwidth. (1x10)
2. The _____ model is a conceptual framework used to understand network interactions in seven layers, from the physical layer to the application layer.
3. _____ is a method of error detection used to ensure that transmitted data is accurate by checking for discrepancies.
4. The _____ is a method of managing data flow in a network by ensuring that data is transferred without overwhelming the network.
5. In _____ switching, data is transferred in discrete packets, which are switched through various routers in the network.
6. The _____ technology is widely used for Local Area Networks (LANs) and operates based on the principle of Ethernet standards.
7. _____ is a method of wireless communication that utilizes high-frequency radio waves to transfer data over short distances.
8. The _____ is used for addressing in the Internet, and it supports unique identification of devices connected to a network.
9. _____ is the protocol used to resolve the MAC address of a device given its IP address within a local network.
10. The _____ layer in the OSI model is responsible for routing data from one network to another, ensuring that packets are sent to their correct destination.

Q.2. State True or False:

1. Multiplexing allows multiple signals to share the same transmission medium by combining them into a single signal. (1x10)
2. The OSI Model consists of five layers: Physical, Data Link, Network, Transport, and Application.
3. Ethernet is primarily used for Wide Area Networks (WANs).
4. In Packet Switching, data is sent in fixed-size packets which are individually routed through the network.
5. Flow Control ensures that the sender does not overwhelm the receiver with too much data at once.
6. In Circuit Switching, a dedicated path is established for the duration of the communication session.
7. The main function of the Network Layer in the OSI model is to handle end-to-end communication between devices across networks.
8. Wireless networks typically use radio frequencies, microwave frequencies, and infrared waves for data transmission.
9. A switch is a device that operates at the Physical Layer and transmits data over long distances.
10. CSMA/CD (Carrier Sense Multiple Access with Collision Detection) is a protocol used in Ethernet networks to manage access to the transmission medium.

Q.3. Multiple choice questions:

1. Which of the following is the primary function of multiplexing in data communications? (1x10)
(a) Error detection (b) Combining multiple signals for transmission (c) Data encryption (d) Managing network flow
2. In the OSI model, which layer is responsible for error detection and correction?
(a) Network Layer (b) Transport Layer (c) Data Link Layer (d) Application Layer
3. Which of the following is a key characteristic of Packet Switching?
(a) Dedicated path for the entire communication (b) Data sent in small, discrete packets (c) Requires a circuit to be established before data transfer (d) No error detection in data transfer
4. Which network technology is primarily used for Local Area Networks (LANs)?
(a) ISDN (b) Ethernet (c) Frame Relay (d) SONET

5. Which of the following wireless communication technologies uses high-frequency radio waves for data transmission?
 (a) SONET (b) Microwave frequencies (c) Ethernet (d) Token Ring
6. Which layer of the OSI model is responsible for routing data between different networks?
 (a) Physical Layer (b) Transport Layer (c) Network Layer (d) Data Link Layer
7. Which of the following is a feature of a Peer-to-Peer network?
 (a) Centralized control (b) Server-based communication (c) Decentralized network management (d) High-speed data transfer
8. What is the purpose of the Address Resolution Protocol (ARP)?
 (a) To resolve DNS names to IP addresses (b) To map a MAC address to an IP address (c) To establish a secure communication channel (d) To detect errors in data transmission
9. Which of the following is used for error detection and flow control in TCP/IP networks?
 (a) ALOHA (b) Sliding Window (c) Polling (d) Token Passing
10. Which of the following is a function of a router in a network?
 (a) Forwarding frames within a local network (b) Establishing dedicated communication paths (c) Connecting multiple networks and routing data between them (d) Encrypting data packets for secure transmission

PART-B

(Attempt any five questions, each carry equal marks)

- Q.4. (a) Describe the installation and configuration process for a network printer in a Windows 7 environment. What are the necessary steps? (5x2)
 (b) Describe the function of the Transport Layer in the OSI model. How does it ensure reliable data communication between two devices?
- Q.5. (a) What is the difference between LAN and WAN? Describe the key technologies that are used for WANs. (5x2)
 (b) Explain the role of Ethernet in LAN networks. How has Ethernet evolved, and what are its modern versions?
- Q.6. a) Discuss the different wireless network technologies. How do radio frequencies, microwave frequencies, and infrared waves differ in terms of data transmission? (5x2)
 (b) What is the purpose of network security, and what are the common techniques used to secure a network?
- Q.7. a) Explain the concept of a virtual LAN (VLAN). How does it differ from a traditional LAN, and what are its advantages? (5x2)
 (b) What are the key features of Windows 7 networking? Describe the process of installing and configuring network services on a Windows 7 system.
- Q.8. a) Explain the function and significance of DNS in a network. How does DNS resolve domain names to IP addresses? (5x2)
 (b) Discuss the role of network protocols such as HTTP, FTP, and SMTP in data communication. How do they ensure efficient transmission of data?
- Q.9. (a) What are the main components of a wireless network? Explain how different wireless transmission technologies are used for network connectivity. (5x2)
 (b) What is ISDN, and how does it facilitate digital communication in wide area networks? Discuss its key features and benefits.
- Q.10. (a) Explain the process of subnetting in IPv4 networks. How does subnetting help in efficient use of IP addresses? (5x2)
 (b) What is the function of the Session Layer in the OSI model? How does it manage sessions between different applications in a network?