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| Name of the Bundle | Proficient and Advanced Bundle V2 | Subject | Networking V2 |
| Topic | OSI Model | Last updated on | 11 January 2024 |

1. What does OSI stand for?

- a. Open Source Integration
- b. Open Systems Interconnection
- c. Operating System Interface
- d. Optical System Interface

Ans: b. Open Systems Interconnection

Explanation: OSI stands for Open Systems Interconnection. It is a conceptual framework used to understand network interactions and standardize network protocols.

2. How many layers are there in the OSI model?

- a. 5
- b. 6
- c. 7
- d. 8

Ans: c. 7

Explanation: The OSI model consists of seven layers, each responsible for specific aspects of network communication.



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3. Which layer of the OSI model is responsible for data compression and decompression ?

- a. Data Link Layer
- b. Presentation Layer
- c. Transport Layer
- d. Application Layer

Ans: b. Presentation Layer

Explanation: The Presentation Layer deals with the syntax and semantics of the data, including encryption and compression.

4. What is the primary function of the Data Link Layer in the OSI model?

- a. Error detection and correction
- b. Routing
- c. Termination
- d. Session establishment

Ans: a. Error detection and correction

Explanation: The Data Link Layer is responsible for error detection and correction in the data link.



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5. Which layer is responsible for end-to-end communication and data flow control?

- a. Session Layer
- b. Presentation Layer
- c. Transport Layer
- d. Application Layer

Ans: c. Transport Layer

Explanation: The Transport Layer ensures end-to-end communication and controls the flow of data between devices.

6. In the OSI model, which layer is closest to the end-user?

- a. Application Layer
- b. Session Layer
- c. Presentation Layer
- d. Transport Layer

Ans: a. Application Layer

Explanation: The Application Layer provides network services directly to end-users, making it the closest layer to them.



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7. Which layer of the OSI model deals with the physical connection between devices?

- a. Physical Layer
- b. Data Link Layer
- c. Network Layer
- d. Transport Layer

Ans: a. Physical Layer

Explanation: The Physical Layer deals with the physical connection and transmission of raw bits between devices.

8. What is the purpose of the Network Layer in the OSI model?

- a. Error detection and correction
- b. Data compression
- c. Logical addressing and routing
- d. Flow control

Ans: c. Logical addressing and routing

Explanation: The Network Layer handles logical addressing and routing to facilitate communication between different networks.



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9. Which layer of the OSI model is responsible for creating, maintaining, and terminating sessions?

- a. Transport Layer
- b. Session Layer
- c. Application Layer
- d. Presentation Layer

Ans: b. Session Layer

Explanation: The Session Layer manages sessions, including establishment, maintenance, and termination of communication sessions.

10. What does the Presentation Layer of the OSI model handle?

- a. Encryption and decryption
- b. Logical addressing
- c. Error detection
- d. Flow control

Ans: a. Encryption and decryption

Explanation: The Presentation Layer is responsible for translating data and handling encryption and decryption processes.



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11. Which layer of the OSI model is responsible for establishing, maintaining, and terminating connections between applications?

- a. Presentation Layer
- b. Session Layer
- c. Application Layer
- d. Transport Layer

Ans: c. Application Layer

Explanation: The Application Layer provides network services directly to applications, including session management.

12. In the OSI model, which layer is responsible for synchronization and dialogue control between devices?

- a. Network Layer
- b. Data Link Layer
- c. Session Layer
- d. Presentation Layer

Ans: c. Session Layer

Explanation: The Session Layer handles synchronization and dialogue control between devices during communication sessions.



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13. Which layer is responsible for converting data into a format that can be understood by the application?

- a. Presentation Layer
- b. Transport Layer
- c. Application Layer
- d. Data Link Layer

Ans: a. Presentation Layer

Explanation: The Presentation Layer ensures that data is in a format understandable by the application layer.

14. Which layer of the OSI model is responsible for addressing and routing at the local network level?

- a. Data Link Layer
- b. Network Layer
- c. Transport Layer
- d. Application Layer

Ans: a. Data Link Layer

Explanation: The Data Link Layer handles addressing and routing at the local network level.



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15. In the OSI model, what does the Application Layer provide?

- a. Network services directly to end-users
- b. Logical addressing
- c. Data compression
- d. Physical connection between devices

Ans: a. Network services directly to end-users

Explanation: The Application Layer provides network services directly to end-users.

16. Which layer of the OSI model is responsible for the actual transmission and reception of data bits?

- a. Network Layer
- b. Data Link Layer
- c. Physical Layer
- d. Transport Layer

Ans: c. Physical Layer

Explanation: The Physical Layer is responsible for the actual transmission and reception of raw data bits.



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17. Which layer of the OSI model is responsible for flow control and error checking?

- a. Presentation Layer
- b. Session Layer
- c. Network Layer
- d. Transport Layer

Ans: d. Transport Layer

Explanation: The Transport Layer is responsible for flow control and error checking at the transport level.

18. Which layer is responsible for translating data between the application layer and the lower layers in the OSI model?

- a. Presentation Layer
- b. Session Layer
- c. Data Link Layer
- d. Application Layer

Ans: a. Presentation Layer

Explanation: The Presentation Layer translates data between the application layer and the lower layers in the OSI model.



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19. Which layer is responsible for framing and addressing the OSI Model?

- a. Data Link Layer
- b. Network Layer
- c. Transport Layer
- d. Presentation Layer

Ans: a. Data Link Layer

Explanation: The Data Link Layer is responsible for framing and addressing at the Data Link Layer.

20. Which layer of the OSI model is responsible for translating network addresses into physical addresses?

- a. Network Layer
- b. Data Link Layer
- c. Transport Layer
- d. Presentation Layer

Ans: b. Data Link Layer

Explanation: The Data Link Layer is responsible for translating network addresses into physical addresses.



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21. In the OSI model, which layer provides network services such as file transfer and email for end-users?

- a. Network Layer
- b. Transport Layer
- c. Application Layer
- d. Presentation Layer

Ans: c. Application Layer

Explanation: The Application Layer provides network services such as file transfer and email for end-users.

22. What does the Network Layer of the OSI model use to route data between different networks?

- a. IP addresses
- b. MAC addresses
- c. Port numbers
- d. Physical addresses

Ans: a. IP addresses

Explanation: The Network Layer uses IP addresses to route data between different networks.



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23. Which Application Layer protocol is commonly used for sending emails?

- a. HTTP
- b. FTP
- c. SMTP
- d. SNMP

Ans: c. SMTP

Explanation: SMTP (Simple Mail Transfer Protocol) is a protocol used for sending emails.

24. Which protocol is commonly used for transferring files over the Internet?

- a. SMTP
- b. FTP
- c. HTTP
- d. Telnet

Ans: b. FTP

Explanation: FTP (File Transfer Protocol) is used for transferring files over a network.



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25. Which protocol is used for securely transferring files over a network?

- a. FTPS
- b. HTTP
- c. SMTP
- d. Telnet

Ans: a. FTPS

Explanation: FTPS (File Transfer Protocol Secure) is an extension of FTP that adds support for the Transport Layer Security (TLS) and Secure Sockets Layer (SSL) cryptographic protocols for secure file transfer.

26. Which protocol is commonly used for retrieving emails from a mail server?

- a. POP3
- b. IMAP
- c. SMTP
- d. HTTP

Ans: a. POP3

Explanation: POP3 (Post Office Protocol version 3) is used for retrieving emails from a mail server.



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27. Which protocol is used for the secure transmission of web pages?

- a. HTTP
- b. FTP
- c. HTTPS
- d. SNMP

Ans: c. HTTPS

Explanation: HTTPS (Hypertext Transfer Protocol Secure) is a secure version of HTTP used for the secure transmission of web pages.

28. Which protocol is responsible for translating domain names into IP addresses?

- a. DNS
- b. DHCP
- c. SNMP
- d. HTTP

Ans: a. DNS

Explanation: DNS (Domain Name System) is responsible for translating domain names into IP addresses.



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29. Which protocol is used for remotely managing and monitoring network devices?

- a. HTTP
- b. SNMP
- c. FTP
- d. SMTP

Ans: b. SNMP

Explanation: SNMP (Simple Network Management Protocol) is used for remotely managing and monitoring network devices.

30. Which protocol is used for the secure transfer of web pages and is commonly used in online banking and shopping?

- a. HTTP
- b. FTP
- c. HTTPS
- d. Telnet

Ans: c. HTTPS

Explanation: HTTPS (Hypertext Transfer Protocol Secure) is used for the secure transfer of web pages, commonly used in online banking and shopping.



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31. Which protocol is used for the dynamic assignment of IP addresses in a network?

- a. DNS
- b. DHCP
- c. SNMP
- d. FTP

Ans: b. DHCP

Explanation: DHCP (Dynamic Host Configuration Protocol) is used for the dynamic assignment of IP addresses in a network.

32. Which protocol is responsible for the delivery of web content and is the foundation of data communication on the World Wide Web?

- a. FTP
- b. SMTP
- c. HTTP
- d. SNMP

Ans: c. HTTP

Explanation: HTTP (Hypertext Transfer Protocol) is responsible for the delivery of web content and is the foundation of data communication on the World Wide Web.



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33. Which protocol is used for secure remote login and is often replaced by SSH for security reasons?

- a. FTP
- b. Telnet
- c. SMTP
- d. HTTP

Ans: b. Telnet

Explanation: Telnet is used for remote login but is often replaced by SSH (Secure Shell) for security reasons.

34. Which protocol is commonly used for the delivery of web pages and is not secure by default?

- a. HTTPS
- b. HTTP
- c. FTP
- d. DNS

Ans: b. HTTP

Explanation: HTTP (Hypertext Transfer Protocol) is commonly used for the delivery of web pages but is not secure by default.



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35. Which protocol is used for the retrieval of emails from a mail server and is more feature-rich than POP3?

- a. SMTP
- b. IMAP
- c. HTTP
- d. FTP

Ans: b. IMAP

Explanation: IMAP (Internet Message Access Protocol) is used for the retrieval of emails from a mail server and offers more features than POP3.

36. In the OSI model, where does the Application Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 6
- d. Layer 7

Ans: d. Layer 7

Explanation: The Application Layer is Layer 7 in the OSI model.



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37. What encryption mechanism does the Presentation Layer use to secure data?

- a. DES (Data Encryption Standard)
- b. SSL/TLS (Secure Sockets Layer/Transport Layer Security)
- c. AES (Advanced Encryption Standard)
- d. RSA (Rivest–Shamir–Adleman)

Ans: b. SSL/TLS (Secure Sockets Layer/Transport Layer Security)

Explanation: SSL/TLS are commonly used protocols at the Presentation Layer for securing communication over a computer network.

38. Which of the following is an example of a presentation layer standard?

- a. ASCII (American Standard Code for Information Interchange)
- b. ICMP (Internet Control Message Protocol)
- c. IP (Internet Protocol)
- d. UDP (User Datagram Protocol)

Ans: a. ASCII (American Standard Code for Information Interchange)

Explanation: ASCII is a character encoding standard commonly used in the Presentation Layer.



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39. Data compression in the Presentation Layer helps in:

- a. Increasing latency
- b. Reducing bandwidth usage
- c. Improving data integrity
- d. Enhancing routing efficiency

Ans: b. Reducing bandwidth usage

Explanation: Data compression reduces the amount of data that needs to be transmitted, thereby saving bandwidth.

40. In the OSI model, where does the Presentation Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 6
- d. Layer 7

Ans: c. Layer 6

Explanation: The Presentation Layer is Layer 6 in the OSI model.



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41. The Presentation Layer is responsible for:

- a. Establishing connections between devices
- b. Framing data packets
- c. Translating data formats
- d. Error detection and correction

Ans: c. Translating data formats

Explanation: The Presentation Layer is responsible for translating data between the application layer and the lower layers, ensuring compatibility.

42. Which of the following protocols operates at the Session Layer?

- a. TCP
- b. UDP
- c. NetBIOS
- d. ICMP

Ans: c. NetBIOS

Explanation: NetBIOS (Network Basic Input/Output System) operates at the Session Layer to provide session services in a network.



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43. Which protocol is commonly associated with the Session Layer for remote terminal emulation?

- a. SNMP
- b. SMTP
- c. Telnet
- d. FTP

Ans: c. Telnet

Explanation: Telnet is a protocol at the Session Layer used for remote terminal emulation.

44. Which of the following is an example of a Session Layer service?

- a. Data encryption
- b. Flow control
- c. Connection establishment
- d. Error correction

Ans: c. Connection establishment

Explanation: Connection establishment is a key service provided by the Session Layer.



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45. What is the purpose of session teardown in the Session Layer?

- a. Establishing a session
- b. Recovering from errors
- c. Terminating a session
- d. Ensuring data integrity

Ans: c. Terminating a session

Explanation: Session teardown involves terminating a communication session once the data exchange is complete.

46. In the OSI model, where does the Session Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 5
- d. Layer 7

Ans: c. Layer 5

Explanation: The Session Layer is Layer 5 in the OSI model.



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47. Which transport layer protocol provides connection-oriented, reliable communication?

- a. TCP
- b. UDP
- c. ICMP
- d. ARP

Ans: a. TCP

Explanation: TCP (Transmission Control Protocol) provides connection-oriented, reliable communication by establishing a virtual connection before data exchange.

48. Which transport layer protocol is connectionless and does not guarantee reliable data delivery?

- a. TCP
- b. UDP
- c. ICMP
- d. ARP

Ans: b. UDP

Explanation: UDP (User Datagram Protocol) is connectionless and does not guarantee reliable data delivery.



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49. What is the role of the port number in the Transport Layer?

- a. Identifying the network address
- b. Identifying the physical address
- c. Identifying the application or service
- d. Managing flow control

Ans: c. Identifying the application or service

Explanation: Port numbers help identify the specific application or service to which the data should be delivered.

50. Which transport layer protocol is commonly used for real-time applications such as voice and video streaming?

- a. TCP
- b. UDP
- c. ICMP
- d. ARP

Ans: b. UDP

Explanation: UDP is preferred for real-time applications due to its lower latency and lack of connection setup overhead.



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51. What is the purpose of the acknowledgment mechanism in TCP?

- a. Flow control
- b. Error detection
- c. Reliability and sequencing
- d. Multiplexing

Ans: c. Reliability and sequencing

Explanation: Acknowledgments in TCP ensure reliable data delivery and sequencing of segments.

52. In the Transport Layer, what is the purpose of segmentation?

- a. Managing flow control
- b. Breaking large messages into smaller segments
- c. Identifying the application or service
- d. Assigning port numbers

Ans: b. Breaking large messages into smaller segments

Explanation: Segmentation involves breaking large messages into smaller segments for transmission.



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53. In which scenario would UDP be more suitable than TCP?

- a. File transfer
- b. Video streaming
- c. Email communication
- d. Database synchronization

Ans: b. Video streaming

Explanation: UDP is more suitable for real-time applications like video streaming where low latency is critical.

54. Which transport layer protocol is commonly used for web browsing and email communication?

- a. UDP
- b. TCP
- c. ICMP
- d. SMTP

Ans: b. TCP

Explanation: TCP is commonly used for web browsing and email communication, providing reliable data delivery.



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55. In TCP, what is the purpose of the three-way handshake during connection establishment?

- a. Error detection
- b. Flow control
- c. Sequence number negotiation
- d. Routing information exchange

Ans: c. Sequence number negotiation

Explanation: The three-way handshake in TCP involves the negotiation of sequence numbers for reliable communication.

56. Which transport layer protocol is associated with the concept of ports?

- a. IP
- b. ARP
- c. TCP/UDP
- d. ICMP

Ans: c. TCP/UDP

Explanation: TCP and UDP use port numbers to identify specific applications or services.



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57. In the OSI model, where does the Transport Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 5
- d. Layer 7

Ans: b. Layer 4

Explanation: The Transport Layer is Layer 4 in the OSI model.

58. In UDP, what happens if a packet is lost during transmission?

- a. It is retransmitted
- b. The receiving end sends an acknowledgment
- c. Nothing, as UDP does not guarantee delivery
- d. The sender waits for a timeout period

Ans: c. Nothing, as UDP does not guarantee delivery

Explanation: UDP does not provide mechanisms for retransmission, and lost packets are not automatically retransmitted.



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59. Which protocol is used for logical addressing in the network layer?

- a. IP
- b. ICMP
- c. OSPF
- d. UDP

Ans: a. IP

Explanation: IP (Internet Protocol) is responsible for logical addressing in the network layer.

60. What is the purpose of the subnet mask in IP addressing?

- a. Identifying the network portion and Host portion of an IP address
- b. Identifying the DHCP server
- c. Identifying the default gateway
- d. Identifying the DNS server

Ans: a. Identifying the network portion and Host portion of an IP address

Explanation: The subnet mask is used to identify the network portion and host portion of an IP address.



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61. In the OSI model, where does the Network Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 3
- d. Layer 7

Ans: c. Layer 3

Explanation: The Network Layer is Layer 3 in the OSI model. DHCP

62. Which protocol is responsible for dynamically assigning IP addresses to devices on a network?

- a. ARP
- b. DHCP
- c. ICMP
- d. OSPF

Ans: b. DHCP

Explanation: DHCP (Dynamic Host Configuration Protocol) is used for dynamically assigning IP addresses to devices.



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63. What is the primary function of the OSPF protocol in the network layer?

- a. Logical addressing
- b. Error detection
- c. Dynamic routing
- d. Flow control

Ans: c. Dynamic routing

Explanation: OSPF (Open Shortest Path First) is a routing protocol used for dynamic routing in networks.

64. In IP addressing, what is the purpose of the default gateway?

- a. Identifying the network portion of an IP address
- b. Identifying the host portion of an IP address
- c. Identifying the router for reaching remote networks
- d. Identifying the DNS server

Ans: c. Identifying the router for reaching remote networks

Explanation: The default gateway is the router used to reach remote networks.



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65. What is the role of the ARP protocol in the network layer?

- a. Logical addressing
- b. Dynamic routing
- c. IP address to MAC address resolution
- d. Error detection

Ans: c. IP address to MAC address resolution

Explanation: ARP (Address Resolution Protocol) is used to map an IP address to a corresponding MAC address.

66. What is the purpose of NAT (Network Address Translation) in the network layer?

- a. IP address to MAC address resolution
- b. Dynamic routing
- c. Translating private IP addresses to a public IP address
- d. Error detection

Ans: c. Translating private IP addresses to a public IP address

Explanation: NAT is used to map private IP addresses to a single public IP address for Internet communication.



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67. Which protocol is used for error reporting and diagnostics in the network layer?

- a. TCP
- b. UDP
- c. ICMP
- d. OSPF

Ans: c. ICMP

Explanation: ICMP is used for error reporting and diagnostics in the network layer.

68. What is the purpose of the subnetting in IP addressing?

- a. Increasing the number of available IP addresses
- b. Reducing network congestion
- c. Improving security
- d. Dividing a large network into smaller, more manageable subnetworks

Ans: d. Dividing a large network into smaller, more manageable subnetworks

Explanation: Subnetting involves dividing a large network into smaller subnetworks for better organization and management.



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69. What is the primary function of the IP header in the network layer?

- a. Logical addressing
- b. Error detection
- c. Dynamic routing
- d. DNS resolution

Ans: a. Logical addressing

Explanation: The IP header is responsible for carrying logical addressing information.

70. The Data Link Layer is responsible for:

- a. Physical addressing of devices
- b. Routing data across different networks
- c. Establishing connections between devices
- d. Formatting and converting data for presentation.

Ans: a. Physical addressing of devices

Explanation: The Data Link Layer of the OSI model is responsible for physical addressing of devices, such as assigning MAC (Media Access Control) addresses to network interface cards.



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71. Which layer of the OSI model provides error detection and correction?

- a. Physical Layer
- b. Network Layer
- c. Data Link Layer
- d. Transport Layer

Ans: c. Data Link Layer

Explanation: The Data Link Layer provides error detection and correction mechanisms to ensure reliable data transmission over the physical medium. It uses techniques like checksums and CRC (Cyclic Redundancy Check) to detect and correct errors.

72. Which layer of the OSI model is responsible for medium access control?

- a. Physical Layer
- b. Network Layer
- c. Data Link Layer
- d. Transport Layer

Ans: c. Data Link Layer

Explanation: The Data Link Layer is responsible for medium access control, which involves managing access to the physical medium, such as Ethernet or Wi-Fi, and coordinating the transmission of data between devices.



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73. Which protocol operates at the Data Link Layer and provides reliable delivery of data frames?

- a. TCP
- b. IP
- c. UDP
- d. HDLC

Ans: d. HDLC (High-Level Data Link Control)

Explanation: HDLC operates at the Data Link Layer and provides reliable delivery of data frames over point-to-point links. It is commonly used in telecommunications and networking.

74. Which protocol operates at the Data Link Layer and provides error detection using CRC?

- a. IP
- b. TCP
- c. ARP
- d. Ethernet

Ans: d. Ethernet

Explanation: Ethernet operates at the Data Link Layer and provides error detection using the CRC (Cyclic Redundancy Check) algorithm. It is a widely used LAN (Local Area Network) technology.



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75. Which layer of the OSI model is responsible for dividing data into data frames?

- a. Physical Layer
- b. Network Layer
- c. Data Link Layer
- d. Transport Layer

Ans: c. Data Link Layer

Explanation: The Data Link Layer is responsible for dividing data received from the Network Layer into data frames for transmission over the physical medium. It adds header and trailer information to each frame.

76. Which protocol operates at the Data Link Layer?

- a. ICMP
- b. IP
- c. ARP
- d. MAC

Ans: d. MAC (Media Access Control)

Explanation: MAC operates at the Data Link Layer and provides media access control for Ethernet networks. It defines the rules for accessing and transmitting data on a shared network medium.



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77. Which protocol operates at the Data Link Layer and is used for LAN communication?

- a. TCP
- b. IP
- c. UDP
- d. Ethernet

Ans: d. Ethernet

Explanation: Ethernet operates at the Data Link Layer and is widely used for LAN communication. It defines the specifications for the physical and data link layers of LAN technologies.

78. Which protocol operates at the Data Link Layer and is used for point-to-multipoint communication over wireless networks?

- a. Wi-Fi
- b. IP
- c. ARP
- d. ICMP

Ans: a. Wi-Fi

Explanation: Wi-Fi operates at the Physical and Data Link Layers, providing wireless communication capabilities. It allows point-to-multipoint communication over wireless networks.



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79. Which sub-layer of the Data Link Layer is responsible for framing?

- a. Logical Link Control (LLC)
- b. Media Access Control (MAC)
- c. Flow Control
- d. Error Control

Ans: b. Media Access Control (MAC)

Explanation: The MAC sub-layer is responsible for framing, addressing, and controlling access to the physical medium.

80. In the OSI model, where does the Data-Link Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 3
- d. Layer 7

Ans: a. Layer 2

Explanation: The Data-Link Layer is Layer 2 in the OSI model.



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81. What is the function of the Address field in a data frame?

- a. Error Detection
- b. Source and Destination Addressing
- c. Flow Control
- d. Framing

Ans: b. Source and Destination Addressing

Explanation: The Address field is used for specifying the source and destination addresses in a data frame.

82. In Ethernet, what is the size of the MAC address?

- a. 32 bits
- b. 48 bits
- c. 64 bits
- d. 128 bits

Ans: b. 48 bits

Explanation: Ethernet MAC addresses are 48 bits in size.



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83. What is the primary function of the LLC (Logical Link Control) sub-layer?

- a. Framing
- b. Error Detection
- c. Flow Control
- d. Logical addressing and control

Ans: d. Logical addressing and control

Explanation: The LLC sub-layer is responsible for logical addressing and control, including flow control.

84. Which Data Link Layer protocol is commonly used in wireless LANs?

- a. Ethernet
- b. PPP
- c. Bluetooth
- d. Wi-Fi (IEEE 802.11)

Ans: d. Wi-Fi (IEEE 802.11)

Explanation: Wi-Fi, based on the IEEE 802.11 standard, is commonly used in wireless LANs.



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85. Which addressing scheme does Ethernet use to identify devices on a network?

- a. IP Addressing
- b. MAC Addressing
- c. Logical Addressing
- d. Subnet Addressing

Ans: b. MAC Addressing

Explanation: Ethernet uses MAC addressing to uniquely identify devices on a network.

86. Which layer of the OSI model handles the synchronization of data bits for transmission?

- a. Physical Layer
- b. Network Layer
- c. Data Link Layer
- d. Transport Layer

Ans: a. Physical Layer

Explanation: The Physical Layer handles the synchronization of data bits for transmission. It defines the electrical, optical, or wireless characteristics of the physical medium and the encoding/decoding of data signals.



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87. Which of the following is a characteristic of optical fiber communication?

- a. Susceptible to electromagnetic interference
- b. High data transmission rates
- c. Short transmission distances
- d. Low installation cost

Ans: b. High data transmission rates

Explanation: Optical fiber communication offers high data transmission rates and is not susceptible to electromagnetic interference.

88. In the OSI model, where does the Physical Layer reside?

- a. Layer 2
- b. Layer 4
- c. Layer 1
- d. Layer 7

Ans: c. Layer 1

Explanation: The Physical Layer is Layer 1 in the OSI model.



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89. Which physical layer standard is commonly used in Ethernet networks over twisted pair cables?

- a. IEEE 802.11
- b. IEEE 802.3
- c. IEEE 802.15
- d. IEEE 802.16

Ans: b. IEEE 802.3

Explanation: IEEE 802.3 defines the standards for Ethernet networks.

90. What is the role of a modem in communication?

- a. Signal amplification
- b. Error correction
- c. Modulation and demodulation
- d. Flow control

Ans: c. Modulation and demodulation

Explanation: A modem modulates digital data for transmission and demodulates received signals back into digital data.



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91. The Physical Layer of the OSI model is responsible for:

- a. Routing data packets.
- b. Ensuring reliable data delivery.
- c. Establishing connections between devices.
- d. Transmitting raw bits over the physical medium.

Ans: d. Transmitting raw bits over the physical medium.

Explanation: The Physical Layer is responsible for transmitting raw bits over the physical medium, such as copper wires, fiber optics, or wireless signals. It deals with the physical characteristics of the transmission medium.

92. Which layer of the OSI model deals with the electrical, mechanical, and procedural aspects of the physical medium?

- a. Physical Layer
- b. Data Link Layer
- c. Network Layer
- d. Transport Layer

Ans: a. Physical Layer

Explanation: The Physical Layer deals with the electrical, mechanical, and procedural aspects of the physical medium. It includes characteristics such as voltage levels, cable specifications, connectors, and physical topology.



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93. Which of the following is an example of a physical transmission medium?

- a. Ethernet
- b. TCP/IP
- c. HTTP
- d. Coaxial cable

Ans: d. Coaxial cable

Explanation: Coaxial cable is an example of a physical transmission medium used for carrying electrical signals over long distances. It consists of a central conductor surrounded by an insulating layer and a metallic shield.

94. Which device operates at the Physical Layer?

- a. Hub
- b. Switch
- c. Router
- d. Bridge

Ans: a. Hub

Explanation: A hub operates at the Physical Layer and simply broadcasts data to all connected devices without filtering based on MAC addresses.



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95. What is the purpose of a gateway in a network?

- a. Signal Amplification
- b. Connects Different Network Types
- c. Filtering Broadcast Traffic
- d. Extending Network Range

Ans: b. Connects Different Network Types

Explanation: A gateway connects different types of networks and facilitates communication between them.

96. Which device is responsible for filtering and forwarding data based on MAC addresses in a LAN?

- a. Router
- b. Hub
- c. Switch
- d. Repeater

Ans: c. Switch

Explanation: A switch operates at the Data Link Layer and makes forwarding decisions based on MAC addresses, improving network efficiency.



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97. Which device is used to connect multiple network segments and operates at the Network Layer?

- a. Repeater
- b. Hub
- c. Router
- d. Switch

Ans: d. Router

Explanation: A router operates at the Network Layer and makes forwarding decisions based on IP addresses, connecting different networks.