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Course Code: MCA- 103 Course Name: Computer Networks

Practice Questions (Theory)

Q 1. An analog signal has a bandwidth of 40 KHz. If we sample this signal and send it through a 50Kbps channel. What is the SNR?
Q 2. Assume five devices are arranges in a mesh topology. How many cables are needed? How many ports are needed for each device?
Q 3. Compare a PICONET and a SCATTERNET.
Q 4. Compare and contrast a random access protocol with a channelizing protocol.
Q 5. Compare and contrast Flow Control and Error Control.
Q 6. Compare Checksum and CRC.
Q 7. Compare NRZ-I, Manchester and Differential Manchester with the help of an example. Discuss merits and demerits of these techniques.
Q 8. Compare Stop-and-Wait ARQ protocol to the Go-Back-N ARQ Protocol.
Q 9. Compare TCP/IP model with ISO/OSI Model of computer networks.
Q 10. Compare the layers of OSI Model and TCP/IP Model. Explain the responsibility of each layer.
Q 11. Compare UDP and TCP.
Q 12. Define piggybacking and its usefulness.
Q 13. Describe IPv4 packet and explain its various fields.
Q 14. Describe the count-to-infinity problem.
Q 15. Describe the following terms that are used in the Domain Name System.
Q 16. Describe the three HDLC station type.
Q 17. Difference between access protocol and channelizing protocol?
Q 18. Difference between Bandwidth and Throughput.
Q 19. Difference between CSMA, CSMA/CD and CSMA/CA.
Q 20. Difference between Distance Vector routing and Link State routing algorithms.
Q 21. Difference between fixed size framing and variable size framing.
Q 22. Difference between Flow Control and Error Control.
Q 23. Difference between guided and unguided media with the help of an example.
Q 24. Difference between IPv4 and IPv6.
Q 25. Difference between Leaky Bucket and Token bucket algorithms.
Q 26. Difference between MTA and MAA server in Email Architecture?

Q 27. Difference between Open-Loop and Closed-Loop congestion control.
Q 28. Difference between Parabolic Antenna and Horn Antenna?
Q 29. Difference between Private and Public key algorithm.
Q 30. Difference between UDP and TCP protocol.
Q 31. Differentiate between classful addressing and classless addressing. Give examples?
Q 32. Differentiate between periodic signals and Non periodic signals.
Q 33. Differentiate between Static Routing and Dynamic Routing algorithm with examples?
Q 34. Discuss the use of Access Point in BSS and ESS.
Q 35. Distinguish between data rate and signal rate.
Q 36. Distinguish between FSK, PSK and ASK? Discuss Pulse code modulation.
Q 37. Double errors can easily be trapped in the CRC method. Explain.
Q 38. Draw a hybrid topology with a start backbone and four rings networks.
Q 39. Explain HDLC configuration and transfer modes.
Q 40. Explain Ipv4. What are the different fields in the protocols? Explain its use for Network Layer.
Q 41. Explain IPv6 Extension Header.
Q 42. Explain IPv6 Extension Header. What are the various techniques for transition from IPv4 to IPv6?
Q 43. Explain Leaky Bucket Algorithm and Token Leaky Bucket Algorithm with the help of an example.
Q 44. Explain Mobile Telephone System.
Q 45. Explain Pulse Code Modulation.
Q 46. Explain state transition diagram of TCP.
Q 47. Explain the architecture of Bluetooth. Compare a PICONET and a SCATTERNET.
Q 48. Explain the architecture of Optical Fiber? What are the different types of propagation modes in optical fiber?
Q 49. Explain the concept of Bit Stuffing in HDLC.
Q 50. Explain the difference between encoding and modulation.
Q 51. Explain the difference between node-to-node delivery and source-to-destination delivery?
Q 52. Explain the different architecture of E-Mail.
Q 53. Explain the header of IPv4.
Q 54. Explain the header of IPv6.
Q 55. Explain the layers of Internet model which are the network support layers.
Q 56. Explain the reason for moving from the Stop-and-Wait ARQ protocol to the Go-Back-N ARQ Protocol.
Q 57. Explain the various methods of resolution in DNS.
Q 58. Explain the working of Hamming Code?
Q 59. Find out the capacity of a telephone line that transmits frequencies from 300Hz with a signal to noise ratio of 35dB.
Q 60. Generate a Hamming Coded Message for the Data frame 11001.How this Hamming Code will help in Error Detection & Correction? Briefly explain.

Q 61. Give the names of various layers in OSI model. State the role of network layer in it.
Q 62. Give the NRZ-I, Manchester, Differential Manchester, and Bipolar encoding of the digital data: 1101100101.What are the different factors to measure the performance of a network?
Q 63. Given a 10 bit sequence 11011011100 and a divisor is 1101, find the CRC. Also check your result.
Q 64. How does recursive resolution differ from iterative resolution?
Q 65. How does Signal to Noise ratio affect channel capacity? Explain with the help of Shannon capacity formula.
Q 66. How does streaming live audio/video differ from streaming stored audio/video?
Q 67. How E-Mail works?
Q 68. How HDLC performs framing? What are the different types of frames supported by HDLC? What are the different fields in frames?
Q 69. How Huffman coding works? Explain with the help of an example.
Q 70. How is CRC superior to checksum?
Q 71. How is HTTP similar to SMTP?
Q 72. How is the preamble field different from the SFD field?
Q 73. How is the simple parity check related to the two-dimensional parity check? Explain with the help of an example.
Q 74. How scheduling improves QoS?
Q 75. How symmetric-key cryptography is different from asymmetric-key cryptography?
Q 76. In Go-Back-N, the sequence numbers should be one more than the size of buffer. Why?
Q 77. In Go-Back-N, the sequence numbers should be one more than the size of buffer. Why?
Q 78. Name the factors that affect the performance of a network.
Q 79. Name the factors that affect the security of a network.
Q 80. Suppose that a selective-repeat ARQ is used where W=4. Show, by an example, that a 3 bit sequence number is needed. Discuss it's all the cases of Error Control.
Q 81. Token Bucket can solve the problem of congestion. Justify your answer
Q 82. What advantages does TCP have cover UDP? What are the features, which make TCP a reliable protocol?
Q 83. What are headers and trailers, and how do they get added and removed?
Q 84. What are the advantages of Piggy Backing?
Q 85. What are the basic difference between HUB, Switch and Router? Where we can use these devices?
Q 86. What are the common Gigabit Ethernet implementations?
Q 87. What are the different compression techniques? Explain with the help of an example.
Q 88. What are the different configuration and transfer modes in HDLC.
Q 89. What are the different controlled access methods?
Q 90. What are the different Error Control Protocols in Data link Layer?

Q 91. What are the different factors to measure the performance of a network?
Q 92. What are the different internetworking tools?
Q 93. What are the different methods of Error Control?
Q 94. What are the different modulation-demodulation techniques for converting Digital to Analog and Analog to digital?
Q 95. What are the different protocols in Noiseless Channels and Noisy Channels?
Q 96. What are the different techniques for Analog Modulation and Digital Modulation?
Q 97. What are the different techniques for Analog-to-Analog and Digital-to-Analog conversion?
Q 98. What are the different techniques for Digital-to-Digital and Digital-to-Analog conversion? Explain merits and demerits.
Q 99. What are the different techniques to convert Analog-to-digital? Explain the process.
Q 100. What are the different techniques to improve Quality of Service?
Q 101. What are the different transitions from IPv4 to IPv6?
Q 102. What are the different transmission modes?
Q 103. What are the different types for Error Detection techniques? Explain.
Q 104. What are the different types of address supported by the machine? Explain.
Q 105. What are the different types of addresses?
Q 106. What are the different types of Error reporting messages in ICMP?
Q 107. What are the different types of Ethernet standards?
Q 108. What are the different types of ICMP messages? Explain all messages.
Q 109. What are the different types of ICMP messages? Explain all messages.
Q 110. What are the different types of propagation in wireless media? Difference between parabolic dish antenna and the horn antenna.
Q 111. What are the different types of Propagation modes in Optical Fiber?
Q 112. What are the Different types of Propagation modes in Optical Fiber? Discuss the advantages and disadvantages.
Q 113. What are the Different types of Propagation modes in Optical Fiber? Discuss the advantages and disadvantages.
Q 114. What are the different types of propagation modes in Satellite Communication? Difference between parabolic dish antenna and the horn antenna.
Q 115. What are the different types of Satellites available in the orbit? Compare them.
Q 116. What are the different types of switching? Compare all the types of switching techniques.
Q 117. What are the different types of transmission media?
Q 118. What are the different UNICAST routing algorithms and explain the difference between distance vector and link state routing algorithms.
Q 119. What are the different UNICAST routing protocols? Explain path vector routing.
Q 120. What are the header and trailers, and how do they get added and removed.
Q 121. What are the key elements of a protocol?

Q 122. What are the main difference between a distance vector routing protocol and a link state routing protocol? For the network, shown in the figure given below, create distance vector table for all the nodes.
Q 123. What are the responsibilities of data link layer?
Q 124. What are the responsibilities of Data Link Layer? How can it achieved?
Q 125. What are the responsibilities of Network Layer?
Q 126. What are the responsibilities of Transport Layer? How can it achieved?
Q 127. What are the two approaches to packet-switching?
Q 128. What are the two types of line configuration?
Q 129. What are the various types of timers in State Transition Diagram?
Q 130. What do you mean by BSS and ESS in wireless LAN?
Q 131. What do you mean by direct delivery and indirect delivery?
Q 132. What do you mean by NAT?
Q 133. What do you mean by static documents, dynamic documents and active documents?
Q 134. What do you mean by TCP performance issues?
Q 135. What do you mean by wireless transmission? Briefly describe the various media that support wireless transmission.
Q 136. What does the Shannon capacity and Nyquist theorem have to do with communication?
Q 137. What is an advantage of a hierarchical name space over a flat name space for a system the size of the Internet?
Q 138. What is computer networking? Discuss the various types of it.
Q 139. What is Sliding Window Protocol? What is the importance of windows size in this protocol? Compare its efficiency with Stop & Wait Protocol?
Q 140. What is the difference between Bit rate and Baud rate? Explain with diagram and examples?
Q 141. What is the difference between network layer delivery and transport layer delivery?
Q 142. What is the difference between omni directional waves and unidirectional waves?
Q 143. What is the difference between Signal Rate, Bit rate and Baud rate? Explain with diagram and examples?
Q 144. What is the function of a router?
Q 145. What is the purpose of cladding in optical fiber?
Q 146. What is the purpose of NAV?
Q 147. What is the role of Choke Packet?
Q 148. What is the sampling rate needed for a signal with a bandwidth of 30,000Hz (6,000Hz to 36,000Hz)?
Q 149. What is the sampling rate needed for a signal with a bandwidth of 30,000Hz (6,000Hz to 36,000Hz)?
Q 150. What is zero window advertisement?
Q 151. What the different traditional ciphers?
Q 152. Which of the four digital-to-analog conversion techniques (ASK, FSK, PSK or QAM) is the most susceptible to noise? Defend your answer.
Q 153. Which OSI layers are the user support layers?

Q 154. Which type of orbit does a GEO satellite have? What is the relation between the Van Allen Belts and Satellites?
Q 155. Why Congestion occurs in the network?
Q 156. Why does TCP use the three way handshake and four way handshakes?
Q 157. Why is flow control needed?
Q 158. Why we need to convert MAC to IP and IP to MAC. How can we convert them?
Q 159. With reference to Data Link Layer, discuss the frame format of HDLC. How is bit stuffing performed in HDLC? Briefly explain
Q 160. Write a short note on cryptography.
Q 161. Write a short note on DNS. What are the Generic, Country and Inverse domains?
Q 162. Write a short note on Error Control.
Q 163. Write a short note on ICMP. What are the various error-reporting and query messages in ICMP?