CN Question Sheet

• *One Marker*

1. Using diagram, write the protocol stack of TCP/IP model.
2. What is attenuation?
3. Define the term protocol and state its key elements.
4. Using bit stuffing, what will be the transmitted frame for the bit pattern — 1011111011111111001.
5. List the random-access protocols.
6. What is Autonegotiation?
7. Define analog and digital transmission.
8. Define piggybacking.
9. Define contention system.
10. Why is the system called ethernet?
11. What are standards? What are the types of standards?
12. List any two similarities available in TCP/IP and OSI model.
13. Give diagrammatic representation of bus and mesh topology.
14. What is the use of crossover cables?
15. An anolog voice signal is digitized by sampling it 6000 times per second. Calculate the bit rate where digital signal contains 256 levels.
16. Draw differential Manchester encoding for bit pattern: 010110001.
17. Apply bit stuffing on the following pattern: 01001111111101111110.
18. Write the synonym for CSMA/CD.

19. State any two uses of PPP.

20. List any two-channelization protocol.

21. Define protocol with its key elements.

22. Define mesh topology.

23. What is port address?

24. List the applications of coaxial cable.

25. What is the purpose of line testing tool?

26. Which devices operate at physical layer?

27. Define Bit rate and Baud rate.

28. Which error detection method uses one's complement arithmetic?

29. Define piggybacking.

30. State three types of MAC protocols.

31. Define Home Networks.

32. List two similarities between TCP/IP and OSI model.

33. What is the purpose of twisting wires in twisted pair cables?

34. What is distortion?

35. What is meant by Hamming Distance?

36. State the strategies used to avoid collisions.

37. What is Manchester encoding?

38. What is Pipelining?

39. Draw the Differential Manchester Encoding for the 00110011 data stream.

40. For n devices in a network, what is the number of cables required for ring topology?

41. Define protocols. What are its key elements?

42. List some application layer protocols.

43. List the examples of unguided media.

44. If the bandwidth of the channel is 10 kbps, how long does it take to transmit a frame of 100000 bits?

45. What is flow control? Why is it needed?

46. Define contention system.

47. Which topology requires a multipoint connection?

48. List the connectors used with fiber optic cables.

49. Which device operates in physical layer?

50. Which error detection method uses ones complement arithmetic?

51. Write any two advantages of Star topology.

52. What is the responsibility of Physical Layer?

53. List the cables used with Ethernet LAN.

54. Define Multiplexing and Demultiplexing.

55. Draw the frame format of PPP.

56. List the three types of MAC protocol.

57. State the difference between serial and parallel transmission.

58. What is Piggybacking?

59. A telephone network is an example of a circuit switched network. State True/False.

60. Give the diagrammatic representation of Mesh Topology.

61. Write disadvantages of star topology.

62. List any four application layer protocols.

63. State the applications of coaxial cable.

64. Draw the frame format of PPP.

65. If a composite signal is composed of five sine waves of frequencies 100, 300, 500, 700 & 900 Hz. What is the bandwidth of the signal?

66. List the three types of MAC protocols.

67. List data representation forms or types.

68. State the connectors used with fiber optic cables.

69. Draw NRZ-L encoding for bit pattern 00110110.

70. Define Hamming distance.

• *Five Marker (first)*

1. Explain design issues of the layer.
2. What is pipelining? Discuss selective repeat protocol.
3. What is Ethernet? What are its types?
4. Explain Microwave transmission in brief.
5. A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted.
6. Explain any five goals of computer networks.
7. State the difference between LAN and WAN.
8. Explain fiber optic cable with their types and applications.
9. Calculate the total delay for a frame of size 5 million bits which are sent on a link with 10 Routers, each having queuing time of 2 microseconds and a processing time of 1 microsecond. The length of the link is 2000 km and speed of light is 2×10^8 m/s in the link. The link has bandwidth 5 Mbps.
10. Explain the OSI reference model in detail.
11. Explain the packet switching with advantages and disadvantages.
12. Describe the functions performed by Data Link Layer.
13. State and explain the difference between LAN and WAN.
14. Explain coaxial cable and give its applications, advantages and disadvantages.
15. Calculate the total delay for a frame of size 5 million bits which is sent on a link with 10 routers, each having queuing time 2 microseconds and a processing time of 1 microsecond. The length of the link is 2000 km and speed

of light is 2 x 108 m/s in the link. The link has bandwidth 5 mbps.

16. What is Topology? Explain the Ring Topology with advantages and disadvantages.

17. Write a short note on Microwave Transmission.

18. Consider a CDMA scheme with 3 stations having chip sequences $[+1 -\!-1 +1 -1]$, $[+1 +1 -1 -1]$ and $[+1 +1 +1 +1]$. Station 1 sends bit 1. Station 2 sends bit O. Station 3 is silent. Show the process of encoding and decoding along with the signals.

19. What is computer Network? Describe any four goals of computer Network.

20. Calculate maximum bit rate using Shannon's theorem for a channel having bandwidth 31000 Hz and S/N ratio 20dB.

21. Write a note on microwave transmission.

- ## *Five Marker (second)*

1. Explain the factors that affect protocol efficiency.
2. What are the different services offered by ISDN?
3. Discuss the functions of transport layer.
4. Explain Pure ALOHA and slotted ALOHA with example.
5. Differentiate between port address, logical address and physical address.
6. Explain circuit switching in detail.
7. What are the responsibilities of session and presentation layer?
8. What is parallel transmission? State their advantages of disadvantages.
9. Generate the CRC code for message 1001101010. Give generator polynomial $g(x) = x^4 + x^2 + 1$.
10. Write in detail about simplex, half duplex and full duplex data communication.
11. Write a note on Infrared wireless transmission.
12. Consider a CDMA scheme with 3 stations having chip sequences $[+1\ -1\ +1\ -1]$, $[+1\ +1\ -1\ -1]$ and $[+1\ +1\ +1\ +1]$. Station 1 sends bit 1. Station 2 sends bit 0. Station 3 is silent. Show the process of encoding and decoding along with the signals.
13. Explain the similarities and differences between OSI and TCP/ IP reference model.
14. What is parallel transmission? State their advantages and disadvantages.
15. Given 12-bit sequence 110111100101 and a divisor of 1001. Find the CRC.
16. Compare and contrast OSI and TCP/IP model.

17. Explain serial transmission in detail.
18. Given a 12-bit sequence 110111100101 and a divisor of 1001. Find the CRC.
19. Compare and contrast OSI and TCP/IP model.
20. Explain the characteristics of line coding.
21. Explain the Data link protocols for noiseless channel.

- *Ten Marker*

1. Questions
   a. Calculate the maximum bit rate for a channel having bandwidth 1600 Hz if: S/N ratio is 0dB and S/N ratio is 20dB. [4]
   b. Explain any two framing methods in data link layer. [4]
   c. State the difference between De-facto and De-jure standard. [2]

2. Questions
   a. What is Channelization? Discuss three channelization protocols. [4]
   b. Given a 12-bit sequence 110111100101 and the divisor of 1001. Find the CRC. [4]
   c. Explain bit synchronization function of physical layer. [2]

3. Questions
   a. Write a note on serial transmission. [5]
   b. What is Piggybacking? Explain the advantages of Piggybacking. [3]
   c. What are the advantages of point-to-point network? [2]

4. Questions
   a. What is transmission impairment? Explain the causes of transmission impairment. [5]
   b. Explain Polling "Select" function. [3]
   c. Write any two differences between STP and UTP. [2]

5. Questions

a. What is framing? Explain any two framing methods with example. [4]

b. Explain FDMA in detail. [4]

c. Using diagram, write the protocol stack of TCP/IP model. [2]

6. Questions

a. What are Random access methods? Explain any one mechanism. [4]

b. Write notes on:

i. PPP [2]

ii. Thermal and Induced noise. [2]

c. Explain star topology with their advantages. [2]

7. Questions

a. Calculate the bit rate for a channel having bandwidth [4]
2000 Hz if:

i. S/N ratio is 0 dB

ii. S/N ratio is 20 dB.

b. Describe Pure and Slotted ALOHA in brief. [4]

c. The stop and wait protocol always accept frames in order. Comment. [2]

8. Questions

a. Discuss Attenuation and Distortion in detail. [4]

b. Draw and explain the frame format of PPP. [4]

c. Explain the terms de facto and de jure. [2]

9. Questions

a. What is framing? Explain any two framing methods with examples. [5]

b. Write a note a Reservation method used in controlled access. [3]

      c. Define physical and logical address. [2]

10. Questions

      a. What is channelization? List three channelization methods and explain any one method. [5]

      b. Explain PPP protocol with their frame format. [3]

      c. State the advantages and disadvantages of star topology. [2]

11. Questions

      a. Explain the characteristics of Line coding. [4]

      b. Explain the strategies used by CSMA/CA. [4]

      c. What is Framing? List methods of framing. [2]

12. Questions

      a. Compare the circuit and packet switching. [4]

      b. Write a short note on HDLC. [4]

      c. List any four goals of Computer Network. [2]

13. Questions

      a. Define Bridge. List the types of Bridges and explain any one type in detail. [5]

      b. State the difference between Reservation and Polling. [3]

      c. State four levels of addresses used in TCP/IP. [2]

14. Questions

      a. What is channelization? List the methods of channelization. Explain any one method. [5]

      b. Define attenuation, distortion and Noise. [3]

      c. State advantages and disadvantages of mesh topology. [2]