Question Bank

MIT, Arts Commerce & Science College, Alandi (D)
Department of B. Sc. (Comp. Sci.)
Computer Networks I

Chapter 1: Introduction to Computer Networks

1 Marks Questions:

1. Define protocol with its key elements.
2. Define Computer networks.
3. Define topology. What are the two types of topology?
4. List any four goals of networking.
5. List the uses of networks in business application.
6. Explain SAP.
7. What is peer entities?
8. Which are the two types of transmission technologies in computer networks?
9. Define broadcast networks.
10. Define point to point networks.
11. State the difference between De-Facto and De-Juro standards.
12. What is meant by acknowledged connectionless service.
13. Explain Mesh topology.

5 Marks Questions:

1. State the difference between server based and peer LAN's.
2. Explain peer-to-peer networks.
3. What are computer networks and what are network goals?
4. State the applications of computer networks.
5. State the difference between LAN and WAN.
6. Explain the different futures of LAN.
7. List the advantages of LANs.
8. State and explain different topologies in detail.
9. Write a note on service primitives.
10. State and explain different design issues of the network layers.
11. Explain connection oriented and connectionless service.

12. Write a short note on internetworks.

Chapter 2: Network Models

1 Marks Questions:

1. What are similarities available in TCP/IP and OSI model?
2. State the different layers in ISO- OSI reference model.
3. State any four protocols under application layer.
4. State different types of addresses.
5. Using diagram write a protocol stack of TCP/IP model.
6. What are MAC addresses?
7. Define physical addresses.

5 Marks Questions:

1. Write a note on TCP/IP reference model.
2. Compare and contrast OSI and TCP/IP reference models.
3. Explain in brief functions of seven layers of the OSI model.
4. Write a note on port numbers.
5. What is socket address? What is its structure?
6. Explain services of network layer and transport layer of TCP/IP model.
7. Discuss all functions of network layer.
8. Explain the functions of physical and network layer in TCP/IP.
9. What are the services provided by transport layer and application layer?

Chapter 3: Physical Layer

1 Marks Questions:

1. Write any two differences between analog transmission and digital transmission.
2. What is Manchester encoding?
3. Define multiplexing and demultiplexing.
4. Write two disadvantages of message switching.
5. What are the advantages of digital transmission?
6. Compare analog and digital transmission.
7. Define switching .what are its types?

8. State the main tasks performed by physical layer?
9. What is attenuation?
10. Define periodic and non-periodic signals.
11. Define Bit Rate, bit length.
12. Define distortion.
13. Explain bit synchronization function of physical layer.
14. Explain NRZ method for Line Coding.
15. Define Line Coding.
16. Explain RZ method of Line Coding.
17. Show NRZ-L and NRZ-I encoding of the bit pattern 01100110.
18. State Differentiate types of Line Coding.
19. State the different methods of sending data.
20. State the characteristics of line coding.

5 Marks Questions:

1. Write a short note on transmission impairments.
2. State and explain Nyquist Bit rate formula for noiseless channel.
3. State and explain Shannons law for noisy channel.
4. Which are the factors that affect the performance of the networks?
5. Write a short note on Jitter.
6. Define Line coding. State and explain different line coding schemes.
7. Differentiate parallel and serial transmission.
8. Differentiate asynchronous and synchronous transmission.
9. Explain different multiplexing techniques.
10. Differentiate circuit switching and message switching.
11. Write a short note on Integrated service digital network.
12. Which are the different services provided by ISDN?
13. Explain ISDN system architecture for large business.
14. Computer networks are always packet switched, sometimes circuit switched, but never message switched. Comment.
15. Explain ISDN system architecture for home use.

Chapter 4: Data Link Layer

1 Marks Questions:

1. What are the advantages of piggybacking?
2. State the disadvantages of piggybacking.
3. Define piggybacking.
4. Draw frame format of PPP.
5. Draw frame format of HDLC.
6. List the factors affecting protocol efficiency.
7. State error control function of data link layer.
8. State access control function of data link layer.
9. Define pipelining.
10. What is the use of information frame of HDLC?
11. What is meant by Hamming distance?
12. Which error detection method involves polynomials?
13. Bit stuff the following data. 01111111000111110011.
14. Bit stuff the following data. 00111110111011111110.
15. By using byte stuffing byte stuff the data.

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16. State the main functions of data link layer?
17. State the services provided by data link layer to the network layer.
18. Which are the standard primitives used for communication between data link layer and network layer?
19. Define Framing.
20. State the names of error correction methods.
21. State the names of error detection methods.

5 Marks Questions:

1. What are design issues of data link layer?
2. What is framing? Explain any two methods.
3. Explain the factors affecting protocol efficiency.
4. Write a short note on:
   i. HDLC
   ii. PPP
5. What is pipelining? Explain any two protocols used for pipelining.

6. Explain 1-bit sliding window protocol.
7. Explain a simplex protocol for noisy channel.
8. Given a message polynomial $X^7+X^5+X^2+X+1$ and a generator X^3+X^2+1.Find CRC.
9. Draw and explain frame format of point to point protocol.
10. Draw and explain frame format of HDLC.
11. What is pipelining? Explain selective repeat protocol.
12. What is pipelining? Explain Go- Back- N protocol.
13. Explain the services provided by data link layer to the network layer.
14. Explain UTOPIA (unrestricted simple protocol).
15. Discuss stop and wait protocol.
16. Explain different framing methods in details.
17. Explain/What is sliding window protocols?
18. A receiver receives a bit pattern 01101011. If the system is using even parity, is the pattern has an error?
19. Construct the hamming code for the bit sequence 10011101.
20. How does Go-Back-N differ from selective repeat?
21. Explain different types of frames used in HDLC.
22. Given a 10 bit sequence 10110011 and divisor of 1011, calculate CRC.
23. Explain all error detection methods.
24. Name and explain any four procedures used in the data link layer protocols.
25. Explain with example the need for pipelining.
26. What is character stuffing? Explain its use in data link layer.
27. Write a short note on PAR or ARQ.
28. Compare PAR protocol and Sliding window protocol.
29. Explain the functions of data linklayer.

Chapter 5: The Medium Access Sublayer

1 Marks Questions:

1. Define CSMA/CD.
2. What is contention system?
3. List all random access protocols.
4. Define ALOHA protocol.

5. What non-persistence CSMA?
6. What is 1-persistence CSMA?
7. What is p-persistence CSMA?
8. State controlled access methods.
9. Define polling.
10. Define Token.
11. What is the purpose of jam signal in CSMA/CD?
12. Define channelization.
13. What is chip sequence?
14. What is maximum channel utilization of pure ALOHA?
15. What is maximum channel utilization of Slotted ALOHA?

5 Marks Questions:

1. Explain at least two controlled access methods to the shared channel in details.
2. Write a short note on Reservation and Polling.
3. Write a short note on reservation and token passing.
4. What is channelization? Discuss three methods of channelization.
5. Discuss in detail CSMA/CA protocol.
6. Discuss in detail CSMA/CD protocol.
7. Explain the concept of ALOHA with its types.
8. Explain 1-persistence and non-persistence CSMA.
9. Write a short note on CSMA scheme.
10. Compare persistence and non-persistence CSMA.
11. What are the different classes of protocols used on multiple access channels?
12. Differentiate between pure ALOHA and Slotted ALOHA.
13. Comment,"CSMA /CD is not useful in satellite communication".

Chapter 6: Wired LANs

1 Marks Questions

1. What is multicasting?
2. Why there is no need for CSMA/CD on a full duplex Ethernet LAN?
3. Explain the sub layers of data link layer.
4. State the functions of Logical Link control .(LLC).
5. State the functions of MAC sublayer.

6. Draw the 802.3 frame format.
7. What happens if the collision occurs on the Ethernet LAN?
8. What is IEEE standard for wireless LAN?
9. State the services provided by wireless LAN.
10. Define BSS.
11. Define ESS.
12. What is the purpose of transceiver?

5 Marks Questions

1. Explain 802.3 standards.
2. Write a short note on
   i. Switched Ethernet.
   ii. Gigabit Ethernet.
3. What is the purpose of NIC?
4. What is the difference between unicast , multicast and broadcast address?