St. Thomas College of Engineering & Technology, Kozhuvalloor

Department of Computer Science and Engineering

CST303 COMPUTER NETWORKS

Class: S5CSE

Question Bank

Module-I

1. What is the propagation delay if distance between two points is 12,000 km? Assume propagation speed to be 2.4x10 8 m/s in cable.

2. What is the transmission time of a packet sent by a station if the length of the packet is 1 million bytes and the bandwidth of the channel is 200 Kbps?

3. Define simplex, half-duplex, and full-duplex transmission modes. Give one example for each.

4. With a neat diagram, explain Open Systems Interconnection (OSI) Reference Model.

5. Compare Twisted Pair, Coaxial Cable and Optical Fibre guided transmission media.

6. Sketch the waveform in Manchester and Differential Manchester Encoding for the bitstream 11000110010.

7. Compare LAN, MAN, WAN

8. Compare the types of networks formed based on topology. Discuss the advantages and disadvantages of each type.

9. Illustrate the construction of optical fiber and justify how this reduces the interference. Draw the structure of optical fiber.

10. List and explain the service primitives required to implement a connection oriented service.

11. List the different guided media for communication. Explain the cable type, connectors, and applications of each of them.

12. With a neat diagram, explain TCP/IP Reference Model.

Module-II

1. A bit string, 0111101111101111110, needs to be transmitted at the data link layer. If the flag used is 01111110, what is the string actually transmitted after bit stuffing?

2. What is Binary exponential backoff algorithm? Explain its working.

3. Show how the data field is managed in the Ethernet frame format.

4. An 8-bit byte with binary value 10101111 is to be encoded using an even-parity Hamming code. What is the binary value after encoding?

5. Explain the concept of Sliding window protocols. Differentiate between the working of One-bit sliding window, Selective repeat and Go-back- N bidirectional protocols.

6. Compare Go back N protocol with Selective Repeat protocol using required diagrams.

7. A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted.

8. Which are the devices operating in datalink layer and physical layer? Explain the function of each of them.

9. Draw and explain IEEE 802.11 Wireless LAN frame structure.

10. Summarize about the high-speed LANs specified in IEEE standard.

11. Discuss about the frame formats of HDLC protocol.

12. Write short notes on any two carrier sense multiple access protocols used in IEEE standards.

13. Explain the working of IEEE 802.11 MAC sublayer.

14. Explain the working of High-Level Data Link Control (HDLC) protocol.

15. Differentiate between bridges and switches.

Module-III

1. State Optimality principle. What is a Sink tree.

2. Explain the Count-to-Infinity problem in distance vector routing.

3. Explain Adaptive and Non-adaptive routing algorithms.

4. Compare the features of link state routing with distance vector routing.

5. Illustrate Distance Vector Routing algorithm with an example.

6. Illustrate Link State Routing algorithm with an example.

7. Differentiate between the implementation of datagram subnet and virtual circuit subnet.

8. What is meant by congestion in networks? How does it affect network performance? Describe any five congestion control techniques for datagram networks.

9. Illustrate the packet routing process of mobile hosts.

10. Explain the steps involved in Multicast routing.

11. Differentiate between Open loop and Closed loop approaches for congestion control.

12. Identify and describe the scheduling techniques to improve the Quality of Services (QoS)

13. Consider the following subnet.
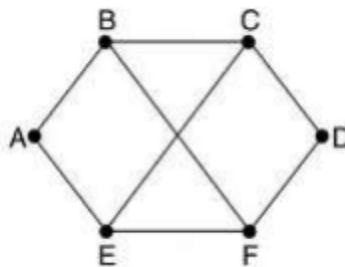
Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The measured delays to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the expected delay.

Module-IV

1. A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?

2. Illustrate the sub-netting concept. A company is granted the site address 181.56.0.0 (class B). The company needs 1000 subnets. Find the number of subnets possible and hosts which can be connected in each subnet.

3. Describe how does OSPF perform routing in larger networks? Also explain the different types of OSPF messages.

4. Explain the purposes of using ARP and RARP in the network layer. Also describe the working of each.

5. Draw and explain the header format of IPv4 packets.

6. What is meant by exterior gateway routing protocol? Explain the working of BGP?

7. What is internet multicasting? What is IGMP?

8. Explain the functions of BOOTP and DHCP.

9. Draw IPv6 Datagram format and explain its features.

10. Explain ICMP in detail.

Module-V

1. Explain UDP header format with a neat sketch.

2. Explain Remote Procedure Call(RPC) with a diagram.

3. What is TCP? Draw and explain TCP segment header. Explain TCP connection establishment process.

4. Explain SNMP basic components and their functions. Describe the basic commands used in SNMP.

5. What is DNS? Explain resource record and name server. Illustrate DNS working.

6. What is FTP? Explain it's working in detail with the commands involved.

7. Describe the TCP congestion control approaches with necessary diagrams.

8. Summarize the architecture of electronic mail system with neat diagram.

9. Distinguish the header formats of Transmission Control protocol (TCP) and User Datagram Protocol (UDP).

10. With the help of a basic model, explain the working of World Wide Web (WWW).