MALLA REDDY UNIVERSITY

II Year I Semester - Computer Networks (MR22-1CS0145)

Unit-I

1) Define Network and explain Different Categories of Networks with Advantages and Disadvantages?
2) What do you mean by Topology and Explain Different network topologies with Advantages and Disadvantages?
3) Explain the functions of various layers in ISO-OSI reference model and give advantages and disadvantages of OSI Model.
4) Explain about Protocol stack of TCP/IP with neat diagrams.
5) Discuss about the differences between TCP/IP and OSI Reference Model?
6) Discuss about similarities and difference between TCP/IP and OSI Reference Model?
7) Explain the mechanism of following devices:

   i) Hub ii) Bridge iii) Network Interface Card iv) Firewall

   v) Modem vi) Repeater vii) Router viii) Gateway
8) Write short notes on Multiplexing and Demultiplexing.
9) Discuss the various types of transmission media, highlight their merits and demerits.

Unit-II

1) Elaborate the design issues of data link layer and services provided to network layer.
2) What is framing? Explain different farming methods in Computer Networks.
3) What are the different types of error detection methods? Explain in detail about the error detecting techniques with an example.
4) Explain Cyclic Redundancy Check? Suppose we want to transmit the message 11001001 and protect it from errors using the CRC polynomial 3x + 1. Use polynomial long division to determine the message that should be transmitted.
5) Explain about Hamming code error correction method with an example.
6) Explain in detail about the sliding window protocol using Go-Back-N and Selective Repeat
7) Explain a) Byte/Character Stuffing b) Bit Stuffing
8) Discuss briefly about collision free protocols.
9) Explain briefly about MAC sub layer protocol and frame structure of IEEE 802.11.
10) What is Ethernet? Explain Ethernet MAC sub layer protocol.

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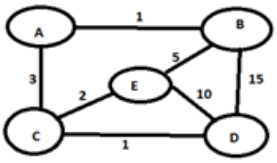
Unit-III

1) Explain about IPv6? Compare IPv4 and IPv6.
2) Explain the Distance Vector routing algorithm. Analyze its limitations comparing with other routing algorithms.
3) Compare Classful Addressing and Classless Addressing.
4) Explain the working of Link-state Routing in detail. Consider the network shown in Fig. Compute the shortest path from C to all other nodes using Link-State algorithm. Also update the forwarding table of node C.



5) Why subnetting is necessary? With suitable example, develop the concept of subnetting in Class B network.
6) Discuss about the concept of internetworking in detail.
7) Explain Internet Protocol with the neat block diagram of IPv4 headerformat.
8) Discuss briefly about:
   a) ARP protocol b) ICMP protocol
9) What is the difference between Non-adaptive and adaptive routing algorithm? Explain.
10) What is count-to-infinity problem? In which routing algorithm it exists and gives solution to it.
11) Discuss briefly about Load Shedding and jitter control methods in congestion control in datagram subnets.
12) Explain about classes of IP addresses used in network layer. Find the class of the following addresses:

    i. 227.13.14.88 ii. 10.15.0.100 iii. 192.168.0.68 iv. 172.0.10.18

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Unit-IV

1) With a neat architecture, explain TCP and UDP in detail.
2) Discuss in detail the various congestion control mechanisms in TCP.
3) Classify the advantages of connection-oriented services over connectionless services.
4) Examine the Three-Way Handshake protocol to establish the transport level connection.
5) Define and Differentiate TCP and UDP.
6) Explain the Closed Loop Congestion Control.
7) Discuss about the network performance issues.
8) Write about User Datagram Protocol (UDP).
9) Explain different quality of services parameters available in transport layer.
10) Explain in details about transport services and elements of transport layer?
11) Explain about Transport layer and discuss the various issues of transport layer in details.

Unit-V

1) Explain about Application layer and its services in detail?
2) What is DNS? What are the services provided by DNS and explain how it works.
3) Discuss the features of HTTP and how HTTP works.
4) What is World Wide Web? Explain in brief about the formats of HTTP request and Response messages?
5) Discuss the File Transfer Protocol (FTP) with a neat diagram.
6) Explain the working of electronic mail. How SMTP used in email applications.
7) Explain briefly Simple Network Management Protocol.
8) Explain in detail about TELNET.
9) Explain in detail which and how Firewall can protect the Network and Explain Next-Generation Firewall.
10) Describe the role of a DNS on a computer network with reference to its components.