Reg. No :

Question Paper Code :19CS4B

B.E / B.Tech DEGREE EXAMINATION, NOV / DEC 2021
Fifth Semester
CS19541 - COMPUTER NETWORKS
Computer Science and Engineering
(Regulations 2019)

Time : Three Hours   Maximum : 100 Marks

Answer ALL Questions
PART A (10 x 2 = 20 Marks)

1. What is the use of Hamming code?

2. Consider a mesh Network having 6 devices. Calculate the number of physical channels required to link 6 devices and the required I/O ports for each device.

3. Write the use of RTS and CTS frame.

4. How do you address the problem of address assignment inefficiency?

5. Differentiate Forwarding table and Routing table.

6. How the following IP Address 47CD:0000:0000:0000:0000:0000:A456:0124 can be written compactly?

7. Write any four applications that use UDP.

8. Draw the timeline for three-way Handshake Connection establishment in TCP.

9. State the purpose of SNMP.

10. What are the two web services architecture and write the two MEPs that are used in web services?

PART B (5 x 13 = 65 Marks)

11.   a. List the seven layers of Open System Interconnection model and explain any four layers with neat diagrams.
   **(OR)**
        b.i.How Bit stuffing in the HDLC protocol works? Justify your answer with an example. (6)
         ii. What are the methods used for flow control and explain any one method?   (7)

12.   a. i. Write Ethernet Transmitter Algorithm and explain it.   (9)
        ii. Write the need for dynamic host configuration.   (4)
<div align="center">(OR)</div>

      b. i. What is meant by loop problem in a network? How do you avoid this problem?   (7)
      ii. Draw the flow diagram of CSMA/CD and describe its process.   (6)

13.   a. Write the Link state routing algorithm. From the given below network graph write the steps to build routing table for node D.
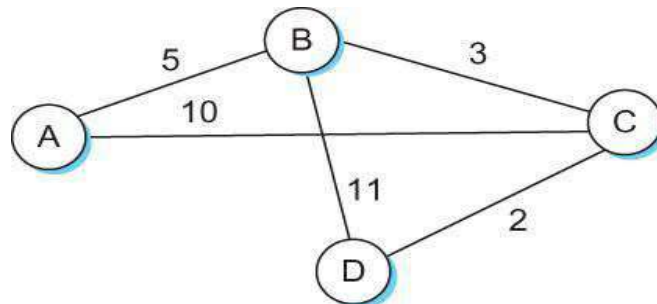
<div align="center">(OR)</div>

      b. Explain how inter domain routing is implemented using BGP.

14.   a. i. Compare TCP and UDP in terms of Reliability, Speed of transfer, Streaming of Data, Weight, Data Flow Control and Ordering of data packets.   (6)
      ii. What is TCP Congestion control? In Additive Increase Multiplicative Decrease algorithm, if the window size at the start of slow start phase is 4 MSS, the threshold at the starting of the first transmission is 32 MSS. Suppose a time out occurs during the sixth transmission, find the size of the congestion window at the end of the 9th transmission. (7)
<div align="center">(OR)</div>

      b. i.How congestion will be avoided by using RED Algorithm and explain it.   (9)
      ii. With a diagram brief the Taxonomy of applications.   (4)

15.   a. i. Explain the three components of DNS with neat diagrams.   (7)
      ii. Write the types of messages supported in HTTP.   (6)
<div align="center">(OR)</div>

      b. How electronic mail applications are carried out in a network and brief the protocols that are used in this application.

<div align="center">PART C (1x15=15 Marks)</div>

16. a. i. Suppose we want to transmit the message 10011101and protect it from errors using the CRC polynomial $x^3 + 1$. Use polynomial long division to determine the message that should be transmitted. Suppose the third bit from the left is inverted during transmission. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred?   (12)
    ii. What is the subnetwork address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0?   (3)

b. i. A company is granted the site address 181.56.0.0. The company needs 1000 subnets.Design the subnets. (7)

ii. Consider the packet format of IPV4. And if suppose a router receives an IP packet containing 600 data bytes and has to forward the packet to a network with maximum transmission unit of 200 bytes. Assume that IP header is 20 bytes long. What are fragment offset values for divided packets? (8)

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