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Reg. No. :

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B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Fourth Semester

Computer Science and Engineering

15UCS404- COMPUTER COMMUNICATION AND NETWORKS

(Regulation 2015)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5Marks)

1. How many cable segments does a fully connected network of 10 hosts have?   CO1- R

    (a) 100   (b) 45   (c) 90   (d) 81

2. How many bits are used for addressing in gigabit Ethernet?   CO2- R

    (a) 64 bits   (b) 48 bits   (c) 32 bits   (d)128 bits

3. What is the name of the fixed route established at the time of initial connection setup in ATM networks?   CO3- R

    (a) VPN   (b) virtual circuit   (c) connection network   (d) cell network

4. What is the name of routing type in which every incoming packet is sent to every neighbour router except the one from which the packet came?   CO4- R

    (a) multicast   (b) link-state   (c) shortest-path   (d) flooding

5. The HTTP protocol is mostly used to access data through____   CO5- R

    (a) WWW   (b) remote login   (c) file transfer   (d) DNS messages

<div align="center">PART – B (5 x 3= 15Marks)</div>

6. What are the ways in which IPv4 address is represented and give an example   CO1- U
    for each? Why most of the addresses in Class A are wasted?

7. Differentiate between PCF and DCF in wireless LAN   CO2- U

8. Compare X.2S standard with frame relay on the OSI layer operation and node   CO3- U
    error checking.

9. Identify the classes of the following IP address.   CO4- R
    a) 4A:30:10:21:10:1A
    b) 47:20:1B:2E:08:EE
    c) FA:A9:23:14:7A:D2

10. Suppose host A sends two TCP segments back to back to host B. The first   CO5- App
    segment has sequence number 124, and the second has sequence number 154.
    a) Restate how much data is present in the first segment?
    b) If the first segment is lost, but the second segment arrives at B, locate
        the acknowledgement number in the acknowledgement that B sends
        to A.

<div align="center">PART – C (5 x 16= 80Marks)</div>

11. (a) Define TCP/IP Model. Explain the functions and protocols and   CO1-U   (16)
         services of each layer. Compare it with OSI Model.

<div align="center">OR</div>

    (b) (i) Construct the block diagrams of an FDM and TDM   CO1-U   (10)
             communication system and explain.
         (ii) Compare the characteristics of various un-guided   CO1-U   (6)
             transmission medium.

12. (a) (i) Given the data word 1010011110 and the divisor 10111,   CO2- App   (8)
             (a) Show the generation of the codeword at the sender site
                 (using binary division).
             (b) Show the checking of the codeword at the receiver side
                 (assume no error).
         (ii) A bit string 0111111011101010111111111110101 needs to   CO2- App   (8)
             be transmitted at the data link layer. Examine the string actually
             transmitted after bit stuffing and Explain.

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OR

(b) (i) Consider a LAN with a maximum distance of 2 km. At what bandwidth would the propagation delay equal transmit delay for 100-byte packets? What about 512-byte packets?   CO2- App   (8)

(ii) What are the various conditions that has to be hold for a corrupted frame to circulate forever on a Token ring without the monitor? How does the monitor fix the problem?   CO2- App   (8)

13. (a) What is satellite-based networks? Explain various advantages and applications of GEO, MEO and LEO based communication networks.   CO3- U   (16)

OR

(b) (i) Discuss the features of ATM networks. Explain the issues involved in using ATM technology in LANs.   CO3- U   (10)

(ii) Explain satellite frequency bands with downlink and uplink frequency.   CO3- U   (6)

14. (a) (i) Explain in detail , Path vector routing protocol with a neat diagram.   CO4- U   (8)

(ii) Differentiate between ICMP error and query-reporting messages.   CO4- U   (8)

OR

(b) (i) An ISP is granted a block of addresses starting with190.100.0.0/16. The ISP wants to distribute these addresses to three groups of customers as follows: CO4- App   (10)

     a) The first group has 64 customers; each needs 256 addresses.

     b) The second group has 128 customers; each needs 128 addresses.

     c) The third group has 128 customers; each needs 64 addresses.

Design the subblocks and find out how many addresses are still available after these allocations.

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(ii) Some people argue that we can consider the whole address space as one single block in which each range of address is a subblock to this single block. Elaborate on this idea. What happens to subnetting if we accept this concept?   CO4- App   (6)

15. (a) (i) Compare and contrast TCP's three-way handshaking with four-way handshaking with flow diagram.   CO5- U   (10)

(ii) Discuss about various flow characteristics used to improve Quality of services.   CO5- U   (6)

OR

(b) (i)What DNS cache issues are involved in changing the IP address of a web server host name? How might these be minimized?   CO5- U   (8)

(ii) Draw the client and server flow diagram for retrieving the image file in HTTP and for sending the document to the sever in HTTP with an explanation.   CO5- U   (8)

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