CBCS SCHEME

USN | | | | | | | | | | 18EC71

Seventh Semester B.E. Degree Examination, Dec.2024/Jan.2025
Computer Networks

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. With the help of a diagram explain about layers in the TCP/IP protocol suite. Also discuss the addressing in each layer. **(10 Marks)**

b. Compare various networks topologies. **(06 Marks)**

c. Explain the major components of data communication with a neat diagram. **(04 Marks)**

OR

2 a. Explain circuit switched and packet switched networks with the help of diagram. **(06 Marks)**

b. What are the two principles of protocol layering? With a neat diagram explain encapsulation and decepsulation. **(08 Marks)**

c. Compare TCP/IP and OSI reference model with the support of diagram. **(06 Marks)**

Module-2

3 a. Explain the format of standard Ethernet frame. What are the minimum and maximum frame length? **(08 Marks)**

b. Discuss the ARP operation and show how ARP sends request and reply message with example. **(08 Marks)**

c. Identify if the following MAC addresses are uni cast, multicast or broad cast :

i) 45 : 20 : 1B : 2E : 08 : EE

ii) EE : FF : 10 : 01 : 11 : 00

iii) FF : FF : FF : FF : FF : FF

iv) 1C : 30 : 10 : 21 : 10 : 1A. **(04 Marks)**

OR

4 a. Illustrate byte stuffing and un staffing with an example. **(06 Marks)**

b. A pure ALOHA network transmits 200 bit frames on a shared channel of 200 kbps. What is the through put if the system (all stations together) produces?

i) 1000 frames per second?

ii) 500 frames per second?

iii) 250 frames per second? **(06 Marks)**

c. Show the behavior of three persistence methods in CSMA. **(08 Marks)**

Module-3

5 a. What is NAT? how can NAT help in address depletion? **(07 Marks)**

b. Find the class of the following IP addresses :

i) 237 · 14 · 2.1

ii) 208 · 25 · 54 · 12

iii) 14 · 23 · 120 · 8. **(03 Marks)**

c. Explain Link state Routing. Discuss the formation of least cost tree using Dijkstra's algorithm. **(10 Marks)**

OR

6 a. An organization is granted a block of addresses with the starting address 14 · 24 · 74 · 0/24. The organization needs to have 3 sub blocks of addresses : one sub block of 10 addresses, one sub block of 60 addresses, and one more sub block of 120 addresses. Design the sub blocks. Find out the total number of unused addresses. **(10 Marks)**

b. Explain IPV4 datagram format. **(10 Marks)**

Module-4

7 a. Explain selective repeat protocol in detail along with send and receive window. **(10 Marks)**

b. Explain TCP connection establishment and connection termination using three way handshaking. **(10 Marks)**

OR

8 a. Explain why the size of window in Go back N must be less than 2^m. **(08 Marks)**

b. Explain TCP segment format. **(06 Marks)**

c. Explain how segment are sent using sending and receiving buffers in TCP. **(06 Marks)**

Module-5

9 a. Compare recursive resolution and iterative resolution in Domain Name System. **(10 Marks)**

b. Write short notes on World Wide Web (www). **(10 Marks)**

OR

10 a. Explain the basic model of FTP along with the two connections. **(10 Marks)**

b. Write short notes on TELNET. **(10 Marks)**

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