

GBCS SCHEME



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15EC64

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022 Computer Communication Networks

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. List out the various components used in data communication networks and explain. (04 Marks)
- b. With the help of diagrams, explain the layers of TCP/IP and discuss the communication through internet. (08 Marks)
- c. Explain bit stuffing and byte stuffing with an example for each. (04 Marks)

OR

- 2 a. Explain with neat diagram the physical topologies for a computer network. (04 Marks)
- b. Explain the packet format of ARP and show the ARP request and ARP response transmissions with suitable example. (08 Marks)
- c. Explain the FSM for stop-and-wait protocol. (04 Marks)

Module-2

- 3 a. With the help of necessary diagrams, explain the operation of pure-ALOHA protocol. (07 Marks)
- b. Explain the different types of controlled access protocols in detail. (06 Marks)
- c. Define the type of the following addresses used in standard Ethernet:
 - i) 4A:30:10:21:10:1A
 - ii) 47:20:1B:2E:08:EE
 - iii) FF:FF:FF:FF:FF:FF(03 Marks)

OR

- 4 a. A slotted ALOHA network transmits 200-bit frames using a shared channel with a 200-kbps bandwidth. Find the throughput if the system produces.
 - i) 1000 frames per second
 - ii) 500 frames per second
 - iii) 250 frames per second.(06 Marks)
- b. With neat diagram, explain Ethernet frame format. (05 Marks)
- c. With the help of diagram, explain Gigabit Ethernet encoding scheme. (05 Marks)

Module-3

- 5 a. With necessary diagrams, explain the 3-categories of connecting devices used in internet. (06 Marks)
- b. Explain Virtual-LAN technology. (06 Marks)
- c. A block of classless address is given as 167.199.170.82/27. Find:
 - i) First address in the block
 - ii) Last address in the block
 - iii) Total number of addresses in the block. (04 Marks)



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OR

- 6 a. Explain in detail, the layers used in Bluetooth. (10 Marks)
b. An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 subblocks of addresses to use in its three subnets. One subblock of 10 addresses, one subblock of 60 addresses and one subblock of 120 addresses. Design the subblocks. (06 Marks)

Module-4

- 7 a. Explain IPV₄ datagram format in detail. (08 Marks)
b. Explain the principle of distance-vector routing. (08 Marks)

OR

- 8 a. With neat diagrams, explain the general format of ICMP message. (08 Marks)
b. Explain the 3-phases of operation used by a mobile host to communicate with a remote host. (08 Marks)

Module-5

- 9 a. Explain TCP segment format in detail. (08 Marks)
b. Outline send window and receive window structure for selective-repeat protocol. (08 Marks)

OR

- 10 a. Explain TCP connection establishment and connection termination using 3-way handshaking. (08 Marks)
b. Draw and explain FSM for Go-back-N protocol. (08 Marks)
