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No. of Printed Pages—3

EC-802

B. TECH.

EIGHTH SEMESTER EXAMINATION, 2003-2004

DATA COMMUNICATION NETWORK

Time : 3 Hours

Total Marks : 100

Note : Attempt **ALL** questions.

1. Attempt any *FOUR* parts of the following :— (5×4=20)

- (a) What are the two reasons for using layered protocols ?
- (b) List two advantages and two disadvantages of having international standards for network protocols.
- (c) If a binary signal is sent over a 3 kHz channel whose signal-to-noise ratio is 20 dB, what is the maximum achievable data rate ?
- (d) What are the differences between Baseband and Broadband coaxial cable transmission mediums ?
- (e) How are the bits of physical layer grouped into frames ?
- (f) Describe how PPP handles error detection and how it allows IP addresses to be negotiated at connection time.

2. Attempt any *FOUR* parts of the following :— (5×4=20)

- (a) Describe the concepts of pure ALOHA and slotted ALOHA systems.
- (b) Graphically represent the comparison of the channel utilization versus load for various random access protocols (i.e. pure ALOHA,

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- stotted ALOHA, 1-persistent CSMA, 0.5-persistent CSMA and non-persistent CSMA).
- (c) What are the basic strategies for channel acquisition in a cable network ? Describe the working principle of limited contention protocols.
 - (d) Briefly describe the carrier sense multiple access with collision detection protocol.
 - (e) Describe the interfaces that are used in CDPD.
 - (f) What is the adaptive tree walk protocol ? Also describe its working principle.
3. Attempt any *TWO* parts of the following :— (10×2=20)
- (a) Find out the baud rate of the standard 10-Mbps IEEE 802.3 LAN. Also sketch the encoding for the bit stream 0001110101.
 - (b) Briefly describe the connections of two bridges, using IEEE 802.4 LAN and 802.5 LAN. The first bridge is faced with 1000512-byte frames per second and second bridge is faced with 2004096-byte frames per second.
 - (c) Describe the operations of transparent and spanning tree bridges of IEEE 802.3 LAN.
4. Attempt any *TWO* parts of the following :— (10×2=20)
- (a) How does the routing algorithm decide and perform the routing of packets from the source machine to the destination machine ? Also describe the optimality principle.
 - (b) What are the causes due to which size of packets is imposed to a limited size ? Also describe the transparent and non-transparent fragmentations.

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- (c) Write short notes on the following :—
- (i) Choke packets
 - (ii) Internetworking
5. Attempt any TWO parts of the following :— (10×2=20)
- (a) Describe establishing a connection element of transport protocols. Also, describe the problems occurred when the network can lose store and duplicate packets.
 - (b) How are the connection establishment and release managed by transport protocols while they are in use ?
 - (c) Explain the TCP transmission policy. Also describe the silly window syndrome and congestion window.