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Fifth Semester B.E. Degree Examination, June/July 2011
Computer Networks – I

Time: 3 hrs.

Max. Marks:100

*Note: Answer FIVE full questions
 selecting atleast TWO from each part.*

PART – A

- 1
 - a. Explain the fundamental characteristics of a data communication system. (06 Marks)
 - b. What is a physical topology? Describe the four basic topologies. (08 Marks)
 - c. Assume that fifty devices are arranged in a mesh topology. How many links are needed? How many ports are needed for each device? (06 Marks)
- 2
 - a. What are the propagation time and the transmission time for a 5-Mbyte message if the bandwidth of the network is 1 Mbps? Assume that the distance between the sender and the receiver is 12,000 km and that light travels at 2.4×10^8 m/s. (06 Marks)
 - b. Represent the bit sequence "01001011" using Bipolar schemes AMI and pseudoternary. Explain their characteristics with regard to synchronization and DC component. (08 Marks)
 - c. Explain a PCM encoder. (06 Marks)
- 3
 - a. Describe the different transmission modes. (08 Marks)
 - b. An analog signal has a bit rate of 8000 bps and a baud rate of 1000 baud. How many data elements are carried by each signal element? How many signal elements do we need? (06 Marks)
 - c. List the multiplexing techniques. Explain the concept of multiplexing using frequency. (06 Marks)
- 4
 - a. Define FHSS and explain how it achieves bandwidth spreading. (06 Marks)
 - b. Find the codeword, using CRC given data word "1001" and generator "1011". (08 Marks)
 - c. Describe the propagation modes in an optical fiber. (06 Marks)

PART – B

- 5
 - a. Describe a stop-wait protocol with ARQ. (10 Marks)
 - b. Why bit stuffing and byte stuffing are needed? Explain them with examples. (10 Marks)
- 6
 - a. Describe the frame format of PPP. (06 Marks)
 - b. A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system produces 1000 frames per second? (06 Marks)
 - c. Describe CSMA /CA protocol with a neat flow diagram. (08 Marks)
- 7
 - a. Describe 802.3 MAC frame. (10 Marks)
 - b. Describe Bluetooth architectures. (06 Marks)
 - c. How does a VLAN reduce network traffic? (04 Marks)
- 8
 - a. Describe frequency reuse, handoff and roaming concepts in cellular telephony. (06 Marks)
 - b. Describe STS-1 frame. (08 Marks)
 - c. Describe the concept of asynchronous TDM. (06 Marks)
