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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)
END SEMESTER EXAMINATIONS, NOV/DEC 2016
SUBJECT : DATA COMMUNICATIONS[CSE 4025]
REVISED CREDIT SYSTEM
DATE: 01-12-2016

TIME:03 HOURS MAX.MARKS : 50

Instructions to Candidates:

- Answer ALL the questions.
- Missing data, if any, may be suitably assumed.

1A. Explain the following terms with respect to communication between two devices: simplex, half-duplex and full duplex, along with relevant diagrams. 2M

1B. Draw and explain any four physical topologies of computer networks. Discuss advantages and disadvantages. 4M

1C. Explain the broadband transmission of digital signals(using modulation) with diagrams 4M

2A. Distinguish between signal rate versus data rate. 2M

2B. Explain Delta Modulation and demodulation with the help of diagrams. 4M

2C. Explain Binary Amplitude Shift Keying with neat diagram. Give the expression for its bandwidth. 4M

3A. Find the bandwidth for a signal transmitting at 12 Mbps for QPSK. The value of d=0. 2M

3B. For the bit stream 01001100011, sketch the waveform in NRZ-L, NRZI, Bipolar AMI,Pseudo-ternary, Manchester and Differential Manchester. Assume that the signal level for the preceding bit for NRZI was low, the most recent preceding bit (AMI) has a negative voltage; and the most recent preceding 0 bit (pseudo-ternary) has a negative voltage. 4M

3C. What are the different types of serial data transmission? Explain with diagrams. 4M

4A. Explain the frequency Division Multiplexing and De-Multiplexing with neat Diagram. Discuss its advantages. 2M

4B. Explain Virtual Circuit Connection setup phase with suitable diagrams. 4M

4C. Using the polynomial P= 10001000000100001, generate the 16-bit CRC code for a message consisting of a 1 followed by 15 0s. 4M

1. Use long division
2. Use the shift register mechanism

5A. What is Hidden Station Problem and Exposed station Problem in wireless LANs? Explain with Diagram. 2M

5B. Explain Bit Oriented Framing with bit stuffing and Unstuffing with diagrams at Data Link Layer. 4M

5C. Draw the Ethernet frame format and explain in detail including frame length and addressing. 4M