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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)
MAKEUP EXAMINATIONS, DEC 2017
SUBJECT : DATA COMMUNICATIONS[CSE 4025]
REVISED CREDIT SYSTEM
DATE: 27-12-2017

TIME:03 HOURS MAX.MARKS : 50

Instructions to Candidates:

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

1A. A non periodic composite signal has a bandwidth of 200 kHz,with a middle frequency of 140 kHz and peak amplitude of 20V. The two extreme frequencies have an amplitude of 0V. Draw the frequency domain of the signal. 2M

1B. State and explain Shanon's capacity formula. How both Shanon's capacity formula and Nyquist formula is used to find limits and signal levels? Explain with an example. 4M

1C. Define term Latency(Delay) and explain its four components with suitable expressions. 4M

2A. A signal is carrying data in which one data element is encoded as one data element(r=1). If the bit rate is 100kbps, what is the average value of the baud rate if case factor c is between 0 and 1? 2M

2B. For the bit stream 01001100011, sketch the waveform in NRZ-L, NRZI, Bipolar AMI,Pseudoternary, 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

2C. Draw the components of PCM encoder. Explain different sampling methods for PCM. 4M

3A. Design a three stage 200x200 switch,with N=200, using Clos criteria with a minimum number of cross points. 2M

3B. Explain the working principle and propagation modes of optical fibers with suitable diagram. 4M

3C.	Explain Interleaving in Time Division Multiplexing with a Diagram.	4M
4A.	Explain Reservation Access method at MAC sub-layer with neat diagram.	2M
4B.	Explain Transition Phases of Point-to-Point Protocol(PPP) with suitable diagram.	4M
4C.	Explain CSMA/CD with a Flow Diagram.	4M
5A.	What is Hidden Station Problem and Exposed Station Problem in wireless LANs? Explain with Diagram.	2M
5B.	Write the Ethernet frame format and explain its fields.Also explain auto negotiation in Fast Ethernet.	4M
5C.	Explain how bridges are used for Raising the Bandwidth and Separating Collision Domains with neat Diagrams.	4M