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MANIPAL INSTITUTE OF TECHNOLOGY
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V SEMESTER B.E. (CSE) DEGREE END-SEM EXAMINATION – December 2010

SUBJECT: **COMPUTER COMMUNICATION & NETWORKS (CSE 309)**

Date: 8-12-2010

TIME: 3 HOURS MAX .MARKS: 50

Instructions to Candidates

- Answer **ANY FIVE FULL** questions

1a) With a neat diagram explain the TCP/IP reference model. -5-

1b) Given a channel with a bandwidth of 3 MHz and an intended capacity of 20 Mbps. Assuming white thermal noise, what signal to noise ratio is required to achieve this capacity? -3-

1c) Distinguish between Analog Transmission and Digital Transmission. -2-

2a) Explain delay distortion. How does it affect digital data? How is it overcome? -4-

2b) With neat diagrams, explain step-index multimode and graded-index multimode form of optical fiber transmission. -6-

3a) Encode a string of 8 zeroes using HDB3. Assume that the polarity of the preceding pulse was positive and that there were even number of ones since last substitution. -4-

3b) Given the message D = 1010011010 and pattern P = 10111. Find FCS using modulo-2 arithmetic. -6-

4a) A system uses the Stop-and-Wait ARQ protocol. If each packet carries 1000 bits of data, how long does it take to send 1 million bits of data if the distance between the sender and receiver is 5000 Km and the propagation speed is 2 *(10^8) m / sec? Ignore transmission, waiting and processing delays. Assume no frame is lost or damaged. -4-

4b) Assume window size is W, normalized frame transmission time is 1 and the propagation time is a. Assume full duplex point-to-point line. With diagrams, derive the expression for utilization for Error-Free Sliding Window Flow Control. -6-

5a) With diagrams of transmitter and receiver, explain synchronous TDM. -6-

5b) Differentiate between virtual-circuit and datagram subnets. -4-

6a) Assume stations with addresses 0101, 0110, 1011, 1101 and 1110 are all trying to access the channel. Show how the conflict is resolved using binary countdown collision-free protocol. -4-

6b) With an example, explain the working of MACA protocol for wireless LAN. -6-