



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



## V SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING) END SEMESTER MAKE UP EXAMINATIONS, DEC 2015/JAN 2016

SUBJECT: COMPUTER COMMUNICATION AND NETWORKS

## [CSE 311]

## **REVISED CREDIT SYSTEM**

Time: 3 Hours

Date: 08/01/2016

MAX. MARKS: 50

## Instructions to Candidates:

Answer ANY FIVE FULL questions.

♦ Missing data, if any, may be suitably assumed.

1A.What are the benefits of layered approach to network software design? Whatis one possible disadvantage of using layered protocols?2M1B.(i) Suppose that a digitized TV picture is to be transmitted from a source thatuses a matrix of picture elements (pixels), where each pixel can take on one of32 intensity values. Assume that 30 pictures are sent per second. Find the sourcerate R (bps)2M(ii) What do you mean by interlacing?1M

(ii) What do you mean by interlacing? 1M 1C. Explain important factors that can be used in evaluating or comparing the various digital-to-digital encoding techniques 5M

2A. Why do you need encoding of data before sending over a medium? How does Manchester encoding differ from differential Manchester encoding? 4M
2B. Explain How QPSK works with neat circuit diagram 4M
2C. If the received signal level for a particular digital system is -151 dbW and the receiver system effective noise temperature is 1500 K, what is E<sub>b</sub>/No for a link transmitting 2400 bps? 2M

3A. Using the  $X^{16}+X^{12}+X^5+1$  polynomial, generate the 16-bit CRC code for a message consisting of a 1 followed by 15 0s

i. Use long division.2Mii. Use the shift register mechanism2M3B. what are the transfer modes supported by HDLC? Describe each.3M3C. Describe sliding-window flow control. What is the advantage of sliding-<br/>window flow control compared to stop-and-wait flow control?3M



4A. Differentiate between static and dynamic channel allocation 4M 4B. What is the length of a contention slot in CSMA/CD for (a) a 2-km twinlead cable (signal propagation speed is 82% of the signal propagation speed in vacuum)? And (b) a 40-km multimode fiber optic cable (signal propagation speed is 65% of the signal propagation speed in vacuum)? 2M 4C. Establish the difference between ALOHA and slotted ALOHA. Also explains in detail the slotted ALOHA 4M

5A. Explain the frame structure of Ethernet MAC Sub layer protocol with a neat diagram
5B. With neat diagram explain exposed and hidden station problem in wireless LAN's and how it overcomes?
5C. Explain Interframe spacing in 802.11 with neat diagram and give its importance.
6A. Explain multicast routing with an example
6B. How is Congestion Control handled in Virtual Circuit Subnets?

6C. Explain virtual channel sensing in 802.11 MAC sub layer protocol CSMA/CA 4M