B.Tech. (CS/IT)
Mid Semester Examination 2017
V *Semester*

Paper Name: **Computer Network - II**

MM: 50

Time: 1:30 Hours

Note:

(i)   This question paper contains two sections.

(ii) Both sections are compulsory.

Section – A

Q1. Fill in the Blank / True-False   (1 X 5 = 5 Marks)

a) The relationship between Baud rate and Bit rate is _____.

b) How big is the MAC address space?

c) If the bandwidth of a signal is 5 KHz and the lowest frequency is 52 KHz. The highest frequency is _____.

d) Physical addressing is a function of the _____ layer.

e) If two or more bits in the data unit have changed from 1 to 0 or 0 to 1 is known as _____ error.

Q2. Attempt any five parts.   (3 X 5 = 15 Marks)

a) What is error detection? Why it is needed?

b) A digital signal has a bit rate of 5kbps, the duration of each bit will be _____.

c) Why is an ARP query sent within a broadcast frame?

d) Difference between pure ALOHA and slotted ALOHA.

e) Suppose a signal travels through an amplifier and its power is increased 10 times. Calculate the attenuation.

f) Assume that a voice channel occupies a bandwidth of 4 kHz. We need to multiplex 10 voice channels with guard bands of 500 Hz using FDM. Calculate the required bandwidth.

Section – B

Each question contains three parts a, b & c. Attempt any two parts of choice from each question.

Q3.   (5 X 2 = 10 Marks)

a.   Explain the various services provided by Data Link Layer to Network Layer.

b.   Assume the CRC generator polynomial of $x5 + x4 + x2 + 1$ is used to provide error checking. Use CRC algorithm to compute the bit stream that will be transmitted if a message 1110001 11000 is sent.

c. It is desired to send a sequence of computer screen images over an optical fiber. The screen is 740x480 pixels, each pixel being 24 bits. There are 30 screen images per second. How much data rate is needed?

Q4. (5 X 2 = 10 Marks)

a. Suppose the information content of a packet is the bit pattern 1110 0011 1010 1011 and an odd parity scheme is being used. What would the value of the field containing the parity bits be for the case of a two-dimensional parity scheme? Your answer should be such that a minimum length redundant bits field is used.

b. In CSMA/CD, after the fourth collusion, what is the probability that a node chooses slot K = 4? The result K = 4 corresponds to a delay of how many seconds on a 10 Mbps Ethernet?

c. Find the checksum for the following bit sequence. Assume 8-bit segment size?

11010011 10010011 10011010 01001001

Q5. (5 X 2 = 10 Marks)

a. Explain the any one method of Analog to Digital conversion.
b. Explain the Transmission Impairments in data communication and network.
c. Explain and Sketch the Manchester and Differential Manchester encoding for the following bit stream: (take necessary assumptions if any)
   01100110100101