Roll No. | | | | | | | | Paper Code: TCS-~~505~~ 504

B.Tech. (CS)
Mid Semester Examination 2019
V *Semester*

Paper Name: **Computer Network - II**

Time: 1:30 Hours MM: 50

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

b) The maximum number of VLANs that can be configured on a switch supporting the 802.1Q protocol are _____.

a) If the bandwidth of a signal is 20KHz and the lowest frequency is 50 KHz. The highest frequency is _____.

b) The data link layer takes the packets from _____ and encapsulates them into frames for transmission.

c) If a signal travels through an amplifier and its power is increased 10 times, the attenuation will be _____dB.

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

a) Why is an ARP query sent within a broadcast frame? Why is an ARP response sent within a frame with a specific destination MAC address?

b) Why do data link layer protocols position the checksum in the trailer and not in the header? Justify you answer with proper example.

c) How many responses does a computer expect to receive when it broadcast an ARP request? Why?

d) Explain the Transmission Impairments

e) Explain any one Random Access technique.

f) An analog signal has a bit rate of 8000 bps and a baud rate of 1000 baud. How many data elements are carried by each signal element? How many signal elements do we need?

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. Suppose the information content of a packet is the bit pattern 1010 1110 1001 1101 and an even 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 checksum field is used.

b. Suppose that N switches supporting K VLAN groups are to be connected via a trunking protocol. How many ports are needed to connect the switches? Justify your answer.

c. Explain the Steps of Cyclic Redundancy Check. A bit stream 1101001011 has to be transmitted using the standard CRC method. The generator polynomial is x^3+1. Show the actual bit stream transmitted.

Q4.

(5 X 2 = 10 Marks)

a. Outline and discuss the main fields in Ethernet IEEE 802.3 frame. What are the main objectives of preamble?

b. The telephone line has 4 KHz bandwidth. What is the maximum number of bits we can send using each of the following techniques?
   i. ASK
   ii. 16-QAM
   iii. 64-QAM

c. A sender needs to send the four data items 0x3456, 0xABCC, 0x02BC, and 0xEEEE. Find the checksum at the sender site. Find the checksum at the receiver site if there is no error.

Q5.

(5 X 2 = 10 Marks)

a. Explain the Persistent and Non-persistent CSMA.

b. Explain the Analog to digital conversion techniques.

c. Explain and Sketch the Manchester and Differential Manchester encoding for the following bit stream: (take necessary assumptions if any)
   011001101011