TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
2010

Full Marks: 40
Time: 2 hrs.

BIM/ Second Semester/ITC 214: Data Communication and Computer Network

Candidates are required to answer the questions in their own words as far as practicable

Group 'A'

1. Brief Answer Questions: **[10×1=10]**

a. If a spectrum of signal is 11 KHz to 33.6 MHz. Find the bandwidth occupied by the signal.

b. List down the various advantages of analog transmission over digital transmission.

c. Which type of multiplexing is preferred if pure analog data transmission has to be done?

d. What is the 32-bit binary equivalent of the IP address 196.16.4.140? What is the default subnet mask for this class of IP?

e. What is Piggy backing?

f. What is Shannon's Channel capacity?

g. What are the phases that can be seen in connection oriented service provided by the data link layer?

h. Define 'Token' in IEEE 802.4 and IEEE 802.5 standard.

i. Make distinction between circuit switching and packet switching.

j. What is persistent CSMA?

Group 'B'

Attempt any FIVE questions: **[5×6=30]**

2. a. You would like to send an e-mail to your friend from a computer at your residence. Draw and explain one of the possible models of a communication system that can support your requirement.
b. Encode the following bit stream 0001110101 with
i) Manchester Encoding ii) ASK iii) NRZ-1

3. a. Data is to be transmitted over the network using a transmitting scheme with eight levels. If the bandwidth of the network is 3500 Hz, deduce the Nyquist maximum data transfer rate. Assuming that network has a typical signal – to – noise power ratio is 25 dB, determine the maximum theoretical information rate that can be achieved**.** **[4]**
b. Calculate the white noise in decibel-watts where temperature is 15 Celsius and bandwidth is 6 MHz. **[2]**

4. **a.** Differentiate between:
i) TCP and UDP
ii) ARP and RARP
b. The message sequence is 1001101 and generator polynomial G(X) = x3+x+1. Calculate the transmitted frame.

5. **a.** Define CSMA / CD. Write an algorithm for CSMA/CD.
b. What is ALOHA? Briefly describe different types of ALOHA.

6. **a.** Differentiate GO-Back-N and selective repeat ARQ.
b. What do you mean by framing? List the different framing techniques and illustrate character count method with appropriate example and diagram/

7. **a.** Explain virtual circuit switching approach? How is it different from datagram approach?
b. What is flooding? Why flooding technique is not commonly used for routing?
c. List out the advantages and disadvantages of fixed routing.

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