CBCS SCHEME

USN | | | | | | | | | | |

18CS46

Fourth Semester B.E. Degree Examination, Jan./Feb. 2023
Data Communication

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Define Data Communication. Explain the five component of data communication. **(06 Marks)**

b. Explain the functionalities of Data link layer, Network layer and transport layer. **(09 Marks)**

c. Distinguish between TCP/IP protocols suites of OSI Model. **(05 Marks)**

OR

2 a. What is transmission impairment? Explain three causes of transmission impairment. **(07 Marks)**

b. Determine the appropriate bit rate and signal level for a channel with a 1MHz bandwidth. The signal to noise ratio for this channel is 63. **(06 Marks)**

c. Explain briefly how encapsulation and Decapsulation takes place in internet. **(07 Marks)**

Module-2

3 a. What is line coding? Represent the sequence 010011 using NRZ – I, NRZ – L, Manchester and differential Manchester schemes. **(08 Marks)**

b. Explain the three step procedure of Pulse Code Modulation (PCM) for analog to digital conversion with example. **(08 Marks)**

c. Explain any four characteristics of line coding techniques. **(04 Marks)**

OR

4 a. With neat diagram, explain Amplitude Shift Keying (ASK) and Frequency Shift Keying (FSK) conversion techniques. **(08 Marks)**

b. Describe briefly about different transmission modes. **(06 Marks)**

c. An analog signal has a bit rate of 8000bps and a baud rate of 1000 baud. How many data elements are carried by each signal element? How many signal elements are we need? **(06 Marks)**

Module-3

5 a. Why is signal multiplexing required. Explain synchronous TDM with data rate management strategies. **(07 Marks)**

b. What is the significance of spread spectrum? Discuss FHSS. **(07 Marks)**

c. Compare and contrast circuit switching with packet switching. **(06 Marks)**

OR

6 a. What is Hamming distance? Discuss about minimum hamming distance for error detection. **(06 Marks)**

b. Define cyclic codes. Find the codeword C(X) using CRC for the information 1001 with generator 1011. **(06 Marks)**

c. Explain direct sequence spread spectrum with an example. **(08 Marks)**

Module-4

7 a. What is the need of Bit stuffing and Byte stuffing at Data link layer? Explain with example for each. **(08 Marks)**

b. Illustrate the working of CDMA with suitable example. **(08 Marks)**

c. Explain three persistent methods of CDMA. **(04 Marks)**

OR

8 a. Explain the three strategies used in CSMA/CA to avoid collision. **(08 Marks)**

b. Discuss three controlled access methods. **(06 Marks)**

c. Draw three structures of HDLC frames. Briefly explain control field for S frame. **(06 Marks)**

Module-5

9 a. With a neat diagram of Ethernet frame, explain the seven fields. **(08 Marks)**

b. List the goal of Fast Ethernet. Briefly explain the challenges in fast Ethernet about access method. **(08 Marks)**

c. Explain the three reasons why CSMA/CD algorithm does not work in wireless LANS. **(04 Marks)**

OR

10 a. Explain the architecture of Bluetooth technology. **(06 Marks)**

b. Discuss briefly the operations of the cellular telephony. **(08 Marks)**

c. Explain the two kinds of services defined by IEEE 802.11 project. **(06 Marks)**

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