53 (IT 302) DTCM

2019

DATA COMMUNICATION

Paper : IT 302

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* What is the difference among port address, logic address and physical address ? 5

   (b) What are the responsibilities of the transport layer, network layer, data link layer and application layer ? 10

   (c) Name the *four* basic network topologies and cite an advantage of each type. 5

Contd.

2. *(a)* What is multiplexing? What are the various types of multiplexing? Explain in detail. Differentiate between multiplexing and multiple access. 2+10+3=15

(b) For a channel with 5 *kHz* bandwidth and 150 *kbps* data rate, what is the minimum SNR_{dB}? What is SNR? 5

3. *(a)* Encode the following bits using NQZ-L, NRZ-I, Manchester and Differential Manchester encoding. 10

0010101110101

(b) Given the dataword 1010011010 and the divisor 10111. 10

(i) Show the generation of the codeword at the sender site.

(ii) Show the checking of the codeword at the receiver site.

4. *(a)* Explain ASK, FSK and PSK with neat diagram. 10

(b) Explain CDMA with example. 10

5. *(a)* Differentiate among circuit switching, packet switching and message switching. 15

(b) What is noiseless channel? Find out maximum bit rate in noiseless channel with bandwidth of 3000 *Hz* transmitting a signal with two signal levels. 5

6. *(a)* What is flow control? How data link layer performs flow control? 10

(b) What is bit stuffing and byte stuffing? What is framing? 5

(c) Two channels, one with bit rate of 150 *kbps* and another with a bit rate of 400 *kbps*, are to be multiplexed using pulse stuffing TDM with no synchronisation bits. 5

(i) What is the size of the frame in bits?

(ii) What is frame rate?

(iii) What is data rate?

7. Write short notes on : 10×2=20

(a) Transmission Impairments

(b) Transmission Media.
