18/8/17 Repeat

IT 5 – 1(RC)

T.E. (I.T.) (Semester – V) (RC) Examination, May/June 2017
INTRODUCTION TO DATA COMMUNICATION

Duration : 3 Hours | Total Marks : 100

Instructions *: 1) Answer* ***any 5*** *questions, taking atleast* ***one*** *from* ***each*** *Module.*
2) Assume ***any*** *suitable data* ***if necessary****.*

MODULE – 1

1. a) List the factors that affect the performance, reliability and security of a network. **6**

   b) Give the disadvantages of each of the following topologies : Mesh, Star, Bus. **6**

   c) List and explain any three services provided by the transport layer. **3**

   d) Why are protocols needed ? What are the key elements of a protocol ? **5**

2. a) How do the layers of the TCP/IP protocol suite correlate to the layers of the OSI model ? **6**

   b) Describe any two types of transmission impairments in a transmission medium. **4**

   c) Discuss the modes of propagating light along optical channels. **6**

   d) When the signal is 10 volts and the noise is 5 millivolts, what is the maximum data rate supported by a telephone line (Bandwidth = 4KHz) ? **4**

MODULE – 2

3. a) With the help of a neat diagram explain frequency hopping spread spectrum. **8**

   b) Encode the following using NRZ-L, Manchester and HDB3 encoding 110000110000100000. **6**

   c) Compare the methods of serial transmission. Discuss the advantages and disadvantages of each. **6**

P.T.O.

4. a) With the help of a neat diagram explain the functioning of EIA-232 in synchronous full duplex mode over a leased line using primary channel. 8

   b) Explain the asymmetry of 56K modem. 5

   c) Discuss the various methods for converting analog data to analog signals. 5

   d) What is the purpose of a null modem ? 2

MODULE – 3

5. a) The code 11110101101 was received. Using the Hamming code algorithm, what was the original code sent ? 5

   b) In stop and wait ARQ, what happens if a NAK is lost in transit ? Why is there no need for NAKs to be numbered ? 5

   c) With the help of a neat diagram show how Poll/Response is implemented using HDLC. 7

   d) In HDLC, what is the purpose of bit stuffing ? 3

6. a) With the help of a neat diagram explain the sliding window flow control mechanism. 7

   b) Explain the steps involved in creating a checksum. Given a sequence 1001001110010011100110000 1001101, find checksum. 6

   c) A message is broken into four pieces. Discuss the transmission of packets using the datagram approach and permanent virtual circuit approach to packet switching. 7

MODULE – 4

7. a) Explain the type 1, 2 and 3 operation in LLC protocol. 8

   b) What are the typical requirements that a wireless LAN must meet on any LAN ? 7

   c) What are the differences between Backend LANs, SNs and Backbone LANs ? 5

8. Write short notes on : (4×5=20)

   a) Bluetooth architecture

   b) Fiber Channel

   c) Spanning tree approach

   d) Networking and internetworking devices.