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15CS46

Fourth Semester B.E. Degree Examination, June/July 2023
Data Communication

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1   a. What is data communication? Explain with neat sketches, three types of communications between the devices considering data flow. **(06 Marks)**
    b. With a neat diagram, explain the functionalities of each layer of TCP/IP suite. **(06 Marks)**
    c. List and explain the four levels of addresses used in an internet employing the TCP/IP protocol. **(04 Marks)**

OR

2   a. What is transmission impairment? Write a descriptive note on three causes of transmission impairment. **(05 Marks)**
    b. Define Latency. Briefly explain the components of Latency. What are the propagation time and transmission time for a 5M byte message (image) if the bandwidth of the network is 1 Mbps? Assume that the distance between the sender and receiver is 12000 km and light travels at 2.4×10^8 m/s. **(05 Marks)**
    c. What is line coding? Drawing line code sequence 01001110 in NRZ-L, Manchester, Differential Manchester, RZ and AMI coding scheme. **(06 Marks)**

Module-2

3   a. Give the block diagram of PCM encoder and state the role of each processes. **(05 Marks)**
    b. Explain different types of transmission modes. **(08 Marks)**
    c. Explain the concept of constellation diagram. **(03 Marks)**

OR

4   a. A multiplexer combines four 100 kbps channels using a time slot of 2 bits. Show the output with four arbitrary inputs. What is the frame rate? What is the duration? What is the bit rate? What is the bit duration? **(04 Marks)**
    b. What is spread spectrum? Explain FHSS and bandwidth sharing. **(08 Marks)**
    c. What is virtual circuit network? List the characteristics of the same. **(04 Marks)**

Module-3

5   a. Explain CRC with data word 1001 and divisor 1011:
       (i)   Show the generation of code word at the sender site.
       (ii) Show the checking of code word at the receiver site (assume no error) **(10 Marks)**
    b. Explain internet checksum with procedure to calculate the traditional checksum. **(06 Marks)**

OR

6   a. Explain briefly, with neat figure stop and wait protocol and HDLC frames. **(12 Marks)**
    b. Explain the transitional phases of point to point protocol. **(04 Marks)**

Module-4

7 a. With flow diagram, explain the working of CSMA/CD. (08 Marks)
   b. What is channelization? List and explain the channelization protocols. (08 Marks)

OR

8 a. Mention the five goals of Fast Ethernet. Give the importance of "AUTONEGOTIATION". (06 Marks)
   b. Define Bluetooth and explain the architecture of Bluetooth. (10 Marks)

Module-5

9 a. Explain the WiMAX MAC frame format. (10 Marks)
   b. Describe GEO satellites. (06 Marks)

OR

10 a. Explain Mobile IP with phases. (08 Marks)
    b. Explain in detail IPV6 packet format. (08 Marks)

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