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17CS46

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. With neat diagram, explain the components of data communication. **(08 Marks)**

b. What is transmission impairment? Briefly explain three causes of transmission impairment. **(08 Marks)**

c. Explain briefly about Shannon capacity and Nyquist bit rate for communication channel. **(04 Marks)**

OR

2   a. With neat diagram explain TCP/IP protocol suite of computer network. **(08 Marks)**

b. With neat diagram, explain four basic topologies. **(06 Marks)**

c. Explain Simplex, Half duplex and Full duplex with respect to data communication. **(06 Marks)**

Module-2

3   a. With neat diagram, explain pulse code modulation. **(10 Marks)**

b. With neat diagram, explain ASK, FSK and PSK. **(06 Marks)**

c. An analog signal has a bit rate of 8000bps and a band rate of 1000 band. How many data elements are carried by each signal element? How many signal elements do we need? **(04 Marks)**

OR

4   a. What is circuit switching? Explain three stages of circuit switching. **(06 Marks)**

b. What is multiplexing? Explain frequency division multiplexing and Time division multiplexing. **(08 Marks)**

c. Explain frequency Hopping spread spectrum. **(06 Marks)**

Module-3

5   a. Find the code word using CRC encoder and determine whether the data word is accepted of discarded. The given data is 1001 and the generator is 1011. **(10 Marks)**

b. Explain stop-and-wait protocol. **(05 Marks)**

c. Explain two types of Errors. **(05 Marks)**

OR

6   a. With neat diagrams, explain Frame format and transition phases of PPP. **(10 Marks)**

b. Explain character oriented framing and bit oriented framing. **(10 Marks)**

Module-4

7 a. With neat diagram, explain pure ALOHA and slotted ALOHA protocols. **(10 Marks)**
    b. List different controlled access protocols. Explain Reservation method. **(05 Marks)**
    c. Explain frequency Division multiple Accesses. **(05 Marks)**

OR

8 a. With the neat diagram, explain Ethernet frame format. **(10 Marks)**
    b. Explain Bluetooth Architecture. **(05 Marks)**
    c. Explain the different types of addressing mechanisms in IEEE 802.11. **(05 Marks)**

Module-5

9 a. Explain in detail cellular Telephony operation. **(10 Marks)**
    b. Write a note on WIMAX. **(05 Marks)**
    c. List major strategies involved in transition from IPV4 to IPV6. Explain any two. **(05 Marks)**

OR

10 a. Define Home Address in mobile IP. Explain three phases for communication in Mobile IP. **(08 Marks)**
    b. Explain Satellite network and its categories. **(08 Marks)**
    c. Explain Error reporting message of ICMPV6. **(04 Marks)**

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