CBCS SCHEME

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021
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.   Explain Different Forms of Data Representation.   **(06 Marks)**
    b.   What is a Network? Explain briefly three important criteria that a network must meet.   **(06 Marks)**
    c.   Describe in detail TCP/IP protocol suite.   **(08 Marks)**

OR

2   a.   Distinguish Simplex , Half Duplex and Full Duplex form of communication.   **(06 Marks)**
    b.   What is Line coding? Discuss about NRZ – I and Manchester encoding with example.   **(06 Marks)**
    c.   Elucidate on Transmission Impairment.   **(08 Marks)**

Module-2

3   a.   What is TDM? Write about inter leaving process in TDM with a schematic.   **(06 Marks)**
    b.   Give a brief account on Datagram Network.   **(06 Marks)**
    c.   Discuss about Quantization , Quantization levels and Quantization error. Suppose a telephone subscriber line must have an SNR_{DB} above 40. What is the minimum number of bits per sample?   **(08 Marks)**

OR

4   a.   What is Spread Spectrum? Explain FHSS Frequency Selection mapping.   **(06 Marks)**
    b.   What is Circuit Switched Network? Mention three phases of circuit switched network. Discuss about Delay and Efficiency in Circuit Switched Networks.   **(06 Marks)**
    c.   Discuss about Multiplexing and Demultiplexing process in FDM. Five channels each with a 100KHz Bandwidth are to be multiplexed. What is the minimum bandwidth of the link if there is a need for a guard band of 10KHz between the channels to prevent interference?   **(08 Marks)**

Module-3

5   a.   What is Framing? Explain Bit Oriented Protocols.   **(06 Marks)**
    b.   What is Forward Error Correction? How Forward error correction is done using Hamming Distance.   **(06 Marks)**
    c.   With a outline sketch, describe about stop and wait protocol. Also give the FSM for sending and receiving node.   **(08 Marks)**

OR

6   a.   Explain different fields of PPP frame.   **(06 Marks)**
    b.   What is Checksum? Enumerate the procedures to calculate the traditional checksum.   **(06 Marks)**
    c.   What is CRC? How CRC is computed? Compute CRC bits of Data in 1001101 and generator is 1011.   **(08 Marks)**

Module-4

7 a. What is Channelization? Mention different channelization techniques. Explain FDMA.
   (06 Marks)
   b. Describe about different implementations of standard Ethernet. (06 Marks)
   c. Give architectural comparison of wired and wireless LANs. Discuss about characteristics of wireless LANs that does not apply to wired LANs. (08 Marks)

OR

8 a. Explain CSMA/CD with a flow diagram. (06 Marks)
   b. Explain how hidden station problem of wireless networks is resolved using CSMA/CA? What is the purpose of NAV in CSMA/CA. (06 Marks)
   c. What are the advantages of dividing an Ethernet LAN with a Bridge? What is the relationship between a switch and a bridge? (08 Marks)

Module-5

9 a. What is Cellular Telephony? Explain Frequency reuse principle in Cellular Telephony.
   (06 Marks)
   b. Mention three types of IPV6 addresses. Also briefly explain about special addresses.
   (06 Marks)
   c. Give an elaborate account on GSM Architectures, Features and Working. (08 Marks)

OR

10 a. Briefly explain different fields of IP Datagram. In an IPV4 packet the value of HLEN is $(1000)_2$. How many bytes of options are being carried by this packet? (06 Marks)
   b. Describe about different transition strategies from IPV4 to IPV6. (06 Marks)
   c. Mention different types Satellites. Explain the working of GPS. (08 Marks)

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