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17CS46

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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

**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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