CBCS SCHEME

USN | | | | | | | | | | |

15CS46

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021
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. Define Topology. Explain four basic topologies. **(08 Marks)**

b. What are the factors that determine whether a communication system is a LAN or WAN? **(04 Marks)**

c. Differentiate between Packet switched network and Circuit switched network. **(04 Marks)**

OR

2 a. With a neat diagram of TCP/IP protocol suite, discuss each layer of the suite. **(08 Marks)**

b. A line has a signal – to – noise ratio of 1000 and a bandwidth of 4000 KHz. What is the maximum data rate supported by the line? **(04 Marks)**

c. For the given data : 0 1 1 0 0 1, plot the waveform for NRZ – L , NRZ– I , RZ and Manchester line coding schemes. **(04 Marks)**

Module-2

3 a. Explain the process of Pulse Code Modulation (PCM), with illustrations in each process. **(08 Marks)**

b. We have sampled a low pass signal with a bandwidth of 200 KHz, using 1024 levels of quantization :

i) Calculate the bit rate of the digitized signal

ii) Calculate SNR_{dB} for this signal

iii) Calculate PCM bandwidth of this signal. **(08 Marks)**

OR

4 a. Discuss the following digital to analog conversion mechanisms :

i) ASK ii) FSK iii) PSK. **(08 Marks)**

b. Write the taxonomy of switched networks and their presence in the TCP / IP protocol suite layers. And explain circuit switched network and packet switched network with respect to delay. **(08 Marks)**

Module-3

5 a. Given the data {1001} and the divisor {1011}, simulate Cycle Redundancy Code (CRC) using i) Paper – and – Pencil division process ii) Polynomials. **(06 Marks)**

b. Suppose the message is {7, 11, 12, 0, 6} each of 4 bit. Calculate the checksum and simulate for error free and error example. **(06 Marks)**

c. What is the Hamming distance for i) Error detection ii) Error correction? Explain. **(04 Marks)**

OR

6 a. Using an example, explain Stop – and - Wait protocol with Piggy backing. **(08 Marks)**

b. Explain HDLC framing types. **(08 Marks)**

Module-4

7 a. What is Controlled access? Discuss three Controlled access methods. (06 Marks)
b. Explain Ethernet frame format. (06 Marks)
c. Define the following destination addresses :
i) 4A : 30 : 10 : 21 : 10 : 1A
ii) 47 : 20 : 1B : 2E : 08 : EE
iii) FF : FF : FF : FF : FF : FF. (04 Marks)

OR

8 a. Compare three Fast Ethernet implementation. (06 Marks)
b. Discuss the hidden and exposed terminal / station problem in 1EEE 802.11. (04 Marks)
c. Write a short note on Bluetooth layers. (06 Marks)

Module-5

9 a. Compare two services of WiMAX. (04 Marks)
b. Discuss the following operations of cellular telephones :
i) Frequency reuse principle ii) Handoff. (04 Marks)
c. Explain IPV4 datagram format. (08 Marks)

OR

10 a. Write a short note on Messages of ICMPV4 protocol. (06 Marks)
b. Explain the following ICMPV4 debugging tools :
i) Ping ii) Trace route. (06 Marks)
c. Discuss IPV6 extension headers. (04 Marks)

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