

Roll No.

Total Pages : 3

013611

May 2023

B.Tech. (ME) VI SEMESTER

Data Communication and Networking (OEC ME 612)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What is Nyquist signaling rate for noiseless channel?
(1.5)
- (b) List the *three* techniques of digital-to-digital conversion.
(1.5)
- (c) What is piggybacking? (1.5)
- (d) What are headers and trailers? (1.5)
- (e) What is Shannon capacity for Noisy Channel? (1.5)
- (f) Demonstrate the need for sub netting. (1.5)

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- (g) What is topology? Which is the best network topology and why? (1.5)
- (h) Relate WWW and Internet. (1.5)
- (i) Choose the class of the following IP address :
(a) 110.34.56.45 (b) 212.208.63.23. (1.5)
- (j) What is a packet? How is it different from a data frame? (1.5)

PART-B

- 2. (a) Analyze the working of (i) Non-Return-to-Zero (NRZ) and (ii) Pulse Code Modulation (PCM) techniques. (10)
- (b) Discover and Discuss the various causes for Transmission Impairment. (5)
- 3. (a) Compare Bit oriented versus Byte oriented protocol. Draw the HDLC frame format. (8)
- (b) Explain Cyclic Redundancy Check? Suppose we want to transmit the message 11001001 and protect it from errors using the CRC polynomial $x_3 + 1$. Use polynomial long division to determine the message that should be transmitted. (7)
- 4. Explain the OSI model for networking in brief. How does it differ from TCP/IP model? (15)

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- 5. (a) Explain Go-Back-N OR Stop-N-Wait Protocol. (5)
- (b) What is multiplexing? Differentiate between synchronous and asynchronous TDM. (10)
- 6. (a) What is ISDN? Explain its various functional units with the help of a diagram and differentiate between BRI and PRI. (7)
- (b) What is switching? Differentiate between circuit switching and packet switching. (8)
- 7. Write a note on : (15)
- (a) SMTP.
- (b) Token Ring.
- (c) Guided and Unguided Media.

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