



10CS55

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023
Computer Networks – I

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. What is data communication? What are its important fundamental characteristics? List and explain the five components of a data communication system, with examples. (12 Marks)
b. List out the layers in OSI reference model and explain any two layers in detail. (08 Marks)
- 2 a. What do you mean by a composite signal? How does it help in digital data transmission? Explain. (04 Marks)
b. Define : (i) Bit rate (ii) Bit length (02 Marks)
c. What is meant by Transmission impairment? Discuss 'Noise'. (10 Marks)
d. What is the propagation time, if the distance between the two points is 12000 km? Assume propagation speed in the cable is 2.4×10^8 m/s. (04 Marks)
- 3 a. Explain FDM and synchronous TDM with an example for each. (10 Marks)
b. Explain briefly QPSK with implementation and constellation diagram. (06 Marks)
c. Differentiate between circuit switched, datagram network and virtual circuit networks. (04 Marks)
- 4 a. What is internet checksum? List the steps undertaken by the sender and the receiver for error detection. (08 Marks)
b. With a neat diagram, explain CRC encoder and decoder C(7, 4). (12 Marks)

PART – B

- 5 a. What do you mean by flow control and error control? Discuss its improvisation from stop-and-wait ARQ to Go-Back-N protocol and Go-Back-N to selective repeat protocol. (12 Marks)
b. What is the frame format of PPP? Explain. (08 Marks)
- 6 a. Explain CSMA/CA with flow diagram. (07 Marks)
b. Explain with neat diagram the three popular controlled access methods. (09 Marks)
c. A pure ALOHA network transmits 200 bit frames on a shared channel of 200kbps. What is the through put if the system produces i) 1000 frames/sec ii) 500 frames/sec. (04 Marks)
- 7 a. Describe Bluetooth architecture. (10 Marks)
b. List out the connecting devices used in data communication. Explain about repeaters and bridges. (10 Marks)
- 8 a. Compare IPV₄ over IPV₆. (04 Marks)
b. What is NAT? Explain with an example. (08 Marks)
c. What is the need IP addressing scheme? Explain IPV₄. (08 Marks)

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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.