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10CS55

**Fifth Semester B.E. Degree Examination, June/July 2023**  
**Computer Networks – I**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

- 1 a. What is the difference between data and information? (02 Marks)  
b. What are the basic characteristics of data communication? Explain. (06 Marks)  
c. What are the functional roles of the following: (12 Marks)  
(i) Physical layer (ii) Data link layer (iii) Network layer  
(iv) Transport layer.
- 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  $2.4 \times 10^8$  m/s. (04 Marks)
- 3 a. What is multiplexing? With neat diagram, explain FDM. (06 Marks)  
b. What is spread spectrum? Explain with an example direct sequence spread spectrum. (06 Marks)  
c. With a neat diagram, explain how message can be sent from one system to another using datagram networks. (08 Marks)
- 4 a. Define hamming distance. Explain simple parity check code C(5, 4) with  $d_{\min} = 2$ . How many bits can be corrected? (06 Marks)  
b. Find the code word  $c(x)$ , using CRC for the information  $d(x) = x^3 + 1$  with generator polynomial  $t(x) = x^3 + x + 1$ . (08 Marks)  
c. Explain with an example. The computation of internet checksum. List the steps undertaken by the sender and receiver for error detection. (06 Marks)

**PART – B**

- 5 a. Explain briefly, with neat figure stop and wait ARQ and Go Back N ARQ. (12 Marks)  
b. Explain the frame format and transitional phases of point to point protocol. (08 Marks)
- 6 a. Explain : i) CSMA ii) CSMA/CD. (12 Marks)  
b. Describe 802.3 Mac frame. (08 Marks)
- 7 a. What is GSM? Explain. (08 Marks)  
b. What are the issues with Hidden and Exposed node? Explain. (06 Marks)  
c. Which are the layers of Bluetooth? Explain. (06 Marks)
- 8 a. Compare IPV<sub>4</sub> over IPV<sub>6</sub>. (04 Marks)  
b. What is NAT? Explain with an example. (08 Marks)  
c. What is the need IP addressing scheme? Explain IPV<sub>4</sub>. (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.