

Full Marks: 70
Time: 3 hours

Question No.1 is compulsory and answer any five Questions from the rest.

1. a. What is the difference between half duplex and full duplex modes of transmission? [2X10]
b. Identify the five components of data communications system.
c. Write the functions of Network layer.
d. What are the three key elements of a protocol?
e. Why switching is required in computer networking? Define a switch.
f. How do guided media differ from unguided media of transmission?
g. What are the advantages of dividing an Ethernet LAN with a bridge?
h. What are the classes of addresses as below?
(i) 237.14.2.1 (ii) 252.5.10.5 (iii) 114.34.2.8 (iv) 14.23.120.8
i. A pure ALOHA network transmits 200 bits frames on a shared channel of 200 kbps. What is the throughput if the system produces 1000 frames per second?
j. Explain substitution cipher with an example. [6]
2. a. What are the different addresses used in an internet using TCP/IP protocols? Briefly explain each of them. [6]
b. Name the four basic network topologies and give an advantage of each. [4]
3. a. Explain the Unipolar, and Bipolar scheme of line coding? How does block coding improve the performance of line coding. [6]
b. Describe a multiplexing technique, which is applied, when bandwidth of a link is greater than the combined bandwidth of the signals to be transmitted. [4]
4. a. Describe framing used in data link layer and its requirements. [4]
b. Explain the stop & wait protocol with the help of neat diagram and algorithm. [6]
5. a. Explain the slotted ALOHA protocol for multiple access. How does it differ from pure ALOHA protocol? [6]
b. Give a comparison of TDMA and CDMA. [4]

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6. a. Describe how fast Ethernet is implemented at the physical layer. [6]

Show the encoding scheme for two UTP category 5 and two fibers.

b. Describe classless addressing used in IPv4 protocol. [4]

7. a. Describe different types of cipher used in cryptography with suitable example. Discuss their relative advantages and disadvantages. [7]

b. Differentiate between symmetric key and unsymmetric key used in cryptography. [3]

8. Write short notes on any two [5X2]

a. Frequency Shift Keying

b. Firewall

c. HTTP & FTP

d. Line and Block coding