



CBCS SCHEME

18CS46

18CS46

Fourth Semester B.E/B.Tech. Degree Examination, Dec.2025/Jan.2026

Data Communication

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Data Communication with its basic components and also differentiate between TCP/IP from OSI model. (10 Marks)
- b. Explain different causes for transmission impairment during signal transmission through media. (10 Marks)

OR

- 2 a. What is the significance of Nyquist and Shannon Theorems? If a channel has a Bandwidth of 1 MHz. The SNR of channel is 64. Determine the appropriate bit rate and signal level required? (10 Marks)
- b. What are the functions of
- Data link layer
 - Network layer
 - Transport layer
 - Star Topology
 - Mesh Topology.
- (10 Marks)

Module-2

- 3 a. With the help of a neat diagram, explain ASK, FSK and PSK. Discuss the bandwidth requirement in each case. (10 Marks)
- b. What are the different modes of data transmission? Discuss serial transmission. (10 Marks)

OR

- 4 a. Draw Manchester line code for 11001010. Mention its advantages and disadvantages. (10 Marks)
- b. Explain Digital Signal transmission and distinguish between low pass and band pass channel. (10 Marks)

Module-3

- 5 a. What is the special property of cyclic code? Design encoder and decoder for the data 1001 and divisor 1011. (10 Marks)
- b. Why signal multiplexing required? Which are the Analog and digital multiplexing? Discuss any one technique. (10 Marks)

OR

- 6 a. What is Spread Spectrum? Explain direct sequence spread spectrum with an example. (10 Marks)
- b. With an example, explain the computation of internet checksum. List the steps undertaken by the sender and receiver for error detection. (10 Marks)

Module-4

- 7 a. What is the need of Bit and Byte stuffing in DLL? Explain them with example. (10 Marks)
- b. What is the taxonomy of MAC protocols? Discuss CSMA/CD protocol. (10 Marks)

OR

- 8 a. Write the structure of HDLC frames. Discuss control field of S-frame. (04 Marks)
- b. Illustrate the working of CDMA with example. (06 Marks)
- c. Discuss :
- IPV4 addressing scheme
 - DHCP
- (10 Marks)

Module-5

- 9 a. What is the architecture of Bluetooth? Explain its frames. (10 Marks)
- b. How Bridge network improves DLL performance? What are the goals of Fast Ethernet? (10 Marks)

OR

- 10 a. Describe the MAC layers in IEEE 802.11 standard and also explain Hidden and Exposed station problems in IEEE 802.11. (15 Marks)
- b. With a neat diagram, explain BSS and ESS. (05 Marks)
