

SHEET (11)

(2½ hours)

Total Marks: 75

- N. B.: (1) **All** questions are **compulsory**.  
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.  
(3) Answers to the **same question** must be **written together**.  
(4) Numbers to the **right** indicate **marks**.  
(5) Draw **neat labeled diagrams** wherever **necessary**.  
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt **any three** of the following:

- Explain basic communication system with block diagram.
- Discuss parallel transmission and serial transmission.
- List and explain the function of each layer of ISO's OSI model with neat diagram.
- Explain the process of Amplitude Shift Keying with the data '10110'.
- Differentiate between asynchronous transmission and synchronous transmission.
- Show Unipolar NRZ and Polar RZ encoding pattern for bit stream '10110100101'

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2. Attempt **any three** of the following:

- Draw and explain Model of Spread Spectrum in digital communication system.
- What are the problems in connecting multiple devices? How switching techniques overcome these problems?
- What are different duties assigned to data link layer of ISO's OSI model? Explain in brief.
- Explain basic ARQ system with its type.
- Generate the CRC code for message '1001101010'. Give generator polynomial.  
 $g(X) = X^4 + X^2 + 1$
- Compare twisted pair, co-axial and fiber optic cable.

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3. Attempt **any three** of the following:

- Write a short note on Framing and explain any 2 framing methods with example.
- Explain concept of sliding window with movement of both sender and receiver window.
- Explain S-frame and U-frame of HDLC with format.
- Draw and explain flow of ALOHA protocol and compare Pure ALOHA with Slotted ALOHA.
- Explain the architecture of Bluetooth with all its layer.
- Write a short note on
  - GPS
  - Geostationary Satellite.

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4. Attempt **any three** of the following:

- What do you mean by forwarding? Explain Next hop method and Route method of forwarding.
- Differentiate between Adaptive routing algorithm and Non-adaptive routing algorithm.
- Draw structure of IPv4 header and explain various fields.
- What are drawbacks of IP and how ICMP overcome it? Explain.

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- e. Write a short note on OSPF and write features of OSPF.
- f. What are advantages of Fragmentation? Explain two strategies of fragmentation.

5. Attempt any three of the following:

- a. Explain functions given to transport layer of ISO's OSI.
- b. Explain following concepts with the context of TCP
  - (a) Stream delivery
  - (b) Sending and Receiving buffers.
- c. Write a short note on UDP.
- d. How DNS is beneficial for user? Explain.
- e. What were the problems with message sending? And how MIME resolve them?
- f. Explain the following:
  - (a) WWW
  - (b) FTP

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