$(2\frac{1}{2} \text{ hours})$

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N.	B.:	(1)	All	auestions	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 <u>neat labeled diagrams</u> wherever <u>necessary</u>.
- (6) Use of Non-programmable calculators is allowed.

1. Attempt any three of the following:

15

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

2. Attempt *any three* of the following:

15

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

3. Attempt any three of the following:

15

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

4. Attempt <u>any three</u> of the following:

15

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

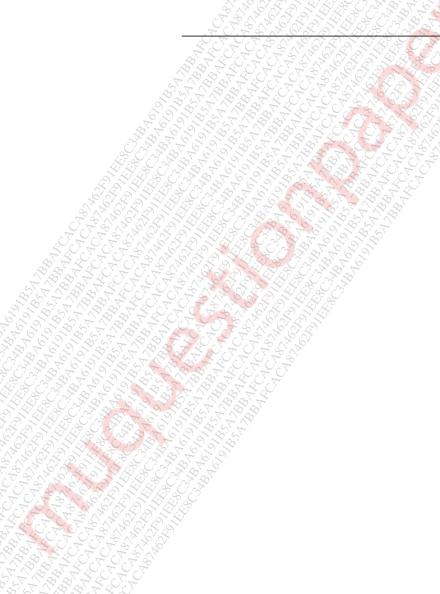
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- e. Write a short note on OSPF and write features of OSPF.
- f. What are advantages of Fragmentation? Explain two strategies of fragmentation.

15

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



Page 2 of 2