

2. (a) What is guided media? Explain the propagation mode of fiber-optic cable.

1+5=6

- (b) Explain how delta modulation (DM) is used to reduce the complexity of PCM in analog-to-digital conversion operation.

4

Or

- (c) Explain how sliding window protocol is used to control the flow of data across communication link of a network.

5

- (d) What is circuit switch network? Explain different phases of communication in circuit switch network.

5

3. (a) What is multiplexing? Explain the multiplexing technique of FDM.

1+4=5

- (b) Explain how Stop and Wait ARQ detects and corrects error.

5

Or

- (c) What is twisted-pair cable? Explain how twisting of cable helps in reducing error in the signal during data transmission.

1+3=4

- (d) What is modulation? Explain different shift keying processes that change the carrier signal in data communication.

2+4=6

4. (a) What is TDM? Explain the difference between synchronous TDM and statistical TDM. $1+4=5$

(b) What is network topology? Explain the advantages and disadvantages of mesh topology. $1+4=5$

Or

(c) What is transmission impairment? Explain different types of transmission impairment in data communication. $2+4=6$

(d) What is HDLC? Explain the transfer mode of HDLC. $1+3=4$

5. (a) What is data communication? Explain different characteristics of data communication. $1+4=5$

(b) What is line discipline? Explain the REQUEST/ACKNOWLEDGEMENT protocol of line discipline. $1+4=5$

Or

(c) What is packet switching? Explain the datagram approach of packet switching. $1+4=5$

(d) Explain how Manchester and differential Manchester encoding schemes help in reducing the complexity of return to zero (RZ) polar scheme.

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2015

(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA-404

(Networking—I)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

1. Put a Tick (✓) mark against the correct answer in the brackets provided : 1×10=10

(a) The tendency which is a measure of how fast we can actually send data through a network is called

(i) latency ()

(ii) throughput ()

(iii) bandwidth ()

(iv) propagation time ()

(b) The process of adding one extra 0 whenever five consecutive 1's follow a 0 in the data, so that the receiver does not mistake the pattern for a flag is called

- (i) flow control ()
- (ii) bit stuffing ()
- (iii) frame buffering ()
- (iv) None of the above ()

(c) The Hamming distance between two pairs of words d (01011, 10101) is

- (i) 3 ()
- (ii) 2 ()
- (iii) 4 ()
- (iv) 5 ()

(d) How many physical links are required to connect 7 nodes in full duplex mode of mesh topology?

- (i) 22 ()
- (ii) 20 ()
- (iii) 19 ()
- (iv) 21 ()

(e) The telephone companies have traditionally multiplexed signals from lower bandwidth lines into higher bandwidth lines using the multiplexing technique of

- (i) TDM ()
- (ii) WDM ()
- (iii) FDM ()
- (iv) CDM ()

(f) The most common twisted-pair cable used in communication is referred to as

- (i) UTP ()
- (ii) STP ()
- (iii) EIA ()
- (iv) RJ45 ()

(g) The rate that defines the number of data elements sent in 1 second is called

- (i) data rate ()
- (ii) signal rate ()
- (iii) bit rate ()
- (iv) pulse rate ()

(h) Switching at the physical layer in a telephone network is used in

- (i) datagram network ()
- (ii) packet switch network ()
- (iii) circuit switch network ()
- (iv) virtual circuit switch network ()

(i) The 8B6T multilevel scheme is mainly used in cable

- (i) 100BASE-4T ()
- (ii) 100BASE-8D ()
- (iii) 100BASE-2T ()
- (iv) 100BASE-16D ()

(j) Radio waves give electromagnetic waves ranging in frequency between

(i) 2 KHz and 4 GHz ()

(ii) 1 GHz and 300 GHz ()

(iii) 200 GHz and 1 GHz ()

(iv) 3 KHz and 1GHz ()

2. State whether the following statements are True or False by putting a Tick (✓) mark : 1×5=5

(a) Bit stuffing is mainly used in byte-oriented protocol.

True () False ()

(b) A virtual circuit network is a cross between circuit switch network and packet switch network.

True () False ()

(c) In amplitude shift keying, the amplitude of the carrier signal is varied to create signal element.

True () False ()

(d) Unguided media (free space) transport electromagnetic radiation without the use of a physical conductor.

True () False ()

(e) The transport layer is responsible for the process-to-process delivery of the entire message.

True () False ()

3. Answer the following questions : $2 \times 5 = 10$

(a) Using polar scheme NRZ, draw the waveform for the following data :

010111010110

3. Answer the following questions. (10 marks)

- (a) Using polar scheme NRZ, draw the waveform for the following data : 10111010110
 (i) 1 GHz and 300 GHz
 (ii) 300 GHz and 1 GHz
 (iii) 3 KHz and 10 KHz

2. State whether the following statements are True or False by putting a Tick (✓) mark. (5 marks)

- (a) Bit stuffing is mainly used in byte-oriented protocols.

True () False ()

- (b) A virtual circuit network is a cross between circuit switch network and packet switch network.

True () False ()

- (c) In amplitude shift keying, the amplitude of the carrier signal is varied to create signal element.

True () False ()

- (d) Unguided media (free space) transport electromagnetic radiation without the use of a physical conductor.

True () False ()

- (e) The transport layer is responsible for the process-to-process delivery of the entire message.

True () False ()

- (c) Explain the step procedure in generating the code word for a given data word 0101 using simple parity check code.

- (d) Explain the difference between connection-oriented and connectionless-oriented modes of data transmission.

- (e) Explain the difference between microwaves and infrared waves.
