

**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 ( )

( 5 )

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

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

010111010110

(b) What is pulse stuffing?

( 7 )

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

( 8 )

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



( 9 )

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

\*\*\*

## IV/BCA/404

2015

( 4th Semester )

### BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA-404

( **Networking—I** )

Full Marks : 75

Time : 3 hours

( PART : B—DESCRIPTIVE )

( Marks : 50 )

*The figures in the margin indicate full marks  
for the questions*

1. (a) What is OSI model? Explain different layers of OSI model. 1+7-8
- (b) Draw the sine wave form for the following data : 2  
 $A = \pm 5 \text{ V}, f = 7 \text{ Hz}, \phi = 90^\circ$   
Or
- (c) Explain how CRC is used to correct error. Also check whether the data word 1001 having divisor 1011 produces error or not. 6
- (d) Explain different modes of transmission in data communication. 4

G15—250/395a

( Turn Over )

( 2 )

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. 5

\*\*\*