2014

(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course No. : 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) For 53 devices in a network with duplex mode link, the number of cable links required for a mesh topology is

(i) 2809 ( )

(ii) 106 ( )

(iii) 2756 ( )

(iv) 1378 ( )

(b) Amplitude shift keying is the process of converting —— signal.

(i) digital to digital ( )

(ii) digital to analog ( )

(iii) analog to digital ( )

(iv) analog to analog ( )

(c) A device capable of creating temporary connections between two or more devices connected to it is called

(i) networking device ( )

(ii) statistical router ( )

(iii) switch ( )

(iv) multiplexer ( )

(d) An analog multiplexing technique to combine optical signal is

(i) FDM ( )

(ii) WDM ( )

(iii) TDM ( )

(iv) STDM ( )

(e) To guarantee correction of up to y errors in all cases, the minimum Hamming distance d_{min} in a block code must be

(i) $y+1$ ( )

(ii) y ( )

(iii) $2y+1$ ( )

(iv) $2y+2$ ( )

(f) Framing, addressing and media access control are the responsibilities of

(i) physical layer ( )

(ii) data-link layer ( )

(iii) network layer ( )

(iv) transport layer ( )

(g) The process of adding one extra 0 whenever five consecutive 1s follow a 0 in the data is called

(i) bit stuffing ( )

(ii) byte stuffing ( )

(iii) 0 stuffing ( )

(iv) ESC stuffing ( )

(h) In selective repeat ARQ, the size of the sender and receiver window must be

(i) at most 2^m ( )

(ii) at least 2^m ( )

(iii) at most one-half of 2^m ( )

(iv) at least one-half of 2^m ( )

(i) A set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgement is

(i) error control ( )

(ii) flow control ( )

(iii) Hamming distance ( )

(iv) minimum Hamming distance ( )

(j) Hamming codes can correct up to

(i) 1 error ( )

(ii) 2 errors ( )

(iii) 3 errors ( )

(iv) 0 error ( )

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

(a) Distortion means change in amplitude of a sine wave.

True ( ) *False* ( )

(b) Frequency division multiplexing cannot be used in telephone networks.

True ( ) *False* ( )

(c) In HDLC normal response mode both the sender and receiver can send and receive commands.

True ( ) *False* ( )

(d) In Go-Back-N ARQ, if the frame number is n, then the ACK number must be $n+1$.

True ( ) *False* ( )

(e) Error detection method with $d_{min} = 4$ can detect up to 4 errors.

True ( ) *False* ( )

3. Answer the following questions : 2×5=10

(a) Differentiate between broadband and baseband signal.

(b) How do guided media differ from unguided media?

(c) What is the purpose of addressing in statistical TDM?

(d) Define piggybacking and its usefulness.

(e) Distinguish between linear block codes and cyclic codes.

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2014

(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course No. : 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)* Explain different categories of networks by giving a suitable diagram. 5

(b) What are the responsibilities of physical layer in the OSI model? Explain. 5

Or

(c) Explain the layers of TCP/IP protocol suite by giving a suitable diagram. 5

(d) Describe the four levels of addresses used in an internet employing TCP/IP protocols. Give example for each address. 5

2. *(a)* What is fibre-optic cable? Explain how it works by giving a suitable diagram. 5

(b) Write the advantages and disadvantages of a fibre-optic cable. 5

Or

(c) What are the characteristics of microwave propagation? 5

(d) What are infrared waves? Write their advantages and disadvantages. 5

3. *(a)* What is sine wave? Explain its characteristics by giving a suitable diagram. 5

(b) Explain various ways in which low-pass analog signals are converted into a bandpass signal. 5

Or

(c) Explain the pulse code modulation technique by giving a suitable diagram. 5

(d) Explain various methods for measuring the performance of a network. 5

4. *(a)* Describe with a neat diagram, the multiplexing and demultiplexing processes of frequency division multiplexing. 5

(b) Explain the synchronous time-division multiplexing process. Also write its disadvantages over statistical time-division multiplexing. 5

Or

(c) Explain how setup request and acknowledgement frames are sent in a virtual circuit network. 5

(d) Write five differences between circuit-switched network and datagram network. 5

5. *(a)* Explain the CRC technique for error correction by giving a suitable diagram. If a CRC code with C(7, 4) is used, calculate the codeword for a dataword 1001 with a divisor 1011. 5

(b) Explain the stop-and-wait ARQ error control mechanism by giving a suitable diagram. 5

Or

(c) What is HDLC? Explain different frame formats of HDLC. 5

(d) Explain simple parity-check code, technique for detecting error. What will be the value of parity bit if a dataword 1001 is sent by the sender? 5

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2014

(5th Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA-501

(Networking—II)

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(*Marks* : 15)

A. Tick (✓) the correct answer in the brackets provided : 1×10=10

1. The protocol used for mapping logical to physical address is

   (a) ARP ( )

   (b) RARP ( )

   (c) BOOTP ( )

   (d) DHCP ( )

2. The networking device that can be used to connect multiple networks is

   (a) repeater ( )

   (b) bridge ( )

   (c) router ( )

   (d) IGMP ( )

3. Which of the following does not belong to ICMP messages?

   (a) Source quench ( )

   (b) Time exceeded ( )

   (c) Ping ( )

   (d) Arbitrary ( )

4. IANA range for registered port is

   (a) 0–1023 ( )

   (b) 1024–49151 ( )

   (c) 49152–65535 ( )

   (d) 65536–75623 ( )

5. TCP groups a number of bytes together known as

   (a) packet ( )

   (b) frame ( )

   (c) segment ( )

   (d) multiple bytes ( )

6. If a TCP connection is transferring a segment carrying 10000 bytes with the bytes numbered from 0 to 9999, what is the segment sequence number?

   (a) 10001 ( )

   (b) 10000 ( )

   (c) 0 ( )

   (d) 9999 ( )

7. Which of the following file types is not transferred by FTP?

   (a) Excess–3 ( )

   (b) ASCII ( )

   (c) EBCDIC ( )

   (d) Image file ( )

8. The protocol used for managing devices in an internet using TCP/IP protocol suite is

   (a) TCP ( )

   (b) IP ( )

   (c) HTTP ( )

   (d) SNMP ( )

9. Which of the following does not belong to ISDN channel?

   (a) B channel ( )

   (b) D channel ( )

   (c) E channel ( )

   (d) H channel ( )

10. Multiplexing method of ATM is

   (a) asynchronous TDM ( )

   (b) synchronous TDM ( )

   (c) asynchronous FDM ( )

   (d) synchronous FDM ( )

B. Indicate *True (T)* or *False (F)* by a Tick (✓) mark : 1×5=5

1. The speed of standard Ethernet is 100 Mbps.

(T / F)

2. IEEE name for Fast Ethernet is 802.3u.

(T / F)

3. A SYN segment cannot carry data, but it consumes one sequence number.

(T / F)

4. UDP is a stream-oriented protocol.

(T / F)

5. TFTP supports bidirectional data transfer.

(T / F)

SECTION—II

(*Marks* : 10)

C. Answer the following questions : 2×5=10

1. Differentiate between Repeaters and Hubs.

2. What is a virtual LAN?

3. Distinguish between Ad hoc architecture and Infrastructure network.

4. Define process-to-process delivery of data.

5. Write two uses of UDP protocol.

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2014

(5th Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA-501

(Networking—II)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

The figures in the margin indicate full marks for the questions

1. *(a)* Write and explain CSMA/CD procedure by giving a detailed flowchart. 5

(b) Explain the method for initialization and updating a routing table using distance vector routing algorithm. Give example. 5

Or

(c) Write the format of IPv4 datagram header and explain each field. 5

(d) What are the four different cases in which the services of ARP can be used? Explain with detailed diagram. 5

2. *(a)* Write the format of UDP user datagram and explain each field. 4

(b) Explain the three-way handshaking method of TCP for connection establishment and data transfer. 6

Or

(c) Write the format of TCP segment header and explain each field. 6

(d) Explain the addressing mechanism used in transport layer. 4

3. *(a)* Explain different sections of Domain Name Space tree by giving a suitable example. 5

(b) Write a short note on TELNET. 5

Or

(c) What is the purpose of FTP? Describe the functions of the two FTP connections. 1+4=5

(d) Write the format of HTTP request message. Describe three types of HTTP request method. 2+3=5

4. *(a)* What are the layers of ATM? Briefly explain each layer function. 6

(b) Write brief and concise notes on privacy and copyright issues. 4

Or

(c) Explain the two types of ATM connection. 4

(d) Write a diagram of ATM architecture and explain each component. 6

5. (a) Describe frequency-reuse principle by giving a suitable example. 4

(b) Explain Hard Handoff, Soft Handoff and Roaming in a cellular telephony. 6

Or

(c) Explain the three major systems of GSM network by giving a suitable diagram. 6

(d) Write a short note on VSAT. 4

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