BRAINWARE UNIVERSITY

Course – B.Sc.(CS)

Computer Networks (BCS301)

(Semester – 3)

Time allotted: 3 Hours **Full Marks : 70**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question) 10 x 1 = 10

1. *Choose the correct alternative from the following*

(i) In an optical fiber, the inner core is _____ the cladding

a. denser than b. less dense than

c. the same density as d. another name for

(ii) The two parameters used for measuring the performance of a network are

a. throughput & delay b. power & delay

c. power and throughput d. throughput & buffer size

(iii) Sliding window protocol is used for

a. error control b. session control

c. flow control d. concurrency control

(iv) In the string 219.46.123.107, what is the network address of the host we are looking for ?

a. 219.46.123.0 b. 107.123.0.0

c. 107.123.46.0 d. 107.0.0.0

(v) The subnet mask 255.255.255.192 of a class C network extends the network portion to

a. 1 bit b. 2 bits

c. 3 bits d. 4 bits

(vi) Which of the following protocols is a network layer protocol ?

a. FTP b. ARP

c. UDP d. Telnet

(vii) Hamming code is a method of

a. error detection
b. error-correction
c. error-encapsulation
d. both a) & b)

(viii) Connection establishment involves a _____ way handshake in TCP

a. one
b. two
c. three
c. four

(ix) Which of the following is an inter-domain routing protocol ?

a. RIP
b. OSPF
c. BGP
d. both a) & b)

(x) Which of the following is a technique under closed loop congestion control?

a. Choke Packet
b. Retransmission Policy
c. Window Policy
d. Acknowledgement Policy

Group – B

(Short Answer Type Question) 3 x 5 = 15

Answer any *three* from the following

2. Compare Mesh and Star Topology. [5]
3. Explain ALOHA and slotted ALOHA with proper diagram. [2.5 + 2.5]
4. Applying CRC algorithm, determine the transmitted frame for the frame 11010111 where the generator polynomial is x^3+x^2+1. [5]
5. Discuss about Open Loop Congestion Control methods. [5]
6. Why do we need DNS. Explain two types of resolutions in DNS. [1 + 4]

Group – C

(Long Answer Type Question) 3 x 15 = 45

Answer any *three* from the following

7. (a) Find NRZ-L, NRZ-I, Manchester and Differential Manchester encoded representation for the binary data 111001000. [4]
   (b) What is transmission impairment? Discuss various types of transmission impairments. [6]

(c) Using the TDM technique, calculate throughput for the following system :
There are 4 nodes in the network having loads 20k, 35k, 58k and 10k respectively. Each time slot accommodates 5k of data. Propose a method to improve of the system and also calculate the throughput using the improved method. [5]

8. (a) Discuss how Selective-Repeat ARQ will work for lost frame, with proper diagram. [5]
(b) Compare bit stuffing and byte stuffing with proper examples. [5]
(c) Discuss how collision is detected in CSMA/CD. [5]
9. (a) Describe the fields of an IP Datagram header. [5]
(b) An IP network 192.168.130.0 is using the subnet mask 255.255.255.224. Determine the number of subnets, number of hosts in each subnet and from what subnet the following hosts belong to :
192.168.130.10, 192.168.130.93, 192.168.130.222, 192.168.130.250. [8]
(c) Discuss NAT ing. [2]
10. (a) What is congestion? Why does congestion occur? [4]
(b) Explain Leaky Bucket algorithm for congestion control. [5]
(c) Describe the method of 3-Way Handshaking for connection establishment and termination. [6]
11. Write short notes on any *three* of the following : [3 x 5]
(a) FTP
(b) SMTP
(c) DHCP
(d) RFID technology
(e) Piggybacking