BRAINWARE UNIVERSITY

Course – B.Sc. (HN)

Basic Computer Networks (BHN201 / BHNC202)

(Semester – 2)

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 Questions)   10 x 1 = 10

1. *Choose the correct alternative from the following*

(i)   Which is a collision free technique

      a. Token passing   b. CSMA/CA

      c. ALOHA   d. CSMA/CD

(ii)   FTP is used for

      a. Security   b. Name resolution

      c. File transfer   d. Mail service

(iii) Which class of IP address is reserved for unicast communication?

      a. A   b. B

      c. C   d.   All of these

(iv)   Repeaters function in which layer?

      a. Data link   b. Network

      c. Transport   d. Physical

(v)   Process to Process delivery is a function of which layer?

      a. Data link   b. Network

      c. Transport   d. Physical

(vi) In which ARQ, sender cannot sent the next frame until the ACK of the sent frame is received?

   a. Stop-and-Wait   b. Go-Back-N

   c. Selective Repeat   d. All of these

(vii) An example of half duplex transmission is

   a. Telephone   b. Walkie-talkie

   c. TV remote   d. None of these

(viii) Which layer handles the routing procedure?

   a. Data link   b. Network

   c. Transport   d. Physical

(ix) Remote login is a function performed by

   a. DNS   b. TELNET

   c. FTP   d. SMTP

(x) IPv6 address is having a length of (in bits)

   a. 16   b. 32

   c. 64   d. 128

Group – B

(Short Answer Type Questions)   3 x 5 = 15

Answer any *three* from the following

2. (a) Design a Bus topology using 5 nodes.   [3]

   (b) For a signal represented by 011001, draw the patterns using the schemes: Manchester and Differential Manchester encoding.   [2]

3. Discuss the structure of a fiber optics cable with the help of a diagram.   [5]

4. Applying CRC algorithm, determine the checksum and the transmitted frame for the bit stream 110110011 and for the generator polynomial $x^4 + x + 1$.   [5]

5. Discuss the closed loop congestion control policies.   [5]

6.   What is the purpose of NAT ing? Find the netid and the hostid of the following IP addresses :

i) 59.34.21.50

ii) 210.34.8.90   [1+2+2]

Group – C

(Long Answer Type Questions)   3 x 15 = 45

Answer any *three* from the following

7. (a) Show how collision is detected in CSMA/CD?   [5]

    (b) State how collision is avoided in CSMA/CA?   [5]

    (c) Discuss the three controlled access methods.   [5]

8. (a) Differentiate intra domain and inter domain routing.   [2]

    (b) Explain the steps of Distance Vector Routing with proper example.   [6]

    (c) Suppose a system uses Selective Repeat protocol with window size 3. If a sender wants to transmit 6 frames and the 4th frame is lost show how it will be handled? Also show how a lost acknowledgement is treated in this scheme.   [4+3]

9. (a) What is Fragmentation in respect to IP Datagram? Discuss the functionalities of each field related to Fragmentation.   [5]

    (b) What is subnetting? Why it is required?   [4]

    (c) An organization is granted the block 130.56.0.0/16. The administrator wants to create 1024 subnets.

       a. Find the number of addresses in each subnet.

       b. Find the subnet prefix.

       c. Find the first and the last address in the first subnet.

       d. Find the first and the last address in the last subnet.   [6]

10. (a) Describe a TCP Segment header. Mention the functionalities of each field.   [6]

    (b) What are the flow characteristics in QoS?   [4]

    (c) Explain Token Bucket algorithm for congestion control with proper example.   [5]

11.   Write short notes on any *three* of the followings   [3 x 5]

    (a)   DHCP

    (b)   Firewall

    (c)   ICMP

    (d)   FTP