Sixth/Eighth Semester Examination -2010
COMPUTER NETWORKS
FULL MARKS-70
Time : 3 Hours

Answer question No. 1 which is compulsory and any five questions from the remaining questions.

The figures in the right hand margin indicate full marks for the questions.

1. Answer the following questions : 2×10

   (a) Assuming 'n' number of devices connected in a mesh topology; find the total number of connections/cables required and how many network I/O ports required for each device ?

   (b) Draw the time domain plot of a sine wave for 1 sec with a maximum amplitude 'A', a frequency of 3 , and phase of 180^0 .

   (c) Calculate the baud rate for a 64Kbps, 64QAM signal.

   (d) What is the use of bit-stuffing in case of HDLC ?

   (e) Assuming the divisor polynomial for CRC is $x^8 + x^4 + x^2 + x + 1$, find the binary equivalent of the divisor.

   (f) Draw and explain the packet exchange sequence for CHAP used in PPP.

   (g) Assuming classful addressing, find the network address of a host having IP address 125.23.57.67.

   What is the broadcast address of this network ?

   (h) ICMP is used in which layer ? Write down 5 types of error reporting messages used by ICMP.

   (i) What is the difference between recursive resolution and iterative resolution of names in case of DNS ?

   (j) Differentiate symmetric-key and asymmetric-key cryptography.

2. (a) Compare the functionalities of Datalink and Transport layer of TCP/IP. (5

   (b) Draw the signals for Manchester and differential Manchester encoding given the bit sequence '1101010010'. Write the advantage ad disadvantage of eachof them. (5

3. (a) Write down at least 4 methods used for error detection. Find the 8 bit checksum for the bit set '11100011 11101010 11010011 11101010'. If there is any 3-bit burst error in the transmission, then detect it at the receiver side using checksum method. (7

   (b) Describe the 'Token-Passing' control access scheme used for Multiple Accesses. (3

4. (a) Why there are more one types of frames used in HDLC ? Explain I-frame and S-frame format. How piggybacking is incorporated in HDLC ? (6

   (b) Explain how the collision is avoided i n case of CSMA/CA used IEEE 802.11 (WLAN). (4

5. (a) Draw and explain the fields used in IPv4 packet header. (5

(b) Explain working of TCP with the help of T state transition diagram.

6. An organization needs atleast 5 subnets with the net address fixed as X.Y.Z.0.(X,Y,&Z are any 8-bit inte) Design the subnets and represent in a schematic dia with following specifications.

(a) Range of IP addresses for each subnet

(b) Subnet address of each subnet

(c) Broadcast address of each subnet.

(d) Subnet mask

7. (a) What is client-server model ? Explain the wo of a connection-oriented concurrent server wi help of suitable server and client algorithms.

(b) Explain the structure of a web page us WWW.List out atleast 4 types of tags with meaning used in a web page.

8. Write short notes on any two : (5

(a) fibre-Optic cables

(b) Layers of Bluetooth

(c) RSA as a Public-Key Cryptography method