[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 1912 **C** **Roll No.....**

Unique Paper Code : 234403

Name of the Course : B.Sc. (Hons.) Comp. Sc.

Name of the Paper : Data Communiation and Comnputer Networks (CSHT–409)

Semester : IV

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Section (A) is compulsory.
3. Do any 4 questions from Section (B).

SECTION – A

1. (a) Draw the pulse diagram for bit stream 101110001011, for the following encoding techniques

   (i) NRZ-L (ii) Manchester (iii) Differential Manchester (6)

   (b) A receiver receives the vector 11001100111. Using the Hamming code algorithm, what was the original code sent. (5)

   (c) How pipelining property is used in sliding window protocols ? (2)

   (d) What is multi path fading ? Explain a technique which provides resistance to multi path fading. (3)

   (e) How does DPCM differ from PCM ? What does adaptive DPCM do to achieve compression ? (4)

   (f) Draw a diagram showing PPP full frame format for unnumbered mode operation. (2)

P.T.O.

(g) What is the purpose of using the three way Handshake scheme ? Briefly explain it. (3)

(h) What are the following used for

(i) WWW

(ii) CGI

(iii) HTTP

(iv) DHTML (4)

(i) A router inside an organization receives a packet with the destination address 190.240.34.95. If the subnet mask is /19. find the subnet address. (2)

(j) At what layer(s) do the following protocols operate in TCP/IP protocol ?

(i) IP

(ii) ICMP

(iii) TDMA

(iv) UDP (2)

(k) Which layer(s) in OSI Model performs the following operations ?

(i) Peer to Peer service

(ii) Synchronization

(iii) Encryption

(iv) Mail services (2)

SECTION – B

2. (a) How do multiple senders share the common transmission media in a network. List three techniques commonly used for this purpose. (4)

(b) What do you mean by data communication ? Write the characteristics on which effectiveness of data communication system depends. (2+2)

(c) Find the minimum bandwidth for an FSK signal transmitting at 2000bps. Transmission is in half-duplex mode, and the carriers are separated by 3000HZ. (2)

3. (a) Why is voice digitized in telephone exchange even though the local loop is analog in nature. (2)

(b) What is CSMA/CD protocol ? How is randomization interval chosen in it and how does it reduce the probability of collision. (2+3)

(c) Explain the differences between circuit switching and packet switching. (3)

4. (a) What is the difference between a connection oriented service and a connection less service ? For each of the following tell whether it might be a connection oriented service, a connection less service, both or neither

(i) Connection establishment

(ii) Data transmission

(iii) Connection release (2+3)

(b) What do you mean by RPC ? Explain briefly. (3)

(c) What is meant by CRC ? How is it useful in networks ? (2)

5. (a) Write the port number of the following protocols :

(i) FTP

(ii) HTTP

(iii) TELNET

(iv) SMTP (2)

(b) What is the format of TCP header ? Explain. (5)

(c) Differentiate between ARP and RARP. (3)

P.T.O.

6. (a) How does the sliding window protocol take care of flow control in the network ? Explain using the selective repeat protocol. (5)

(b) The following character encoding is used in a data link protocol :

A : 01000111; B : 11100011; FLAG : 01111110; ESC : 11100000 show the bit sequence transmitted (in binary) for the four character frame : A B ESC FLAG when each of the following framing methods are used :

(i) Character count

(ii) Flag bytes with byte stuffing

(iii) Starting and ending flag bytes, with bit stuffing (3)

(c) List two differences between fast ethernet and ethernet LANS. (2)

7. (a) Explain the following :

(i) DHCP

(ii) BOOTP (4)

(b) A channel has a bit rate of 4kbps and a propagation delay of 20ms. For what range of frame sizes stop & wait give an efficiency of at least 50 percent ? (2)

(c) Write short notes :

(i) WWW

(ii) URL (4)