

[This question paper contains 4 printed pages.]

**Your Roll No.....**

**Sr. No. of Question Paper : 6506**

**HC**

**Unique Paper Code : 32341303**

**Name of the Paper : Computer Networks**

**Name of the Course : B.Sc. (H) Computer Science**

**Semester : III**

**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. **Part A** is compulsory and carries **35** marks.
3. Attempt any **four** questions from **Part B**.

**PART A**

- (a) Eight signals each requiring 2000 Hz are multiplexed on to a single channel using FDM. How much minimum bandwidth is required for the multiplexed channel assuming guard bands are 200 Hz wide. (2)
- (b) What is the concept of Frequency Division Multiplexing? (2)

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- (c) Write down the three differences between OSI model and TCP/IP model.
- (d) Evaluate the maximum bit rate for a channel having bandwidth 1600 Hz, if S/N ratio is 20db.
- (e) Write two features each of thick and thin Ethernet LAN.
- (f) Give the port number of following protocols:  
TELNET, HTTP
- (g) How pipelining property is used in sliding window protocols?
- (h) What is IP loop back address?
- (i) Give the frame format of Ethernet?
- (j) What is a URL? Write with an example.
- (k) 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.
- (l) At what layer(s) do the following protocols operate?  
TCP/IP protocol?  
(i) DHCP (ii) CSMA (iii) FTP (iv) ICMP
- (m) Define modulation giving any three modulation techniques.

(n) Define the following terms :

- (i) Broadcasting
- (ii) Piggybacking
- (iii) Selective Flooding (3)

### PART B

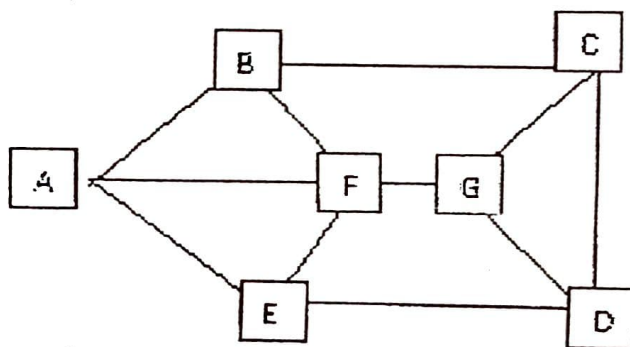
2. (a) Describe the various carries sense protocols. Explain How CSMA/CD protocol works. (3+2)
- (b) Elaborate the technique used to allow programs on one machine to call procedures located on remote host. (5)
3. (a) What are the minimum and maximum frame sizes for Ethernet frames? Why can't the minimum frame length be zero? (3)
- (b) Give the format for IP header. (3)
- (c) How is connection oriented service implemented at network layer? (4)
4. (a) Give the pulse diagram for bit stream 101010101011, for the following encoding techniques
- (i) RZ
  - (ii) Manchester

(iii) Differential Manchester

(b) What are the advantages and disadvantages of using optical fiber as transmission media?

5. (a) Explain the working of Dijkstra Algorithm and find out the shortest distance from A to D according to it. Distance between vertices are as follows:

$d(A,B)=2$ ,  $d(A,F)=1$ ,  $d(A,E)=4$ ,  $d(B,C)=5$ ,  $d(B,F)=3$ ,  
 $d(E,F)=1$ ,  $d(C,D)=1$ ,  $d(D,E)=3$ ,  $d(F,G)=2$ ,  $d(G,C)=1$  and  
 $d(G,D)=4$ .



(b) Explain TCP connection establishment and release process.

6. Write a short note on the following :

- (i) HTTP
- (ii) DNS
- (iii) DSL
- (iv) UDP
- (v) RARP