Sheet 4

1) Consider a host that is sending data over a TCP connection with the following initial values:
Cong Win = 1 MSS, Threshold = 50 MSS. suppose that the receiver size = 20 MSS, and the receiver processing speed is 2 MSS per RTT. Draw a graph that shows the sender rate of sending versus RTT (How many MSS per RTT) for the 1st 15 RTT. Note that a packet is lost at the 4Th RTT due to 3 duplicate ACKs

2)

a) Find the class of the following IP addresses:
1) 123.56.77.32

2) 200.50.7.11

3) 12.5.17.2

4) 128. 4.1.2

b) Find the maximum number of hosts that can be connected to the network in the following cases:
1) Class A IP address

2) Class B IP
address

3) Class C IP
address

c) Write the following netmasks in slash (/n) notation

1) 255.255.255.0

2) 255.255.254.0

3)

The following network is composed of four LANS: LAN 1 , LAN 2 , LAN 3 , and LAN 4 . The network addresses is class C network address   193.115.52.x Determine:

a) Network address for each LAN

b) The IP address for all the hosts in the figure.
c) The maximum number of hosts that can be connected to every LAN and the range of the IP addresses that can be given
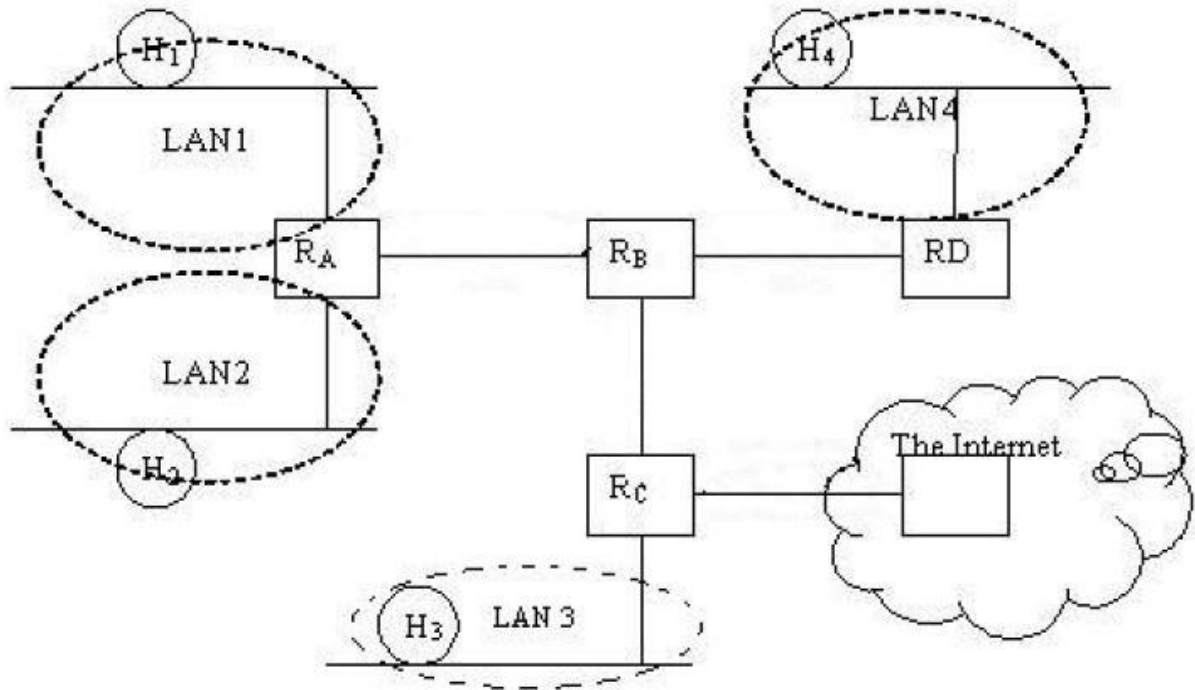
4)

An Organization is assigned 1 class B address 160.17. The Organization has departments that need to have each computer department to be connected on the same subnet. The numbers of computers in the departments are: 50, 90, 44, and 120, respectively

a) How many host bits are needed in the subnet mask?

b) Write down the IP address and subnet mask for each department?

5)

Suppose that a TCP segment that contains 2048 bytes of data plus 20 bytes of TCP header is passed to IP for delivery across 2 networks of the Internet, N 1 and N 2 . The network N 1 uses 14 bytes of header for its data-link layer frames and has an MTU of 1024 bytes; the network N2 uses 8 bytes header with an MTU of 512 bytes. Each network's MTU gives the total packet size that may be encapsulated as data payload in a frame, including the packet's IP header Give the sizes and offsets of the sequence of fragments delivered to the IP layer at the destination host. Assume all IP headers are 20 bytes long.

6)

Suppose that a host application needs to transmit a packet of 3,500 bytes. The physical layer has an MTU of 1,500 bytes. The packet has an IP header of 20 bytes plus another attached header of 20 bytes. Fragment the packet, and specify the ID, MF, and offset field of all fragments