Introduction to Computer Networking

midterm exam November 2000

1. Explain the following terms.(20%)

(a) SAP(service access point)

(b) source quench

(c) Time-To-Live (TTL)

(d) Resource Record

2. (I) Suppose there are two hosts ready for setting up TCP connections and their applications send *Active Open* to their TCP layer simultaneously. What TCP segments will be sent ? and what are the state changes? (10%)

(II) Suppose there are two hosts with an TCP connection and their applications send *Close* to their TCP layer entity simultaneously. What TCP segments will be sent? and what are the state changes? (10%)

3. Determine the following statement as being true or false. Explanations are required, no matter answer is either false or true.(30%)

(A) In the default name server of your host is shutdown temporarily, then your host will not be able to correctly execute the following command:

>> *telnet cc.ee.ntu.edu.tw*

(B) When you use the command *ping www.ntu.edu.tw* an IP packet can be send directly without setting up a TCP connection in advance.

(C) If an 802.3 (ethernet) frame containing an ARP request is forwarded by a switching hub or a bridge, the source MAC address of this frame may be changed.

(D) Every 802.3 network interface card can ask the network interface card of the source host to retransmit a frame if there is any bit error in the receiving ethernet frame.

(E) In an IP subnetwork, it is possible to observe that ethernet frames with different destination MAC addresses are with the same IP destination address.

4. Consider the *tracert* and *ping –r* command in your homework.

(i) Please compare the major differences between the results obtained from *tracert* and *ping –r*. (8%)

(ii) What kinds of packets are sent via *tracert* and *ping –r*, respectively?(6%)

(iii) If the targeted host is in a university in Europe, which command can provide more detailed information about the bottleneck? (6%)

5. If your department is assigned the IP addresses 140.112.18.0 – 140.112.18.255, and you need to further divide them to 3 IP subnetworks, 2 of them with at least 60 IP addresses, one with 120 IP addresses.
Please describe how you assignment them to your IP subnet, and how their netmask is assigned. (10%)