Introduction to Computer Network

Final Exam Jan 2001

1. Please explain the function of the following network terminology:
(the answer must be in Chinese, English answer will be accepted only for the explanation of the acronym) (24%)

(a) Foreign Agent

(b) PEP

(c) MIB

(d) Virtual Channel

(e) Anycast

(f) Trap

2. According to the state transition diagram of DHCP, some transitions are triggered by timer.

(a) Please list all possible state transition triggered by timers.

(b) If at any moment, the probability that the client will receive a DHCPACK after sending DHCPREQUEST is 1/3, what is the probability that the lease time of the client is not allowed to be extended beyond its original lease time?

(12%)

3, Consider the case when the TCP/IP over ATM architecture is employed, please determine whether the following statements are true or false.(24%)

(a) If a group of hosts is connected to the same IP subnet directly to one ATM switch via ATM network interface card, the VPI and VCI of their cells must be set the same.

(b) Since AAL5 is used, 5 ATM cells are required to transport an IP datagram of 230 bytes. 230 48

(c) To route an IP datagram from one Logical IP Subnet (LIS) to another LIS still requires an IP router.

(d) ATMARP server can be omitted in certain cases.

4.In order to support IPv6 via an IPv4-based network, the IP-in-IP encapsulation technique must be used.

(a) Can an IPv4 router directly route the IPv6 datagram to the correct destination via RIP or OSPF? or its routing table must be set manually ? (6%)

(b) Will the Hop Limit field in IPv6 header be changed when an IPv6 datagram (encapsulated in IPv4 datagram) is routed by IPv4 router? (6%)

(c) What is the disadvantage of such an IPv6 network when compared with a native mode IPv6 network? Please answer in terms of their capability and complexity to providing QoS. (6%)

5.(i) Why RTCP, the control protocol of RTP, is separated from RTP and operates via the so-called out-of-band signaling approach? (6%)

(ii) Why the transportation of time stamps between source and destination nodes is in the header of both RTP and RTCP? Do they represent different meaning? (6%)

(iii) What will happen if the clocks of different sources are not synchronized but their streams are mixed and played back at the same destination node? (6%)

6.(I) Explain in what kind of conditions, the use of the NAT(Network Address Translation) device is not appropriate.

(II)Please explain why it is impossible for IP VPN to operate more efficiently than a private IP network.

(12%)

7. What is the function of the Care-Of Address field in the Mobile IP registration message? Is it possible for two mobile terminals to share the same Care-Of Address at the same time? (12%)