Review Exercises

Chapter 4

1. What are *terminal mobility*, *user mobility*, and *service mobility*?
2. What are the advantages of using Network Access Identifier (NAI) instead of using IP address?
3. Describe the differences between *movement-based location update* and *distance-based location update*.
4. Describe the differences between *blanket paging* and *sequential paging*.
5. What are the limitations of *Direct Delivery* and *Relayed Delivery*?
6. Compare *hard handoff* vs. *soft handoff*.
7. What are the main problems with the regular IP routing if a station will move from one IP subnet to another IP subnet?
8. Compare the operations of Mobile IPv4 when a mobile host uses *foreign agent care-of address* and *co-located care-of address*.
9. In Mobile IPv4, how could a mobile detect the change of subnet by using agent advertisement?
10. Describe how does a Home Agent (HA) intercept packets destined to a mobile host by using *Gratuitous ARP* and *Proxy ARP* in Mobile IPv4.
11. In Mobile IPv4, how does a mobile host discover the address of a Home Agent by using *Registration Request*?
12. What are the major security issues in Mobile IPv4?
13. What is the major reason to use *reverse tunneling* in Mobile IPv4?
14. List the pros and cons of Mobile IPv4.
15. Describe the major drawbacks of Mobile IPv4 *route optimization*.
16. Why the *MIPv4 Regional Registration* potentially could reduce the handoff delay in the MIPv4?
17. Use figures to illustrate the *bi-directional tunneling* and *route optimization* in Mobile IPv6.
18. In Mobile IPv6, why the change of CoA is transparent to the upper layer protocols and applications? How is it achieved by using IPv6 routing header?
19. Why the *Hierarchical Mobile IPv6 Registration* potentially could reduce the handoff delay in Mobile IPv6?
20. Compare *Mobile IPv4* vs. *Mobile IPv6*.
21. What are the major motivations for *SIP-based mobility management*?
22. What are the major motivations for *Cellular IP* and *HAWAII*?

23. Why the mobility management in 3GPP PS domain is, in essence, to manage the changes of the host-specific route between each mobile and its serving GGSN?

24. What is the *Packet Mobility Management (PMM)* context in 3GPP? Explain the functions of the PMM states.

25. In 3GPP, what are *Cell Area*, *UTRAN Registration Area (URA)*, *Location Area (LA)*, and *Routing Area (RA)*?

26. In 3GPP, when a mobile moves inside a Routing Area (RA), does it need to perform location update with the PS CN domain? Why?

27. In 3GPP, in what situations the *Serving RNS Relocation* may happen?

28. In 3GPP *Inter-RNC Hard Handoff*, how does a mobile know which radio channel it should tune to? Is it decided by the mobile or by the network?

29. Why the mobility management in 3GPP2 PS domain is, in essence, to manage the changes of the host-specific route between each mobile and its serving PDSN?

30. Compare the *Regular Inter-PDSN Handoff* and *Fast Inter-PDSN Handoff* in 3GPP2.

31. Explain the three states of the *Packet Data Service States* in 3GPP2.

32. How handoffs for supporting packet data services in 3GPP2 are achieved? Do they rely on the circuit-switched network entities or packet-switched network entities?

33. Use a figure to explain how *Fast Inter-PDSN Handoff* works in 3GPP2.

34. Why the "Simultaneous Bindings" flag will be set in a *P-P Registration Request* sending from target PDSN to serving PDSN in 3GPP2 *Fast Inter-PDSN Handoff*?

35. How to page and send user data to a dormant mobile in 3GPP2?

36. Compare the mobility management in IP, 3GPP, and 3GPP2 networks.