

I226 Computer Networks

Chapter 5 Network Layer II

(Review Questions)

Each chapter includes a few questions that are designed to help you to revise your first-level understanding of the slide material presented in the lecture.

1. What are the differences between routers, bridges and repeaters? Discuss from the viewpoint of their tasks, features and positions in the layering model.
2. Illustrate the operation of a bridge. Give an example using a small network, and show the contents of the forwarding table and its change.
3. Illustrate the operation of a router. Show each step from receiving a frame to sending a frame.
4. Illustrate the operations of routers which forward an IP packet hop-by-hop, especially focusing on the data link and network layer addresses.
5. What is the default route of the IP protocol? What does this technology realize?
6. By looking at the **Figure 1: Sample Network**, answer the following questions:
 - (a) Show areas which share the same network address, and assign an address for each area.
 - (b) Show the broadcast domains and contention domains in the figure.
 - (c) Make a routing table for each router. Suppose that a port number is assigned from 1 to n according as the number in the address variable of the port increases (e.g., $MAC_1 < MAC_2$).
 - (d) Suppose that host A runs a dynamic routing managing process, show a routing table for this host.
 - (e) Is it possible to make this network topology without routers? If there is any problem, show a solution for each problem. Explain the difference between network system with routers and without routers.

Figure 1: Sample Network

