1. The data plane refers to the part of a router that controls/decides what to do with incoming packets, such as forwarding them to specific client devices. The forwarding table is managed in the data plane and the control plane helps or serves the functions of the data plane. The control plane executes routing protocols, handles the routing table, and other management functions.

2. Longest prefix match rule.

3.

a. Routers have 2 IP addresses. One for each of its interfaces.

b. Datagrams are reassembled at destination.

c. 11011111.00000001.00000011.00011011

4.

a.

Destination Address Link Interface

H3 3

b. No, forwarding rules are based solely on destination address.

5.

a.

Prefix Link Interface

11100000 0

11100001 01000000 1

11100000 1 2

11100001 3

OTHERWISE 0

b.

1) Interface 3 (OTHERWISE)

2) Interface 1

3) Interface 3

6

a.128.119.40.171

b.128.119.40.64/28, 128.119.40.80/28, 128.119.40.96/28, 128.119.40.112/28

7.

a. Home addresses: 192.168.1.1, 192.168.1.2, 192.168.1.3. Router interface is 192.168.1.4.

b.

WAN Side LAN Side

24.34.112.235, 5000 192.168.1.1, 3345

24.34.112.235, 5001 192.168.1.1, 3346

24.34.112.235, 5002 192.168.1.2, 3445

24.34.112.235, 5003 192.168.1.2, 3446

24.34.112.235, 5004 192.168.1.3, 3545

24.34.112.235, 5005 192.168.1.3, 3546