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1. Subnet 1: from 223.1.17.0/25 to 223.1.17.127/25

Subnet 2: from 223.1.17.128/26 to 223.1.17.191/26

Subnet 3: from 223.1.17.192/26 to 223.1.17.255/26

For subnet 1 we need 128 IPs so we need 7 bits. 32 – 7 = 25.

For subnets 2 and 3 we only need 64 IPs or 6 bits. 32 – 6 = 26.

1. a.

Destination Address Entry Link

11100000 0

1110000100000000 1

11100001 2

Else 3

b.

It looks at the destination address and if the first 8 bits of the address match 11100000 then it goes to link 0. Else, if the first 16 bits match 1110000100000000 then it goes to link 1. Else, if the first 8 bits match 11100001 then it goes to link 2. Else, it goes to link 3.

1. a. The DHCP protocol is a way of assigning IP addresses to hosts. DHCP is an application layer protocol, not a network layer protocol.

b. The NAT converts a host’s private IP address into the external one seen by the receiver of the datagram.

c. The RIP routing algorithm concerns distances in the form of vectors while the OSPF algorithm concerns link states.

d. inter-AS. BGP determines the best path for routing based on the reachability of the subnet.