**QUES 1.** A router has the following CIDR entries in the routing table:

|  |  |
| --- | --- |
| **Address/Mask** | **Next Hop** |
| 135.46.56.0/22 | Interface 0 |
| 135.46.60.0/22 | Interface 1 |
| 192.53.40.0/23 | Router 1 |
| Default | Router 2 |

For each of the following IP addresses, what does the router do if a packet with that address arrive?

**ANSWERS**

1. 135.46.63.10 **- Send to Interface 1**

2. 135.46.57.14 **- Send to Interface 0**

3. 135.46.52.2 **- Send to Router 2**

4. 192.53.40.7  **- Send to Router 1**

5. 192.53.56.7 **- Send to Router 2**

**QUES 2.** A Large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, D request 4000, 2000, 4000, and 8000 addresses, respectively, in that order.

For each of these, give

a. the first IP address assigned,

b. the last IP address assigned

c. and the mask in the w.x.y.z/s notation.

**ANSWERS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Organization**  **A** | **Organization**  **B** | **Organization**  **C** | **Organization**  **D** |
| **First IP** | **198.16.0.1** | **198.16.16.1** | **198.17.0.1** | **198.18.0.1** |
| **Last IP** | **198.16.15.254** | **198.16.23.254** | **198.17.15.254** | **198.18.31.254** |
| **mask**  **in w.x.y.z/s notation** | **255.255.240.0**  **198.16.0.0/20** | **255.255.248.0**  **198.16.16.0/21** | **255.255.240.0**  **198.17.0.0/20** | **255.255.224.0**  **198.18.0.0/19** |

**QUES 3.** PPP is closely based on HDLC, which uses bit stuffing to prevent accidental flag bytes with the payload from causing confusion.

Give one reason why PPP uses byte stuffing instead of bit stuffing?

**ANSWER**

**When data is transmitted between devices, data stuffing is needed to distinguish the data being sent and the encapsulating control information such as frame delimiters (Gean, 2002). Bit stuffing is used by bit-oriented hardware, but byte stuffing is more appropriate for character-oriented hardware. As such, PPP, which is character-oriented, makes use of byte stuffing.**

**References**

**Gean, E. (2002). “Chapter 7 Packets, Frames, and Error Detection.” Retrieved from** [**http://web.calstatela.edu/faculty/egean/cs245/lecture-notes-network/**](http://web.calstatela.edu/faculty/egean/cs245/lecture-notes-network/)