#1 **Q.**A router has the following (CIDR) entries in its routing table:

|  |  |
| --- | --- |
| **Address/mask** | **Next hop** |
| 135.46.56.0/22 | 211.90.0.1 |
|  |  |
| 135.46.60.0/22 | 159.48.0.1 |
| 192.53.40.0/23 | 192.188.0.1 |
| default | 220.20.0.1 |

For each of the following IP addresses, what does the router do if a packet with that address arrives?  
**A.** Write correct IP address of next hop:

|  |  |  |
| --- | --- | --- |
| **No.** | **IP** |  |
| (a) | 135.46.63.10 |  |
| (b) | 135.46.57.14 |  |
| (c) | 135.46.52.2 |  |
| (d) | 192.53.40.7 |  |
| (e) | 192.53.56.7 |  |

#2**Q.**Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation.

#3 **Q.** Suppose that host A is connected to a router R1, R1 is connected to another router, R2, and R2 is connected to host B. Suppose that a TCP message that contains 900 bytes of data and 20 bytes of TCP header is passed to the IP code at host A for delivery to B. Show the Total length, MF, and Fragment offset fields of the IP header in each packet transmitted over the three links.  
Assume that link A-R1 can support a maximum frame size of 1024 bytes including a 14-byte frame header, link R1-R2 can support a maximum frame size of 512 bytes, including an 8-byte frame header, and link R2-B can support a maximum frame size of 512 bytes including a 12-byte frame header.  
**A.**Fill your answer in the blank

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **link** | **Packet** | Total length | MF | Fragment offset |
| A->R1 | **1** |  |  |  |
| R1->R2 | **1** |  |  |  |
|  | **2** |  |  |  |
| R2->B | **1** |  |  |  |
|  | **2** |  |  |  |

#4 **Q.** A large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, and D, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in w.x.y.z/s notation.  
**A.** Fill your answer in the blank

|  |  |  |  |
| --- | --- | --- | --- |
|  | **First IP** | **Last IP** | **net/mask** |
| A |  |  |  |
| B |  |  |  |
| C |  |  |  |
| D |  |  |  |

#5 **Q.** A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of address can be used for a single host?

#6 Assumeing that all routers and hosts are working properly and that all software in both is free of all errors, is there any chance, however small, that a packet will be delivered to the wrong destination?