**Lab 2 Assessment: IPv4 vs IPv6 - Calculating, Configuring, and Testing**

Questions:

1. Convert the decimal number 145 to binary.

1001 0001

1. Convert the binary number 11001100 to decimal.

204

1. Convert the binary number 01101011 to hexadecimal.

6B

1. Convert the hexadecimal number C7 to binary and decimal.

11000111 ; 199

1. Subnet the following IP address for 50 networks. Complete the table with the information for the first four newly created subnets.

|  |  |  |  |
| --- | --- | --- | --- |
| 172.16.0.0 | | | |
| New Subnet Mask | | 255.255.252.0 | |
| Hosts per Subnet | | 1022 | |
| Subnet Address | First Available IP | Last Available IP | Broadcast |
| 172.16.0.0 | 172.16.0.1 | 172.16. |  |
| 172.16.4.0 | 172.16.4.1 |  |  |
| 172.16.8.0 | 172.16.8.1 |  |  |
| 172.16.16.0 | 172.16.16.1 |  |  |

1. Subnet the following IP address for 2000 networks. Complete the table with the information for the first four newly created subnets.

|  |  |  |  |
| --- | --- | --- | --- |
| 10.0.0.0 | | | |
| New Subnet Mask | | 255.255.224.0 | |
| Hosts per Subnet | | 8190 | |
| Subnet Address | First Available IP | Last Available IP | Broadcast |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. True or false? If all network traffic resides on the local LAN, configuring a default gateway is not necessary?

True

1. True or false? If a computer attempts to ping a machine that does not reside on the local LAN and it does not have a default gateway set, the error message returned by the local computer reads Destination host unreachable.

False

1. True or false? If a computer attempts to ping a machine that does not reside on the local LAN and it does have a default gateway set, the error message returned by the local computer reads Request timed out.

True

1. What is the term used to describe a group of 4 binary bits?

word

1. Reduce the following IPv6 address to its shortest form. 2001:01A0:0033:0000:0000:0000:0001:00D4
2. How many possible host addresses are available with a 64-bit interface ID?
3. Is the IPv6 address 2001:1D5::30A::1 a valid address? Why or why not?