# ITMO 440/540 - Data Networks

# Assignment 9b – Classless IP Addressing

# Assigned: 10/22/15 Due: 10/29/2015

### Purpose: Practice concepts related to IPv4 Classless Addresses

For each of the three **Classless** IP addresses given below in **slash notation**, answer the questions that follow.

CLASSLESS ADDRESSES

**Given the classless IP address 100.24.10.11/18,**  **answer the following questions about the address and the network on which it is found.**

1. What is the binary representation of this address? **01100100 00011000 00 001010 00001011 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. What is the binary representation of the network mask of this network? **11111111 11111111 11000000 00000000** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the dotted-decimal representation of the network mask of this network? **255.255.192.0** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What is the Prefix portion of this IP Address in binary? **01100100 00011000 00**
5. What is the Suffix portion of this IP Address in binary? **001010 00001011**
6. How many total IP addresses can there be on the network on which this IP address is found? **2 (32-18) == 214** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. What is the network address (first address) of the network on which this IP address is found ? Give your answer in binary notation. **01100100 00011000 00000000 00000000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
8. What is the network address (first address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. **100.24.0.0** \_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in binary notation. **01100100 00011000 00111111 11111111** \_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. **100.24.63.255** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Given the classless IP address 175.78.56.42/ 20,**  **answer the following questions about the address and the network on which it is found.**

1. What is the **binary** representation of this address? **10101111 01001110 00111000 00101010** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the **binary** representation of the **network mas**k of this network? **11111111 11111111 11110000 00000000** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the dotted-decimal representation of the **network mask** of this network? **255.255.240.0** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What is the NetID portion of this IP Address in binary? **10101111 01001110 0011**
5. What is the HostID portion of this IP Address in binary? **1000 00101010**
6. How many total IP addresses can there be on the network on which this IP address is found? **2 (32-20) == 212**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. What is the network address (first address) of the network on which this IP address is found ? Give your answer in binary notation. **10101111 01001110 00110000 00000000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
8. What is the network address (first address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. **175.78.48.0** \_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in binary notation. **10101111 01001110 0011 1111 11111111** \_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. **175.78.63.255** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Given the classless IP address 220.151.109.200/11,**  **answer the following questions about the address and the network on which it is found.**

1. What is the **binary** representation of this address? **11011100 100 10111 00101101 11001000** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the **binary** representation of the **network mas**k of this network? **11111111 1110000 00000000 00000000** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the dotted-decimal representation of the **network mask** of this network? **255.224.0.0** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What is the NetID portion of this IP Address in binary? **11011100 100** \_\_\_\_\_\_\_\_\_\_\_
5. What is the HostID portion of this IP Address in binary? **10111 00101101 11001000** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. How many total IP addresses can there be on the network on which this IP address is found? **2 (32-11) == 221** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. What is the network address (first address) of the network on which this IP address is found ? Give your answer in binary notation. **11011100 10000000 00000000 00000000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
8. What is the network address (first address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. **220.128.0.0** \_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in binary notation. **11011100 100 11111 11111111 11111111** \_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. What is the limited broadcast address (last address) of the network on which this IP address is found? Give your answer in dotted-decimal notation. **220.159.255.255** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_