

# Exam Prep Questions

1. Which of the following are alternate representations of the decimal number 227? Choose 2.
  - A. 0x227
  - B. 11100011
  - C. 0x143
  - D. 0xE3
  - E. 11100110
2. Which of the following are alternate representations of 0xB8? Choose two.
  - A. 10110100
  - B. 10111111
  - C. 10111000
  - D. 184
  - E. 0x184
3. You have been asked to create a subnet that supports 16 hosts. What subnet mask should you use?
  - A. 255.255.255.252
  - B. 255.255.255.248
  - C. 255.255.255.240
  - D. 255.255.255.224
4. Given the mask 255.255.254.0, how many hosts per subnet does this create?
  - A. 254
  - B. 256
  - C. 512
  - D. 510
  - E. 2
5. You are a senior network engineer at True North Technologies. Your boss, Mr. Martin, asks you create a subnet with room for 12 IPs for some new managers. Mr. Martin promises that there will never be more than 12 managers, and he asks you to make sure that you conserve IP address space by providing the minimum number of possible host IPs on the subnet. What subnet mask will best meet these requirements?
  - A. 255.255.255.12
  - B. 255.255.255.0
  - C. 255.255.240.0
  - D. 255.255.255.240
  - E. 255.255.255.224

6. Your boss Duncan does not seem to be able to grasp subnetting. He comes out of a management meeting and quietly asks you to help him with a subnetting issue. He needs to divide the Class B address space the company uses into six subnets for the various buildings in the plant, while keeping the subnets as large as possible to allow for future growth. Because the company has not upgraded their Cisco equipment since it was purchased several years ago, none of the routers supports the “ip subnet zero” command. What is the best subnet mask to use in this scenario?
- A. 255.255.0.0
  - B. 255.255.248.0
  - C. 255.255.224.0
  - D. 255.255.240.0
  - E. 255.255.255.224
7. You have purchased several brand-new Cisco routers for your company. Your current address space is 172.16.0.0 /22. Because these new routers support the “ip subnet zero” command, you realize you are about to gain back two subnets that you could not use with the old gear. How many subnets total will be available to you once the upgrades are complete?
- A. 4
  - B. 2
  - C. 32
  - D. 62
  - E. 64
8. Which of the following are true about the following address and mask pair: 10.8.8.0 /24? Choose all that apply.
- A. This is a Class B address.
  - B. This is a Class A address.
  - C. This is a Class C address.
  - D. 16 bits were stolen from the host field.
  - E. 24 bits were stolen from the host field.
  - F. The default mask for this address is 255.0.0.0.
  - G. The mask can also be written as 255.255.255.0.
  - H. The mask creates 65,536 subnets total from the default address space.
  - I. Each subnet supports 256 valid host IPs.
  - J. Each subnet supports 254 valid host IPs.

9. Indy and Greg have configured their own Windows XP PCs and connected them with crossover cables. They can't seem to share their downloaded MP3 files, however. Given their configurations, what could be the problem?

Indy's configuration:

IP: 192.168.0.65  
Mask: 255.255.255.192

Greg's configuration:

IP: 192.168.0.62  
Mask: 255.255.255.192

- A. Indy is using a Broadcast ID for his IP.
  - B. Greg is using an invalid mask.
  - C. Indy's IP is in one of the Zero Subnets.
  - D. Greg and Indy are using IPs in different subnets.
10. You are given an old router to practice for your CCNA. Your boss Dave has spent a lot of time teaching you subnetting. Now he challenges you to apply your knowledge. He hands you a note that says: "Given the subnetted address space of 192.168.1.0 /29, give the E0 interface the first valid IP in the eighth subnet. Give the S0 interface the last valid IP in the twelfth subnet. The Zero Subnets are available. You have 10 minutes. Go."

Which two of the following are the correct IP and Mask configurations? Choose 2.

- A. E0: 192.168.1.1            255.255.255.0
- B. E0: 192.168.1.56        255.255.255.248
- C. E0: 192.168.1.57        255.255.255.248
- D. S0: 192.168.1.254       255.255.255.0
- E. S0: 192.168.1.95        255.255.255.248
- F. S0: 192.168.1.94        255.255.255.248

## Answers to Exam Prep Questions

1. Answers B and D are correct. Answer A in decimal would be 551. Answer C in decimal would be 323. Answer E in decimal is 230.
2. Answers C and D are correct. Answer A in hex is 0xB4. Answer B in hex is 0xBF. Answer E is simply an attempt to trick you—the correct decimal answer is incorrectly expressed as a hex value.
3. Answer D is correct. A will only support 2 hosts; B only 6, and C only 14. Watch out for the minus 2 in the host calculation! Answer C creates 16 hosts on the subnet, but we lose 2—one for the Net ID and one for the Broadcast ID.
4. Answer D is correct. The mask 255.255.254.0 gives us nine 0s at the end of the mask;  $2^9 - 2 = 510$ . Answer A is checking to see if you missed the 254 in the third octet because you are used to seeing 255. Answer B does the same thing plus tries to catch you on not subtracting 2 from the host calculation. Answer C tries to catch you on not subtracting 2, and Answer E is the Increment of the given mask that you might pick if you were really off track.
5. The correct answer is D. Disregarding for the moment the possibility that Mr. Martin might be wrong, let's look at the requirements. He says make room for 12 managers, and make the subnets as small as possible while doing so. You need to find the mask that has sufficient host IP space without making it bigger than necessary. Answer A is invalid; 12 is not a valid mask value. Remember, a mask is a continuous string of 1s followed by a continuous string of 0s. In answer B, the mask is valid, but it is not correct. This mask has eight 0s at the end, which, when we apply the formula  $2^8 - 2$  gives us 254 hosts. That makes more than enough room for the 12 managers, but does not meet the “as small as possible” requirement. Answer C has the correct mask value in the wrong octet. That mask gives us eight 0s in the fourth octet, plus another four in the third octet; that would give us 4094 hosts on the subnet. Answer E gives us 30 hosts per subnet, but that only meets half the requirement. This mask does not provide the minimum number of hosts.

6. The correct answer is C. The default mask for a Class B is 255.255.0.0, Answer C extends that mask by three bits, creating 8 subnets ( $2^3=8$ ). The Zero Subnets are lost because the routers cannot use them, so we are left with six subnets. Answer A is incorrect because it is the default mask for a Class B and not subnetted at all. Answer B and D are incorrect because although they create sufficient subnets, they do not maximize the number of hosts per subnet and so are not the best answer. Answer E uses the correct mask in the wrong octet.
7. Answer E is correct. With “ip subnet zero” enabled, all 64 subnets created by the mask in use become available. Answer A, B, and C are not even close and are simply distracters. Answer D wants to catch you by subtracting the zero subnets.
8. The correct answers are B, D, F, G, H, and J. Answer A and C are incorrect because this is a Class A address. Answer E is incorrect because only 16 bits were stolen. Answer I is incorrect because it does not subtract the two IPs for the NetID and Broadcast ID.
9. Answer D is correct. With that mask, the Increment is 64. Greg is in the first subnet, and Indy is in the second. Without a router between them, their PCs will not be able to communicate above layer 2. Answer A is incorrect; the Broadcast ID for Indy would be .63. Answer B is incorrect; nothing is wrong with the mask. Answer C is incorrect; the Zero Subnets are the first and last created, and Indy is in the second subnet. The question does not mention the Zero Subnets, and in any case Windows XP fully supports them.
10. The correct answers are C and F. This is an Increment question. The Increment here is 8, so you should start by jotting down the multiples of 8 (those are all the NetIDs), and then noting what 1 less than each of the NetIDs is (those are the Broadcast IDs). From there, it is easy to find what the first and last IPs in each subnet are. (Remember that Dave says we can use the Zero Subnets.) Answers A and D are incorrect because they do not use the subnetted address space Dave requested. Answer B is incorrect because it is a NetID. Answer E is incorrect because it is a Broadcast ID.