Score for this attempt: **94** out of 100

Submitted Mar 14 at 6:43pm

This attempt took 49 minutes.

**Question 1**

**1 / 1 pts**

What are the two main services provided by the network layer of the TCP/IP model?



Encryption



Routing

Addressing and routing are correct answers because addressing deals with placing the correct IP address in the packet, and routing deals with getting the packet to the correct destination.



Compression



Addressing

Addressing and routing are correct answers because addressing deals with placing the correct IP address in the packet, and routing deals with getting the packet to the correct destination.



Reliability

**Question 2**

**1 / 1 pts**

Which OSI encapsulation term can be used instead of the term IP packet?



Layer 5 PDU



Layer 7 PDU



Layer 1 PDU



Layer 3 PDU

Rather than using terms such as frame, packet, and segment, OSI uses the generic term of PDU (protocol data unit). An IP packet is a Layer 3 PDU because IP operates at Layer 3 of the OSI model.



Layer 2 PDU

**Question 3**

**1 / 1 pts**

Which of the OSI model layers has the main purpose of defining and negotiating data formatting?



Data link



Presentation

The OSI presentation layer (Layer 6) is responsible for defining and negotiating the data format between communicating hosts. Some common formats include ASCII and EBCDIC. It is also at this layer that some data conversion can occur (for example, from ASCII to EBCDIC).



Network



Application



Transport

**Question 4**

**1 / 1 pts**

Which layer of the TCP/IP model defines the rules for data packet recovery?



Internet



Data link



Transport

Transport is correct because the transport layer protocols deal with error recovery of data. The transport layer also handles the mechanism to guarantee delivery across the network. The other layers do not.



Application

**Question 5**

**1 / 1 pts**

What is the name of the data unit that is sent and received at the Ethernet data link layer?



Frame

The name of the data unit used at the Ethernet data link layer is called an Ethernet Frame. A packet (or datagram) is the data unit typically used at the network layer, and a segment is the data unit used at the transport layer.



Segment



Section



Packet



Bit

**Question 6**

**1 / 1 pts**

Which part of a fiber optic cable is at the very center of the cable?



Core

The core is the inner most piece of a fiber optic cable and is found at the very center.



Buffer



Cladding



Strengthener



Jacket

**Question 7**

**1 / 1 pts**

Which IEEE standard defines the use of radio waves to communicate between wireless LAN nodes?



IEEE 802.2



IEEE 802.16



IEEE 802.3



IEEE 802.11

The IEEE 802.11 standard is used to define the use of radio waves for LAN communications. Many amendments to this standard are commonly seen on devices, including 802.11a, 802.11b, 802.11g, 802.11n, and 802.11ac (the fastest current draft).



IEEE 802.5

**Question 8**

**1 / 1 pts**

What is the longest copper cable length supported by the IEEE 802.3u FastEthernet standard?



180 feet



180 meters



100 feet



100 meters

The longest cable length supported when using a copper cable (that is, Category 5e, 6) is 100 meters. A fiber cable must be used for Ethernet cable runs that need to be longer than this.



1 kilometer

**Question 9**

**1 / 1 pts**

A light source for a fiber optic cable is known as which of the following?



Cladding



Optical retina



Optical transmitter

A light source, called an optical transmitter, shines a light into the core of fiber optic cabling.



Light transmitter

**IncorrectQuestion 10**

**0 / 1 pts**

For the address 172.30.173.68/23, what is the binary conversion of the broadcast address?



10101100 00011110 10101101 11111111



10101100 00011110 10101110 11111111



10101100 00011110 10101111 11111111



10101100 00011110 10101100 11111111

The address 172.30.173.68 is a Class B address, which means the first two bits are 10 and the next 14 are reserved for network bits. The other 16 bits are used for hosts. With the mask of /23, or 255.255.254.0, the host portion is subdivided to provide 7 host bits to be used for subnet and the other 9 host bits to be used for host space. This means the first 23 bits will be the same for all the devices within a subnet, with the highest number being used for the broadcast address. The address 172.30.173.68 converts to 10101100 00011110 10101101 01000100 in decimal. The first 23 bits don't change; the rest of the bits change to 1s to get the binary broadcast address 10101100 00011110 10101101 11111111.

**Question 11**

**1 / 1 pts**

You have an interface on a router with the IP address 192.168.192.113/29. What is the broadcast address the hosts will use on this LAN?



192.198.192.111



192.168.192.119

The correct answer is 192.168.192.119 because the resident subnet ID in this case is 192.168.192.112. You can find the subnet broadcast address based on the subnet ID and mask using several methods. If you follow the decimal process in the book, the /29 converts to the mask 255.255.255.248, making the interesting octet be octet 4 with magic number 256 - 248 = 8. For the three octets where the mask = 255, copy the subnet ID (192.168.192). For the interesting octet, take the subnet ID value (112), add magic (8), and subtract 1, for.119. That makes the subnet broadcast address 192.168.192.119.



192.168.192.135



192.168.192.127

**Question 12**

**1 / 1 pts**

Which of the following are valid subnet IDs for network 172.16.0.0, assuming mask 255.255.224.0 is used throughout network 172.16.0.0? (Select all that apply.)



172.16.0.0

The correct answers are 172.16.0.0 and 172.16.160.0 because, with the given mask of 255.255.224.0, subtracting the third value from 256 (256 - 224) equals 32 (magic number). The multiples of 32, starting with 0, include the values 32, 64, 128, 160, 192, and 224.



172.16.240.0



172.16.248.0



172.16.1.16



172.16.160.0

The correct answers are 172.16.0.0 and 172.16.160.0 because, with the given mask of 255.255.224.0, subtracting the third value from 256 (256 - 224) equals 32 (magic number). The multiples of 32, starting with 0, include the values 32, 64, 128, 160, 192, and 224.

**Question 13**

**1 / 1 pts**

For the IP address 172.184.58.184/27, how many *configurable* network, subnet, and host bits exist?



Network: 14, subnet: 11, host: 5

The address 172.184.58.184 is a Class B address, which means the first two bits are 10 and the next 14 are reserved for network bits. The other 16 bits are used for hosts. With the mask of /27, or 255.255.255.224, the host portion is subdivided to provide 11 host bits to be used for subnet and the other 5 host bits to be used for host space.



Network: 5, subnet: 14, host: 11



Network: 15, subnet: 3, host: 13



Network: 15, subnet: 12, host: 4

**Question 14**

**1 / 1 pts**

As the network engineer, you are given the following IP address information: 172.16.8.159 / 255.255.255.192. Identify the broadcast address.



172.16.255.255



172.16.8.255



172.16.8.127



172.16.8.191

The correct answer is 172.16.8.191 because the resident subnet ID in this case is 172.16.8.128.28. You can find the subnet broadcast address based on the subnet ID and mask using several methods; if we follow the decimal process in the book, in the mask 255.255.255.192, we make the interesting octet be octet 4, with magic number 256 - 192 = 64. For the three octets where the mask = 255, copy the subnet ID (172.16.8). For the interesting octet, take the subnet ID value (128), add magic (64), and subtract 1, for.191. That makes the subnet broadcast address 172.16.8.255.

**Question 15**

**1 / 1 pts**

If the host on a network has the address 172.16.66.50/21, what is the subnet ID to which this host belongs?



172.16.56.0



172.16.48.0



172.16.72.0



172.16.64.0

The correct answer is 172.16.64.0 because, first, the resident subnet (the subnet ID of the subnet in which the address resides) must be numerically smaller than the IP address, which rules out one of the answers. The mask converts to 255.255.248.0. As such, you can copy the first two octets of the IP address because of their value, 255. 55. For the third and fourth octet, the subnet ID value must be a multiple of 8 (magic number) because 256 - 248 (mask) = 8. Those multiples include 48, 56, and 64, and the correct choice is the multiple closest to the IP address value in that octet (66.50) without going over. So, the correct subnet ID is 172.16.64.0.

**IncorrectQuestion 16**

**0 / 1 pts**

As the network engineer, you are presented with the following 172.16.0.0/18 IP addressing information. Identify all the possible subnet IDs from the list below, assuming that the /18 subnet is used throughout the network.



172.16.64.0

The /18, or 255.255.192.0, mask provides 16 network bits, 2 subnet bits, and 14 host bits; this allows for a total of four different subnet possibilities, including 172.16.0.0, 172.16.64.0, 172.16.128.0, and 172.16.192.0.



172.16.127.255



172.16.192.0



172.16.191.255

The /18, or 255.255.192.0, mask provides 16 network bits, 2 subnet bits, and 14 host bits; this allows for a total of four different subnet possibilities, including 172.16.0.0, 172.16.64.0, 172.16.128.0, and 172.16.192.0.

**Question 17**

**1 / 1 pts**

The address that, when converted to binary, has all 0s in the host bits, is referred to as the \_\_\_\_\_\_\_\_.



Broadcast address



Last address in a subnet



Subnet address

When you are calculating subnets in binary, the subnet address will always be the one in which all the host bits are 0s, and the subnet broadcast will always be the one in which all the host bits are 1s.



First address in a subnet

**Question 18**

**1 / 1 pts**

As the network engineer, you are provided with the following IP address and subnet mask 172.16.10.22 255.255.255.240. What is the valid host range for this IP address?



172.16.10.1 through 172.16.10.255



172.16.10.20 through 172.16.10.22



172.16.10.17 through 172.16.10.31



172.16.10.16 through 172.16.10.23



172.16.10.17 through 172.16.10.30

The correct answer is 172.16.10.17 through 172.16.10.30 because, with the given mask of 255.255.255.240 (/28), subtracting the last value from 256 equals 16 (magic number). The multiples of 16 include the values 16, 32, 48, and so on. Using the last value of the IP address given, compare it to your list and take the lowest value; the subnet would be 172.16.10.16.

**Question 19**

**1 / 1 pts**

You have a 255.255.255.240 mask. Which of the following are valid host addresses? (Select all that apply.)



192.168.10.210

The correct answers are 192.168.10.210 and 192.168.10.94 because, using the mask given, you calculate all the values of 16 (magic number), which would yield 192.168.10.94 and 192.168.10.210.



192.168.10.127



192.168.10.32



192.168.10.112



192.168.10.94

The correct answers are 192.168.10.210 and 192.168.10.94 because, using the mask given, you calculate all the values of 16 (magic number), which would yield 192.168.10.94 and 192.168.10.210.

**Question 20**

**1 / 1 pts**

As the network engineer, you are presented with the following IP address and subnet mask: 10.10.110.5 / 255.255.255.192. What is the valid host range for this IP address?



10.10.110.1 through 10.10.110.63



10.10.110.1 through 10.10.110.126



10.10.110.1 through 10.10.110.62

The correct answer is 10.10.110.1 through 10.10.110.62 because, with the given mask of 255.255.255.192, subtracting the fourth value from 256 (256 - 192) equals 64 (magic number). The multiples of 64 include the values 0, 64, 128, and 192. Using the last value of the IP address given, compare it to your list and take the lowest value; the subnet would be 10.10.110.0. The valid hosts range would be 10.10.110.1 through 10.10.110.62.



10.10.110.0 through 10.10.110.62

**Question 21**

**1 / 1 pts**

Which of the options shown does *not* mean the same thing?



Subnet address



Subnet broadcast

The terms *subnet ID*, *subnet number*, and *subnet address* are all synonyms.



Subnet number



Subnet ID

**Question 22**

**1 / 1 pts**

Which of the following would be a usable IP address to assign to a host in the network 192.168.10.32/28?



192.168.10.39

The correct answer is 192.168.10.39 because the given mask of /28 converts to a value of 255.255.255.240, and subtracting the fourth value from 256 (256 – 240) equals 16 (magic number). The multiples of 16 include the values 0, 16, 32, 48, and so on. Using the last value of the IP address given, compare it to your list and take the lowest value; the subnet would be 192.168.10.32. This makes the available host range 33 through 46.



192.168.10.14



192.168.10.47



192.168.10.54

**IncorrectQuestion 23**

**0 / 1 pts**

For the address 192.86.26.97/29, what is the binary conversion of the broadcast address?



11000000 01010110 00011010 01100111



11000000 01010110 00011010 01101111



11000000 01010110 00011010 01100000

The address 192.186.26.97 is a Class A address, which means the first 3 bits are 110 and the next 21 are reserved for network bits. The other 8 bits are used for hosts. With the mask of /29, or 255.255.255.248, the host portion is subdivided to provide 5 host bits to be used for subnet and the other 3 host bits used for host space. This means that the first 29 bits will be the same for all the devices within a subnet, with the highest number used for the broadcast address. The address 192.86.26.97 converts to 11000000 01010110 00011010 01100001 in decimal. The first 29 bits don't change; the rest of the bits change to 1s to get the binary broadcast address 11000000 01010110 00011010 01100111.



11000000 01010110 00011010 01101000

**Question 24**

**1 / 1 pts**

What are the main roles for the subnet broadcast address? (Select all that apply.)



An address to send packets to all hosts in a subnet

There are two main roles for the subnet broadcast address: to be used as a destination IP address for the purpose of sending packets to all hosts in the subnet, and as a means of finding the high end of the range of addresses in a subnet because the highest address in each range is the broadcast address.



An address to send packets to specific hosts in a subnet



As a means of finding the low range of addresses in a subnet



As a means of finding the high range of addresses in a subnet

There are two main roles for the subnet broadcast address: to be used as a destination IP address for the purpose of sending packets to all hosts in the subnet, and as a means of finding the high end of the range of addresses in a subnet because the highest address in each range is the broadcast address.

**Question 25**

**1 / 1 pts**

Which of the following is the resident subnet for the IP address 187.225.25.48/20?



187.225.48.0



187.225.16.0

The correct answer is 187.225.16.0 because, first, the resident subnet (the subnet ID of the subnet in which the address resides) must be numerically smaller than the IP address, which rules out two of the answers. The mask converts to 255.255.240.0. As such, you can copy the first two octets of the IP address because of their value, 255. 55. For the third and fourth octet, the subnet ID value must be a multiple of 16 (magic number) because 256 - 240 (mask) = 16. Those multiples include 0 and 16, and the correct choice is the multiple closest to the IP address value in that octet (25.48) without going over. So, the correct subnet ID is 187.225.16.0.



187.225.0.0



187.225.32.0

**Question 26**

**1 / 1 pts**

For the IP address 10.64.17.4/19, how many *configurable*network, subnet, and host bits exist?



Network: 15, subnet: 12, host: 4



Network: 7, subnet: 11, host: 13

The address 10.64.17.4 is a Class A address, which means the first bit is 0 and the next 7 are reserved for network bits. The other 24 bits are used for hosts. With the mask of /19, or 255.255.224.0, the host portion is subdivided to provide 11 host bits to be used for subnet and the other 13 host bits to be used for host space.



Network: 15, subnet: 3, host: 13



Network: 7, subnet: 13, host: 11

**Question 27**

**1 / 1 pts**

As the network engineer, you're shown the following IP address information: 192.168.10.33 / 255.255.255.248. Identify the broadcast address.



192.168.10.255



192.168.10.39

The correct answer is 192.168.10.39 because the resident subnet ID in this case is 192.168.10.32. You can find the subnet broadcast address based on the subnet ID and mask using several methods; if we follow the decimal process in the book, in the mask 255.255.255.248, we make the interesting octet be octet 4, with magic number 256 - 248 = 8. For the three octets where the mask = 255, copy the subnet ID (192.168.10). For the interesting octet, take the subnet ID value (32), add magic (8), and subtract 1, for.39. 39. That makes the subnet broadcast address 192.168.10.39.



192.168.255.255



192.168.10.40

**Question 28**

**1 / 1 pts**

As the network engineer, you need to configure a server that is on the same subnet as a host that's assigned the IP address 192.168.19.24/28.28. The router has the first available host address. Which of the following IP addresses and masks could you assign to the server in this network?



192.168.19.27 / 255.255.255.240

The correct answer is 192.168.19.27 / 255.255.255.240 because the given mask of /28 converts to 255.255.255.240, and subtracting the fourth value from 256 (256 - 240) equals 16 (magic number). The multiples of 16 include the values 16, 32, 48, and so on. Using the last value of the IP address given, compare it to your list and take the lowest value; the subnet would be 192.168.19.16. The valid hosts range would be 192.168.19.17 through 192.168.19.31.



192.168.19.0 / 255.255.255.0



192.168.19.34 / 255.255.255.240



192.168.19.26 / 255.255.255.248



192.168.19.31 / 255.255.255.248

**Question 29**

**1 / 1 pts**

Which of the following is the resident subnet for the IP address 192.168.10.33/29?



192.168.10.24



192.168.10.40



192.168.10.32

The correct answer is 192.168.10.32 because, first, the resident subnet (the subnet ID of the subnet in which the address resides) must be numerically smaller than the IP address, which rules out two of the answers. The mask (/29) converts to 255.255.255.248. You can copy the first three octets of the IP address because of their value, 255. 55. For the fourth octet, the subnet ID value must be a multiple of 8 (magic number) because 256 - 248 (mask) = 8. Those multiples include 24 and 32, and the correct choice is the multiple closest to the IP address value in that octet (33) without going over. So, the correct subnet ID is 192.168.10.32.



192.168.10.48

**IncorrectQuestion 30**

**0 / 1 pts**

You are given the following information about the IP address of a host connected to the network, 172.16.45.1/30. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



S = 14



N= 12

The 172.16.45.1 IPv4 address is a Class B address, which gives you 16 network bits and 16 host bits. The /30, or 255.255.255.252, mask further splits the 16 available host bits: 14 for subnet and 2 for host.



H = 4



N = 8

**Question 31**

**1 / 1 pts**

While working at the help desk, you receive a call and learn that the IP address and mask of a user's PC are 192.168.192.10/29. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



S = 5

The 192.168.192.10 IPv4 address is a Class C address, which gives you 24 network bits and 8 host bits. The /29, or 255.255.255.248, mask further splits the 8 host bits: 5 for subnet and 3 for host.



N = 6



H = 4



S = 6

**Question 32**

**1 / 1 pts**

You have a 255.192.0.0 mask. Which of the following is the valid CIDR notation?



/10

The 255.192.0.0 mask converts to 11111111 11000000 00000000 00000000 in binary, which includes 10 mask bits.



/9



/12



/11

**Question 33**

**1 / 1 pts**

You are given the following information about the IP address of a host connected to the network, 172.16.66.0/21. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



S = 14



S = 6



H = 4



N = 16

The 172.16.66.0/21 IPv4 address is a Class B address, which gives you 16 network bits and 16 host bits. The /21, or 255.255.248.0, mask further splits the 16 host bits: 5 for subnet and 11 for host.

**Question 34**

**1 / 1 pts**

You have a 255.255.255.240 mask. Which of the following is the valid CIDR notation?



/26



/28

The 255.255.255.240 mask converts to 11111111 11111111 11111111 11110000 in binary, which includes 28 mask bits.



/25



/27

**Question 35**

**1 / 1 pts**

Which of the following lists the prefix (CIDR) format equivalent of 255.254.0.0?



/12



/14



/15

The 255.254.0.0 mask converts to 11111111 11111110 00000000 00000000 in binary, which includes 15 mask bits.



/13

**Question 36**

**1 / 1 pts**

An engineer is thinking about the following IP address and mask using classful IP addressing 192.168.19.24/29. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



N = 23



S = 5

The 192.168.19.24 IPv4 address is a Class C address, which gives you 24 network bits and 8 host bits. The /29, or 255.255.255.248, mask further splits the 8 host bits: 5 for subnet and 3 for host.



S = 14



H = 7

**Question 37**

**1 / 1 pts**

You are given the following information about the IP address of a host connected to the network, 200.10.5.68/28. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



H = 4

The 200.10.5.68 IPv4 address is a Class C address, which gives you 24 network bits and 8 host bits. The /28, or 255.255.255.240, mask further splits the 8 available host bits: 4 for the subnet and 4 for the host.



N = 12



S = 3



N = 16

**Question 38**

**1 / 1 pts**

Which of the following is the dotted-decimal notation (DDN) equivalent of /18?



255.255.224.0



255.255.240.0



255.255.192.0

The /18 CIDR notation converts to 11111111 11111111 11000000 00000000 in binary, which then converts to 255.255.192.0 in dotted-decimal notation.



255.255.128.0

**Question 39**

**1 / 1 pts**

Which of the following lists the prefix (CIDR) format equivalent of 255.255.240.0?



/20

The 255.255.240.0 mask converts to 11111111 11111111 11110000 00000000 in binary, which includes 20 mask bits.



/21



/19



/18

**Question 40**

**1 / 1 pts**

You have a 255.255.252.0 mask. Which of the following is the valid CIDR notation?



/21



/23



/20



/22

The 255.255.252.0 mask converts to 11111111 11111111 11111100 00000000 in binary, which includes 22 mask bits.

**Question 41**

**1 / 1 pts**

You are given the following information about the IP address of a host connected to the network, 172.16.112.1/25. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



S = 14



H = 7

The 172.16.112.1 IPv4 address is a Class B address, which gives you 16 network bits and 16 host bits. The /25, or 255.255.255.128, mask further splits the 16 host bits: 9 for subnet and 7 for host.



S = 6



N = 24

**Question 42**

**1 / 1 pts**

While working at the help desk, you receive a call and learn that the IP address and mask of a user's PC are 192.168.192.10/29. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



S = 14



H = 4



S = 5

The 192.168.192.10 IPv4 address is a Class C address, which gives you 24 network bits and 8 host bits. The /29, or 255.255.255.248, mask further splits the 8 host bits: 5 for subnet and 3 for host.



N = 16

**Question 43**

**1 / 1 pts**

Which of the following lists the prefix (CIDR) format equivalent of 255.255.224.0?



/20



/22



/21



/19

The 255.255.224.0 mask converts to 11111111 11111111 11100000 00000000 in binary, which includes 19 mask bits.

**Question 44**

**1 / 1 pts**

While working at the help desk, you receive a call and learn that the IP address and mask of a user's PC are 192.168.192.10/29. Determine the number of network (N), subnet (S), and host (H) bits. Which of the following statements are TRUE?



N = 16



S = 6



S = 14



H = 3

The 192.168.192.10 IPv4 address is a Class C address, which gives you 24 network bits and 8 host bits. The /29, or 255.255.255.248, mask further splits the 8 host bits: 5 for subnet and 3 for host.

**Question 45**

**1 / 1 pts**

Which of the following would be the correct network classification for a network with a first octet value between 192 and 223?



Class B



Class A



Class D



Class E



Class C

Class C networks with a first octet value of 192–223 are for small network unicast.

**Question 46**

**1 / 1 pts**

Which of the following would be the correct network classification for large network unicast addresses?



Class B



Class A

Class A networks with a first octet value of 1–126 are for large network unicast.



Class E



Class C



Class D

**Question 47**

**1 / 1 pts**

Which of the following would be the correct network classification for a multicast address?



Class A



Class E



Class D

Class D networks with a first octet value of 224–239 are for multicast.



Class B



Class C

**Question 48**

**1 / 1 pts**

What is the broadcast address of 192.168.192.10/29?



192.168.192.7



192.168.192.15

The /29, or 255.255.255.248, subnet mask provides 5 subnet bits (25 = 32) and 3 host bits (23 - 2 = 6). The 192.168.192.10 address has a network address of 192.168.192.8 and a broadcast address of 192.168.1.15.



192.168.192.255



192.168.192.31

**Question 49**

**1 / 1 pts**

What is the subnet number of a host with an IP address of 172.16.66.0/21?



172.16.48.0



172.16.64.0

The /21, or 255.255.248.0, mask provides 5 subnet bits (25 = 32), which would make the subnet numbers multiples of 32 starting at 172.16.0.0, 172.16.32.0, 172.16.64.0, and so on, with the address 172.16.66.0/21 being part of the 172.16.64.0 network.



172.16.36.0



172.16.0.0

**Question 50**

**1 / 1 pts**

As the network engineer, you are asked to design an IP subnet plan that calls for 100 subnets. The largest subnet needs a minimum of 350 hosts. Management requires that a single mask must be used throughout the Class B network. Which of the following is a public IP network and mask that would meet the requirements?



177.133.0.0 / 255.255.248.0



177.133.0.0 / 255.255.252.0



177.133.0.0 / 255.255.240.0



177.133.0.0 / 255.255.254.0

The correct answer is 177.133.0.0 / 255.255.254.0 because the only mask that would fit the requirements of 100 subnets and 350 hosts is 255.255.254.0, or /23, which would give you 128 subnets and 510 hosts per subnet.

**Question 51**

**1 / 1 pts**

If you have a Class C 192.168.10.0/28 network, how many usable subnets and hosts are available?



30 subnets, 6 hosts



62 subnets, 2 hosts



16 subnets, 14 hosts

The correct answer is 16 subnets, 14 hosts because the /28 or 255.255.255.240 mask would give you 16 subnets and 14 hosts per subnet.



14 subnets, 14 hosts

**Question 52**

**1 / 1 pts**

As the network engineer, you are asked to design an IP subnet plan that calls for 3 subnets. The largest subnet needs a minimum of 52 hosts. Management requires that a single mask must be used throughout the Class C network. Which of the following is a private IP network and mask that would meet the requirements?



192.168.0.0 / 255.255.255.248



192.168.0.0 / 255.255.255.192

The correct answer is 192.168.0.0 / 255.255.255.192 because the only mask that would fit the requirements of 3 subnets and 52 hosts is 225.255.255.192, or /26, which would give you 4 subnets and 62 hosts per subnet.



192.168.0.0 / 255.255.255.240



192.168.0.0 / 255.255.255.224

**Question 53**

**1 / 1 pts**

What is the correct formula for calculating the number of usable host IP addresses in a subnet?



2x, X = network bits



2x - 2, X = host bits

When you are calculating subnets, you use 2x - 2, where X = host bits. The two IP addresses that are subtracted include the network IP address (subnet network) and the subnet broadcast address.



2x - 2, X = network bits



2x, X = host bits

**Question 54**

**1 / 1 pts**

You have an interface on a router with the IP address 192.168.192.10/29. What is the broadcast address the hosts will use on this LAN?



192.168.192.127



192.168.192.31



192.168.192.15

The 192.168.192.10 address is part of the 192.168.192.8/29 network, which provides 5 subnet bits (25 = 32) and 3 host bits (23 - 2 = 6). From this host range, the 192.168.192.8 is the subnet address, and 192.168.192.15 is the broadcast address.



192.168.192.63

**Question 55**

**1 / 1 pts**

Which of the following are private IP networks? (Select all that apply.)



192.167.36.0



172.48.0.0



172.27.0.0

The correct answer is 172.27.0.0 because it falls in the range of 172.16.0.0 - 172.31.0.0, and 192.168.25.0 also is correct because it falls in the range of 192.168.0.0 - 192.168.255.0.



192.168.25.0

The correct answer is 172.27.0.0 because it falls in the range of 172.16.0.0 - 172.31.0.0, and 192.168.25.0 also is correct because it falls in the range of 192.168.0.0 - 192.168.255.0.

**Question 56**

**1 / 1 pts**

How many subnets and hosts are provided by the network 192.168.254.0/26?



2 network with 62 hosts



254 networks with 62 hosts



4 networks with 62 hosts

The network 192.168.254.0/26 provides 2 subnet bits (22 = 4 subnets) and 6 host bits (26 - 2 = 62 hosts).



4 networks with 64 hosts

**Question 57**

**1 / 1 pts**

You have an interface on a router with the IP address 192.168.192.10/29. How many total host addresses can exist on the subnet of the LAN attached to this router's interface?



30



8



6

The 192.168.192.10 address is part of the 192.168.192.8/29 network, which provides 5 subnet bits (25 = 32) and 3 host bits (23 - 2 = 6).



62

**Question 58**

**1 / 1 pts**

You need to subnet a network that has 5 subnets, each with at least 16 hosts. Which subnet mask would you use?



255.255.255.240



255.255.255.248



255.255.255.224

The correct answer is 255.255.255.224 because the only mask that would fit the requirements of 5 subnets and 16 hosts is /27, or 225.255.255.224, which provides 8 subnets and 30 hosts per subnet.



255.255.255.192

**Question 59**

**1 / 1 pts**

If you wanted to have 12 subnets with a Class C network ID, which subnet mask would you use?



255.255.255.252



255.255.255.254



255.255.255.240

The 255.255.255.240 or /28 mask provides for 4 subnet bits and 4 host bits, providing a total of 16 available subnets. The next lowest mask, 255.255.255.224 or /27, will provide 3 subnet bits and 5 host bits, providing only 8 available subnets.



255.255.255.248

**Question 60**

**1 / 1 pts**

You need to subnet a class C network that has 5 subnets, each with at least 16 hosts. Which classful subnet mask would you use?



255.255.255.240



255.255.255.192



255.255.255.224

The 255.255.255.224, or /27 mask, provides 3 subnet bits (23 = 8) and 5 host bits (25 - 2 = 30).



255.255.255.248

**Question 61**

**1 / 1 pts**

As the network engineer, you are asked to design an IP subnet plan that calls for 50 subnets. The largest subnet needs a minimum of 600 hosts. Management requires that a single mask must be used throughout the Class B network. Which of the following is a public IP network and mask that would meet the requirements?



134.119.0.0 /21



134.119.0.0 /22

The correct answer is 134.119.0.0 /22 because the only mask that would fit the requirements of 50 subnets and 600 hosts is /22, or 255.255.252.0, which would give you 64 subnets and 1022 hosts per subnet.



134.119.0.0 /20



134.119.0.0 /23

**Question 62**

**1 / 1 pts**

When calculating subnets, what two IP addresses must be subtracted from the host address space?



Subnet number

The two IP addresses that are subtracted include the network IP address (subnet network) and the broadcast address.



Host broadcast address



Subnet broadcast address

The two IP addresses that are subtracted include the network IP address (subnet network) and the broadcast address.



Host number

**Question 63**

**1 / 1 pts**

The network address 172.16.0.0/19 provides how many subnets and hosts?



7 subnets, 2046 hosts each



8 subnets, 30 hosts each



8 subnets, 8190 hosts each

The /19, or 255.255.224.0 subnet mask, provides 3 subnet bits (23 = 8) and 13 host bits (213 - 2 = 8190).



7 subnets, 8190 hosts each



8 subnets, 2046 hosts each

**Question 64**

**1 / 1 pts**

As the network engineer, you are asked to design an IP subnet plan that calls for 5 subnets. The largest subnet needs a minimum of 5000 hosts. Management requires that a single mask must be used throughout the Class B network. Which of the following is a public IP network and mask that would meet the requirements?



152.77.0.0/17



152.77.0.0/21



152.77.0.0/19

The correct answer is 152.77.0.0/19 because the only mask that would fit the requirements of 5 subnets and 5000 hosts is /19, or 225.255.224.0, which provides 8 subnets and 8190 hosts per subnet.



152.77.0.0/18

**Question 65**

**1 / 1 pts**

Which of the following are public IP network IDs? (Select all that apply.)



172.32.0.0

The correct answer is 8.0.0.0 because it is outside the Class A private network range of 10.0.0.0/8, and 172.32.0.0 also is correct because it is outside the Class B private network range of 172.16.0.0 – 172.31.0.0.



192.168.0.0



8.0.0.0

The correct answer is 8.0.0.0 because it is outside the Class A private network range of 10.0.0.0/8, and 172.32.0.0 also is correct because it is outside the Class B private network range of 172.16.0.0 – 172.31.0.0.



172.16.25.0

**Question 66**

**1 / 1 pts**

What valid host range is the IP address 172.16.10.22 255.255.255.240 a part of?



172.16.10.1 through 172.16.10.255



172.16.10.17 through 172.16.10.31



172.16.10.17 through 172.16.10.30

The IP address 172.16.10.22 is part of the 172.16.10.16/28 network, which includes a host range from 172.16.10.17 through 172.16.10.30.



172.16.10.16 through 172.16.10.23



172.16.10.20 through 172.16.10.22

**Question 67**

**1 / 1 pts**

If you are using a Class C network ID with 2 subnets and need 31 hosts per network, which of the following masks should you use?



255.255.255.0



255.255.255.248



255.255.255.192

Of the available options, the only one that provides for 2 subnets with at least 31 available host addresses is 255.255.255.192, or /26.



255.255.255.224

**Question 68**

**1 / 1 pts**

As the network engineer, you are asked to design a plan for an IP subnet that calls for 25 subnets. The largest subnet needs a minimum of 750 hosts. Management requires that a single mask must be used throughout the Class B network. Which of the following lists a private IP network and mask that would meet the requirements?



172.16.0.0 / 255.255.192.0



172.16.0.0 / 255.255.224.0



172.16.0.0 / 255.255.254.0



177.16.0.0 / 255.255.248.0

The correct answer is 177.16.0.0 / 255.255.248.0 because the only mask that would fit the requirements of 25 subnets and 750 hosts is 225.255.248.0, or /21, which would give you 32 subnets and 2046 hosts per subnet.

**Question 69**

**1 / 1 pts**

As the network engineer, you are asked to design an IP subnet plan that calls for 5 subnets. The largest subnet needs 25 hosts. Management requires that a single mask must be used throughout the Class C network. Which of the following is a public IP network and mask that would meet the requirements?



192.177.4.0 / 255.255.255.240



192.177.4.0 / 255.255.255.224

The correct answer is 192.177.4.0 / 255.255.255.224 because the only mask that would fit the requirements of 5 subnets and 25 hosts is 255.255.255.224, or /27, which would give you 8 subnets and 30 hosts per subnet.



192.177.4.0 / 255.255.255.248



192.177.4.0 / 255.255.255.192

**Question 70**

**1 / 1 pts**

An engineer would like to define the load distribution method as both the source and destination IP addresses. Which command should this engineer use?



port-channel load-balance src-dst-ip

The configuration keyword for both the source and destination IP addresses is src-dst-ip



port-channel load-balance dst-ip-src



port-channel load-balance src-dst-mac



port-channel load-balance dst-port

**Question 71**

**1 / 1 pts**

Which command lets an engineer set the switch's priority in that VLAN?



spanning-tree priority y vlan x



spanning-tree vlan x priority y

The global command spanning-tree vlan x priority y lets an engineer set the switch's priority in that VLAN.



spanning-tree [vlan x] cost y



spanning-tree [cost y] vlan x

**Question 72**

**1 / 1 pts**

Which command on a Cisco Catalyst switch tells the switch which type of STP to use?



Spanning-tree mode

The command spanning-tree mode is used on the Cisco Catalyst switches to tell the switches which type of STP to use.



STP mode



Spanning-tree config



STP config

**IncorrectQuestion 73**

**0 / 1 pts**

How is a root bridge/switch determined?



All the switches send out hello BPDUs, and the switch with the lowest bridge ID becomes the root.



All the switches in the internetwork send out hello BPDUs, and the switch that has the aggregate least number of hops to all the other switches becomes the root.



The core network switch becomes the root.



All the switches send out hello BPDUs, and the switch with the highest bridge ID becomes the root.

When the Spanning Tree Protocol (STP) is just starting up, it must elect a root switch (or bridge). All the switches send out hello BPDUs, and the switch with the lowest bridge ID becomes the root.



The switches send out hello BPDUs, and the switch with the most direct connected switches becomes the root.

**Question 74**

**1 / 1 pts**

What is the name of the field in the STP hello BPDU that contains the bridge ID of the switch that the sender of the BPDU believes is the root switch?



STP core ID



Root bridge ID

The root bridge ID field in the STP hello BPDU contains the bridge ID for the switch that the sender of the BPDU believes is the root switch. This is not always true because every switch initially assumes it is the root switch until the network converges.



STP primary ID



Designated bridge ID

**Question 75**

**1 / 1 pts**

What is the default IEEE STP port cost for a 10 Gbps Ethernet interface?



2

The default IEEE STP port cost for a 10 Gbps Ethernet interface is 2.



4



1



10

**Question 76**

**1 / 1 pts**

How many bits within the IEEE 802.1Q tag are used to identify the VLAN of the frame?



16



8



12

The IEEE 802.1Q tag is 4 bytes in length. Of these 4 bytes, only 12 bits are used to identify the VLAN ID of the specific frame.



48

**Question 77**

**1 / 1 pts**

When configuring a trunk between two switches, which dynamic trunking mode should be used to always initiate a trunking connection?



Dynamic auto



Dynamic on



Dynamic desirable

When a trunk is configured into dynamic desirable mode, it will always attempt to initiate a trunking connection whenever the trunk becomes active. The other option is dynamic auto mode. In this mode, the switch will not initiate a trunking connection but will set one up if initiated from the remote switch.



Dynamic active

**Question 78**

**1 / 1 pts**

With IEEE 802.1Q, what term is used to refer to the traffic that exists on a VLAN trunk that is purposefully *not* tagged?



Native VLAN

IEEE 802.1Q tags all the traffic going over a trunk except the native VLAN, which is purposefully not tagged.



Primary VLAN



Master VLAN



Main VLAN

**Question 79**

**1 / 1 pts**

The IEEE 802.1Q standard adds a(n) \_\_\_\_\_\_\_\_-byte tag to the original frame to identify the VLAN.



1



4

The IEEE 802.1Q standard adds a 4-byte tag that the switches use to identify which VLAN frames are assigned to.



8



2

**Question 80**

**1 / 1 pts**

What is the name of the process that is defined by IEEE 802.1Q to relay traffic from multiple VLANs?



Broadcast forwarding



Switchport mode access



VLAN staging



VLAN tagging

When the IEEE 802.1Q standard is used for trunking, a "tag" is added to the traffic passing over the trunk that enables each frame to be identified into a specific VLAN.

**Question 81**

**1 / 1 pts**

Which of the following will occur if the speed setting cannot be sensed in a Cisco switch?



The speed will default to the setting reported from the other end of the interface.



The speed will default to the highest speed available.



The speed will default to 1 Mbps.



The speed will default to the lowest setting available.

If the speed cannot be sensed, it will default to the lowest setting, often 10 Mbps.

**Question 82**

**1 / 1 pts**

Which of the following is the most essential fact that allows the IEEE autonegotiation protocol to function?



Cisco switch logic can determine speed and duplex for a connection.



Cisco meets the IEEE standard for the protocol.



Any Ethernet device can sense the speed of a connection.



Wiring pinouts are common for 10BASE-T, 100BASE-T, and 1000BASE-T.

The IEEE autonegotiation protocol only works at a foundational level because the pinouts for the different speed standards are the same.

**Question 83**

**1 / 1 pts**

If a Cisco Gigabit Ethernet port is connected to a device that does *not* support IEEE autonegotiation, and the interface speed cannot be sensed, what speed is the interface defaulted into?



1 Gbps



100 Mbps



None; the port is shut down.



10 Mbps

IEEE autonegotiation enables devices to communicate with each other to find the fast speed agreeable between each. If this feature is disabled, Cisco devices have an additional capability to sense port speed. If this is unsuccessful, the port defaults to the lowest speed the port supports, which is 10 Mbps.

**Question 84**

**1 / 1 pts**

When using the no speed command on an interface, what is the resulting change made?



The speed setting defaults to its automatic configuration.

The prefix no in most commands disables any modifications and defaults to automatic settings, like no speed does.



The speed defaults to the lowest possible value.



The speed setting is no longer recorded for the interface.



The speed for the interface is set to 0, disabling it.

**Question 85**

**1 / 1 pts**

How many VLAN interfaces (SVI) can exist and be up on a typical Layer 2 Cisco switch at the same time?



1

Typical Layer 2 Cisco switches are limited to a single active VLAN interface (SVI); while other VLAN interfaces can be configured, only a single one can be active at the same time.



2



8



4096

**Question 86**

**1 / 1 pts**

Which command can be used to alter the default display behavior of syslog messages on a device so that they will not interrupt the output of a show command?



synchronize messages



logging timed



logging synchronous

The logging synchronous command is used to alter the default display behavior of syslog messages on a device.



logging systematic

**Question 87**

**1 / 1 pts**

What is the name used to identify a virtual NIC type of device that exists on Cisco switches to assign IP information to specific VLANs?



SVC



SVI

On most Cisco switches, there exists the concept of a switched virtual interface (SVI), which enables the user to configure IP settings for a specific VLAN.



VRF



PVC

**Question 88**

**1 / 1 pts**

Which of the following is a characteristic of the shared passwords used in networking?



All configuration modes use the same password.



Every piece of equipment must use the same password.



The individual user defines each password.



The password is set and known by administrators.

The shared password is set by network administrators, not the individual user, so it is known by several people.

**Question 89**

**1 / 1 pts**

The IEEE defines three general categories of Ethernet MAC addresses. What are these three types?



Loopback



Anycast



Broadcast

IEEE defines unicast, broadcast, and multicast address types.



Singlecast



Unicast

IEEE defines unicast, broadcast, and multicast address types.



Multicast

IEEE defines unicast, broadcast, and multicast address types.

**Question 90**

**1 / 1 pts**

When STP has placed a port in the blocked state, this port \_\_\_\_\_\_\_\_.



Will forward data frames but cannot receive them



Cannot receive or forward data frames

When an STP port is in blocking state, it can only listen to management Bridge Protocol Data Units (BPDU) but does not listen or forward any data frames.



Will receive and forward data frames only



Will receive data frames but cannot forward them

**IncorrectQuestion 91**

**0 / 1 pts**

Which of the following items does a switch populate into its address table upon receiving a frame from an unknown source? (Select all that apply.)



The source MAC address



The destination port



The destination MAC address

To populate its address table, the switch needs to record the source MAC address and the source port.



The receiving interface

To populate its address table, the switch needs to record the source MAC address and the source port.

**Question 92**

**1 / 1 pts**

Given the following address table, which port would be used to forward a frame destined for 0200.2222.2222?  
  
Text, letter

Description automatically generated with medium confidence



Fa0/1



Fa0/3



Fa0/4



Fa0/2

The address table determines which port will transmit a frame; in this case, the destination matches the port for Fa0/2.

**Question 93**

**1 / 1 pts**

A Cisco switch has four area modules that store various files and the IOS. In which area module is the startup-configuration file stored?



NVRAM

A Cisco device maintains (stores) a copy of the initial (startup) configuration in the NVRAM.



RAM



FLASH



ROM

**Question 94**

**1 / 1 pts**

The \_\_\_\_\_\_\_\_ changes dynamically when someone enters commands in configuration mode.



Running-config

Only the startup-config and running-config exist; running-config is the copy currently running that gets modified as commands are executed.



Default-config



Ram-config



Startup-config

**Question 95**

**1 / 1 pts**

A Cisco switch has four memory areas that store various files as well as the IOS. In which memory area is the bootstrap program stored?



FLASH



ROM

ROM is correct because it is the memory type that holds the bootstrap program and the ROM monitor program.



NVRAM



RAM

**Question 96**

**1 / 1 pts**

You have just completed the setup of your new Cisco 2960 switch, and you need to save your work. To save the configuration file, you would issue which of the following commands?



copy running-config startup-config

You use the copy running-config startup-config command to save the current configuration to the NVRAM. It will then be used when the device reboots or is powered on and off.



move running-config startup-config



save running-config startup-config



copy startup-config running-config

**Question 97**

**1 / 1 pts**

What is the difference between the ISO version of HDLC and the Cisco version of HDLC that is used, by default, on all serial interfaces?



Type field

The Cisco version of HDLC adds a Type field that enables the routers to know which type of packet is inside each frame.



Optimized header



Encryption support



Protocol field



Authentication support

**Question 98**

**1 / 1 pts**

The Internet is essentially one big \_\_\_\_\_\_\_\_ network.



TCP/IP

The term *Internet* actually comes from the name of the protocol being used, the Internet protocol (IP); typically it is referred to as a TCP/IP network. The Transmission Control Protocol (TCP) is one of the most commonly used Layer 4 protocols (OSI), whereas IP (or IPv6) is always used on the Internet for communications at Layer 3 (OSI).



iBGP



EGP



OSI



Ethernet

**Question 99**

**1 / 1 pts**

What is the physical rate of transmission of a T1 leased line?



2 Mbps



44.455 Mbps



5.455 Mbps



1.544 Mbps

A T1 is an older style of telecommunications leased line that offers a physical transmission rate of 1.544 Mbps.



10 Mbps



100 Mbps

**Question 100**

**1 / 1 pts**

What protocol standard is used when utilizing an Ethernet emulation point-to-point link?



IEEE 802.11



ISO 1431



IEEE 802.3

Ethernet emulation technologies, such as Ethernet over Multiprotocol Label Switching (EoMPLS), utilize the same IEEE 802.3 Ethernet standard for transmission that is used on Ethernet LANs.



IEEE 802.5



ISO 4507

Quiz Score: **94** out of 100