



**Exam : 640-821**

**Title : Introduction to Cisco Networking  
Technologies (INTRO)**

**QUESTION 1**

Exhibit

```

CertkillerC # show interfaces serial 0/0
Serial0/0 is administratively down, line protocol is down
Hardware is HD64570
Internet address is 192.168.100.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loop back not set

```

The result of the show interfaces serial 0/0 command is displayed in the exhibit. What command should be executed to make this interface operational?

- A. Certkiller C(config-if)#enable
- B. Certkiller C(config-if)# no keepalive
- C. Certkiller C(config-if)# encapsulation ppp
- D. Certkiller C(config-if)# no shutdown
- E. Certkiller C(config-if)# clockrate 56000
- F. Certkiller C(config-if)# line protocol up

Answer: D

Explanation:

<b>no shutdown</b>	Enable the interface and the configuration changes you have just made on the interface.
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Serial0 is administratively down, line protocol is up.	The possible causes for this state are	The following are some steps you can take to isolate the problem:
	<ul style="list-style-type: none"> <li>• The serial interface has been disabled with the <b>shutdown interface</b> configuration command.</li> <li>• Different interfaces on the router are using the same IP address.</li> </ul>	<ul style="list-style-type: none"> <li>• Use the <b>show configuration</b> privileged EXEC command to display the serial port configuration. If "shutdown" is displayed after "interface Serial0," use the <b>no shutdown interface</b> configuration command to enable the interface.</li> <li>• Use the <b>show interface</b> privileged EXEC command to display the IP addresses for all router interfaces. Use the <b>ip address</b> interface configuration command to assign unique IP addresses to the router interfaces.</li> </ul>

**QUESTION 2**

Which command will reinitialize the router and totally replace the running configuration with the current startup configuration?

- A. Certkiller B#reload
- B. Certkiller B# copy tftp startup-config
- C. Certkiller B# copy startup.-config running-config
- D. Certkiller B# copy running-config flash
- E. Certkiller B# setup

Answer: A

Explanation:

Enter the copy system:running-config nvram:startup-config command to save your configuration changes to your startup configuration so that they will not be lost if there is a system reload or power outage. For example:  
Router# copy system:running-config nvram:startup-config Building configuration...It might take a minute or two to save the configuration. After the configuration has been saved, the following output appears:

[OK] Router#

On most platforms, this task saves the configuration to NVRAM. On the Class A Flash file system platforms, this task saves the configuration to the location specified by the CONFIG\_FILE environment variable. The CONFIG\_FILE variable defaults to NVRAM.

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**QUESTION 3**

Which is the correct fallback sequence for loading the Cisco IOS?

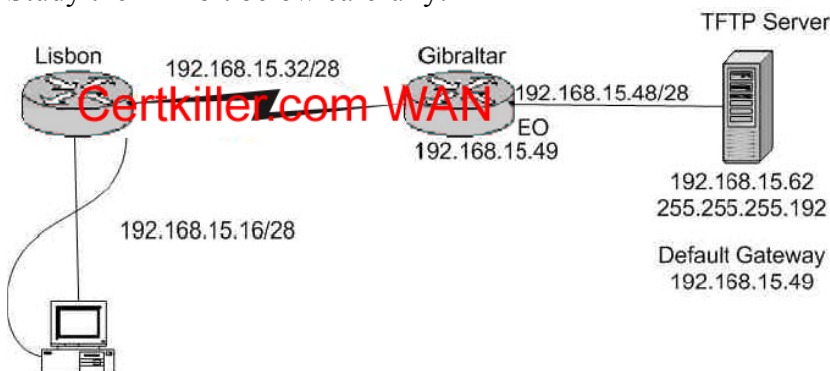
- A. ROM, Flash, NVRAM
- B. ROM, TFTP server, Flash
- C. Flash, TFTP server ROM
- D. Flash NVRAM, RAM

Answer: C

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**QUESTION 4**

Study the Exhibit below carefully:



A new router has been installed in the branch office in Lisbon. However, the network administrator cannot make a backup of the IOS image of the new route to the TFTP server located in the Gibraltar office. Following the network diagram, can you identify the cause of the problem?

- A. IP address if the TFTP server not correct.
- B. Incorrect subnet mask of the TFTP server.
- C. Default gateway of the TFTP server not properly set.
- D. Subnet mask on the Lisbon router not correct
- E. Incorrect IP address configured on E0 of the Gibraltar router

Answer: B

Explanation:

An incorrect subnet mask on the TFTP server is the cause of this problem. If you look at the subnet masks of all

the other devices you'll notice that they are /28. If you rewrite the subnet mask of the TFTP server, of 255.255.255.192 you'll notice that it translates to a subnet mask of /26. A subnet mask of 255.255.255.240, which is a /28, applied to the TFTP server will fix this problem.

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**QUESTION 5**

You are the network administrator at Certkiller . Certkiller users report that they cannot access resources on the LAN attached to interface e0 of router CK1 . You want to view the current IP addressing and the Layer 1 and Layer 2 status of this interface.

Which of the following commands could you use? (Choose three.)

- A. CK1 # show version
- B. CK1 # show protocols
- C. CK1 # show interfaces
- D. CK1 # show controllers
- E. CK1 # show ip interface
- F. CK1 # show startup-config

Answer: C, D, E

Explanation:

showinterfaces is used to see the IP addresses and layer 2 information configured on the interfaces.

showcontrollers is used to see the layer 1 statistics. It tells about the V.35 cables whether they are physically attached or not.

showip interfaces is used to see the IP addresses configured on the interfaces.

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**QUESTION 6**

You are a network technician at Certkiller . You are troubleshooting a LAN connectivity problem.

Which of the following router IOS commands could you use? (Select three options.)

- A. show ip route
- B. winipcfg
- C. tracet
- D. show interfaces
- E. traceroute
- F. ping

Answer: A D F

Explanation

A: The show ip route command displays the IP route table.

D: The show interfaces EXEC command to display statistics for all interfaces configured on the router or access server.

F: The ping command tests connectivity to a remote node.

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**QUESTION 7**

You are a technician at Certkiller . Your newly appointed Certkiller trainee wants to know what command she can use to verify the active configuration on a Cisco router.

What would your reply be?

- A. Router# show memory
- B. Router# show startup-config
- C. Router# show running-config
- D. Router# show flash

Answer: C

Explanation:

The two commands that list the currently used configuration in a router is reloaded are show running-config and write terminal.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) page 494

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### **QUESTION 8**

You are a technician at Certkiller . Your newly appointed Certkiller trainee is troubleshooting a connectivity problem on the Certkiller network. She asks you what command she should use to test application layer connectivity the between source and destination.

What would your reply be?

- A. ping
- B. telnet
- C. traceroute
- D. verify
- E. trace

Answer: B

Explanation:

Telnet - The standard terminal emulation protocol in the TCP/IP protocol stack. Telnet is used for remote terminal connection, enabling users to log in to remote systems and use resources as if they were connected to a local system.

I was going to choose answer A (ping), but the keyword in the question is "application layer". Ping only needs to hit the NIC and that would mean layer 1 (Physical layer).

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) page 589

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### **QUESTION 9**

You are the network administrator at Certkiller . Your assistant made a number of errors when utilizing the router setup mode facility. You want to exit setup mode without applying the changes that your assistant made.

What should you do? (Select two.)

- A. Type exit at the setup dialog.
- B. Type close at the setup dialog.

- C. Press the Ctrl-C key combination.
- D. Press the Ctrl-X key combination.
- E. Issue the copy startup-config command.
- F. Issue the 'write e' command.
- G. Issue the "write mem" command

Answer: A, C

Explanation:

The command 'exit' will set you back from wherever you were without saving any changes. Pressing Ctrl-C will do the same thing.

Incorrect Answers:

- B. This is an invalid command
- E. This command is used to save the configuration stored on NVRAM to a location.
- F. This will have the effect of erasing the running configuration, and setting the router configuration back to the factory default settings.
- G. This is an old command that is still supported on the latest Cisco IOS. It is short for "write memory" and has the same effect as the "copy running-config startup-config" command.

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**QUESTION 10**

With regard to bandwidth, which of the following statements are true? (Choose all that apply.)

- A. Bandwidth availability is decreasing.
- B. Bandwidth availability is infinite.
- C. Bandwidth is used when analyzing network performance.
- D. Bandwidth availability is finite.
- E. Bandwidth availability is fixed.

Answer: C, D

Explanation: C is correct because performance analyzing software is notorious for consuming bandwidth. Most network management devices use SNMP, which consumes bandwidth. D is correct because although new technologies are providing for more bandwidth and a network can be engineered to give more priority to different devices, there is a finite amount of bandwidth available at any given time.

Incorrect Answers:

- A. This is incorrect because new technologies are actually increasing the amount of potential bandwidth.
- B. For any given network, the amount of bandwidth available to end users is usually fixed, and based on the speed of the connection to access connection. For example, any given PC with a 10/100 NIC will be limited to 100Mbps of throughput at any given time.
- E. This is incorrect because it's always possible to upgrade a scalable technology or allocate resources differently.

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**QUESTION 11**

You are the network administrator at Certkiller . From your workstation you telnet to a router VTY line.

You perform a number of configurations on the router. You now want to terminate the telnet connection. What command must you issue to terminate the Telnet connection?

- A. close
- B. disable
- C. disconnect
- D. suspend
- E. exit

Answer: C

Explanation:

Terminating a Telnet session

Use the disconnect from the router you Telnetted from.

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 398

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### **QUESTION 12**

You are a network technician at Certkiller , Inc. You are required to establish a Telnet session with a cisco router.

Which of the following commands should you use?

- A. Certkiller 1(config)# line console 0  
Certkiller 1(config-if)# enable password Certkiller
- B. Certkiller 1(config)# line vty 0  
Certkiller 1(config-line)# enable password Certkiller
- C. Certkiller 1(config)# line vty 0  
Certkiller 1(config-line)# enable secret Certkiller  
Certkiller 1(config-line)# login
- D. Certkiller 1(config)# line console 0  
Certkiller 1(config-line)# enable secret Certkiller  
Certkiller 1(config-line)# login
- E. Certkiller 1(config)# line console 0  
Certkiller 1(config-line)# password Certkiller  
Certkiller 1(config-line)# login
- F. Certkiller 1(config)# line vty 0  
Certkiller 1(config-line)# password Certkiller  
Certkiller 1(config-line)# login

Answer: F

Explanation:

Access from Password Type Configuration

Telnet vty password line vty 0 4

login

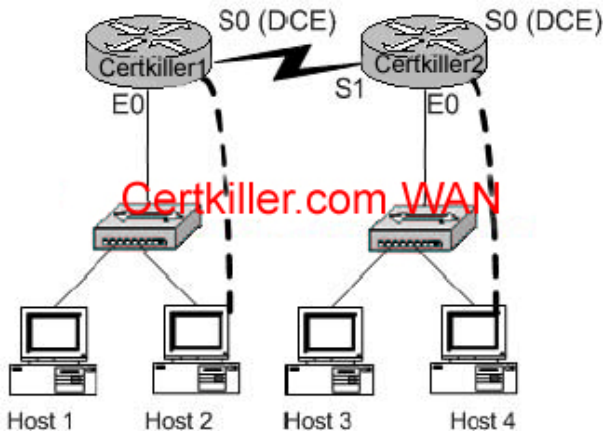
password cisco

Reference:

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 177

### QUESTION 13

Study the Exhibit below carefully:



You are contracted as a network administrator at Certkiller . You are required to configure two routers named Certkiller 1 and Certkiller 2 respectively.

The network topology is shown in the exhibit above.

The enable password is " Certkiller ".

You must configure the following passwords on the Certkiller 2 router:

1. Console password: jack
2. Vty lines 0-4 password: bill

To configure the router click on a host icon that is connected to a router by a serial cable.

Answer:

Click on Host 4:

Router Con0 is now available

Press RETURN to get started !We press enter

Router Certkiller 2:

Certkiller 2> enable !We enter enable mode

Password: Certkiller !We enter " Certkiller "

Certkiller 2 # config terminal !We enter the terminal

Enter configuration commands, one per line. End with CTRL/Z

Certkiller 2 (config) # line console 0 !Configure the terminal connection

Certkiller 2 (config-line)#login

Certkiller 2 (config-line)# password Jack !Specify the terminal connection password

Certkiller 2 (config-line)# exit

Certkiller 2 (config) # line vty 0 4 !Configure the telnet connections. Numbered 0,1,2,3,4.

Certkiller 2 (config-line)# login

Certkiller 2 (config-line)# password bill !specify the password

Certkiller 2 (config-line)# no shutdown

Certkiller 2 (config-line) # exit !Exit from configuration mode.

Certkiller 2 (config) # exit

Certkiller 2 # copy running-configstartup-config !Saves the running config to NVRAM.



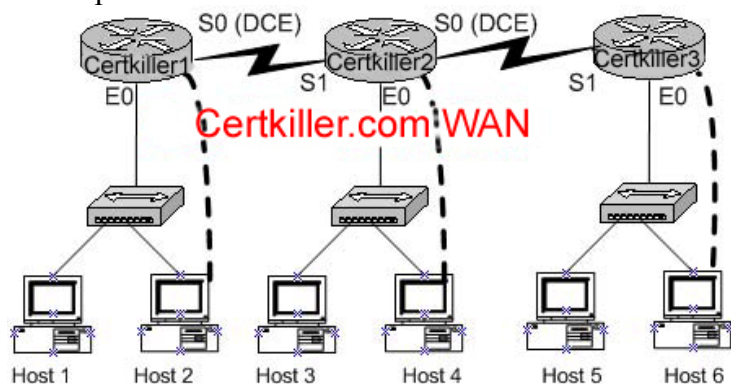
Reference:  
CCNA Self-Study CCNA INTRO exam certification

**QUESTION 14**

You are a network technician at Certkiller, Inc. Certkiller has recently opened a third office in a foreign country and bought a router to connect this office to the other two already on the network. The names of the routers are Certkiller 1, Certkiller 2, and Certkiller 3. Configure the Certkiller 3's router's IP addresses on the E0 and S1 interfaces so that the E0 interface receives the first usable subnet while the S1 interface receives the second usable subnet from the network 192.168.101.0/28. Both interfaces should receive the first available IP of the subnet. The zero subnet should not be used. The routers have been configured with the following specifications.

- \* The routers are named Certkiller 1, Certkiller 2, and Certkiller 3.
- \* RIP is the routing protocol.
- \* Clocking is provided on the serial 0 interfaces
- \* The secret password on the Certkiller 3 router is " Certkiller "
- \* The subnet mask of all networks other than 192.168.101.0 is the default mask.
- \* The IP addresses are listed in the chart below.

Certkiller 1  
E0 192.168.93.1  
S0 192.168.95.1  
Certkiller 2  
E0: 192.168.97.1  
S0: 192.168.101.42  
S1: 192.168.95.2  
Certkiller 3  
E0 to be determined  
S1 to be determined  
Secret password: Certkiller



Click on the host icon that is connect to a router by a serial console cable to configure the router.

Answer:

Certkiller 3> enable

Password: Certkiller

Certkiller 3 # config terminal

Certkiller 3 (config) # interface ethernet 0 (Shorthand: int e 0)

Certkiller 3 (config-if) # ip address 192.168.101.17 255.255.255.240

```
Certkiller 3 (config-if) # no shutdown
Certkiller 3 (config-if) # exit
Certkiller 3 (config-) # interface serial 1 (Shorthand: int s 1)
Certkiller 3 (config-if) # ip address 192.168.101.33 255.255.255.240
Certkiller 3 (config-if) # no shutdown
Certkiller 3 (config-if) # CTRL+Z
Certkiller 3 # copy running-config startup-config
```

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 165

CCNA Self-Study CCNA INTRO exam certification Guide (Cisco Press, ISBN 1-58720-094-5) Page 486

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### **QUESTION 15**

You are logged into a router and wish to view the layer 3 information about your neighboring Cisco routers. What IOS command gives layer 3 information for of the directly connected router interfaces?

- A. show ip links
- B. show cdp neighbor
- C. show cdp neighbor detail
- D. show ip clients
- E. show ip route
- F. None of the above

Answer: C

Explanation:

To display detailed information about neighboring devices discovered using Cisco Discovery Protocol (CDP), use the show cdp neighbors privileged EXEC command. Detail - (Optional) Displays detailed information about a neighbor (or neighbors) including network address, enabled protocols, hold time, and software version.

Incorrect Answers:

A, D. These are invalid commands.

B. The "show cdp neighbor" command, without the "detail" keyword will not display the additional layer 3 protocol information.

E. This will show all routes from all other routers within the domain. We wish to see information from just the direct interface neighbors.

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### **QUESTION 16**

While troubleshooting a connectivity problem on the network, you issue the ping command from your PC command prompt, but the output shows "request times out."

At which OSI layer is this problem associated with?

- A. The data link layer
- B. The application layer
- C. The access layer
- D. The session layer
- E. The network layer

Answer: E

Explanation:

TCP/IP includes ICMP, a protocol designed to help manage and control the operation of a TCP/IP network. The ICMP protocol provides a wide variety of information about a network's health and operational status. Control message is the most descriptive part of a name. ICMP helps control and manage IP's work and therefore is considered part of TCP/IP's network layer.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) page 277.

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**QUESTION 17**

A Certkiller .com technician is troubleshooting connectivity problems between two routers that are directly connected through the serial line. The technician notices that the serial line is up but cannot see any neighbors displayed in the output of the show cdp neighbors command.

In which OSI layer is the problem most likely occurring?

- A. Physical
- B. Data link
- C. Network layer
- D. Transport layer
- E. Application layer

Answer: B

Explanation:

As the question states that serial line is up, it means the problem is not on the Network layer. The administrator cannot see any output by issuing the show cdp neighbors command. It means that CDP is disabled and CDP is a protocol that runs over Layer2 (the data link layer) on all Cisco routers, bridges, access servers, and switches.

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**QUESTION 18**

You are a technician at Certkiller . You tell your newly appointed Certkiller trainee about public networks IP Address classes. Your trainee now wants to know if all the IP Address Classes can be assigned for public use.

What would your reply be?

- A. All except Class E addresses.
- B. Only Class A and Class B addresses.
- C. Only Class B and Class C addresses.
- D. All except Class D and Class E addresses.
- E. Only Class A, Class C and Class E addresses.

Answer: D

Explanation:

RFC 7980 defines the IP protocol, including multiple different classes of networks. IP defines three different network classes, called A, B, and C, from which individual hosts are assigned IP addresses. TCP/IP defines

Class D (multicast) addresses and Class E (experimental) addresses as well.

Reference:

Certkiller 640-821 Study Guide, Section 2, "IP Addressing and Subnetting"

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**QUESTION 19**

Which of the following IP addresses for the network 124.16.32.55/28 can be assigned to hosts? (Choose three)

- A. 124.16.32.45
- B. 124.16.32.48
- C. 124.16.32.57
- D. 124.16.32.60
- E. 124.16.32.62
- F. 124.16.32.63

Answer: C, D, E

Explanation:

In this vlsn address, 124.16.32.55 is the IP address. The /28 indicates that the subnet mask is a 28 bit mask. This equates to 11111111.11111111.11111111.11110000 in binary, or 255.255.255.240. To determine the network address, we use a mathematical operation call Logical ANDing in which we compare the binary values of the IP address and the subnet mask. In binary, the IP address is 01111100.00010000.00100000.00110111.

We compare corresponding bits:

11111111.11111111.11111111.11110000

01111100.00010000.00100000.00110111

Each corresponding bit that is 1 in both IP address and subnet mask remains 1. All other bits become 0. This gives us:

01111100.00010000.00100000.00110000

In decimal format, this is: 124.16.32.48

We can calculate the number of hosts on the network by using the  $2^n - 2$  formula where  $n$  = number of hosts bits (i.e. bits not used for the subnet mask). In this case  $n = 4$ .  $2^4 - 2 = 14$ . Thus network 124.16.32.48 supports 14 hosts but remember that 124.16.32.48 is the network address so the 14 hosts will be 124.16.32.49-62.

Incorrect Answers:

A: Using logical ANDing will reveal that 124.16.32.45/28 is a host on the 124.16.32.32 network.

B: 124.16.32.48/28 is the network address for 124.16.32.55/28.

D: 124.16.32.63/28 is the broadcast address for 124.16.32.55/28.

Reference:

Certkiller 640-821 Study Guide, Section 2, "IP Addressing and Subnetting"

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**QUESTION 20**

You are the network administrator at Certkiller . Certkiller has been assigned the IP address 189.66.1.0 by its Internet Service Provider. Your newly appointed Certkiller trainee wants to know how many hosts will be supported on each subnet if you divide the network by using the 255.255.255.224 subnet mask.

What would your reply be?

- A. 14

- B. 16
- C. 30
- D. 32
- E. 62
- F. 64

Answer: C

The subnet mask 255.255.255.224 is a 27 bit mask (11111111.11111111.11111111.11100000). It uses 3 bits from the host Id for the network ID, leaving 5 bits for host addresses. We can calculate the number of hosts supported by this subnet by using the  $2^n - 2$  formula where n represents the number of host bits. In this case it will be  $2^5 - 2$  gives us 30.

Incorrect Answers:

A: Subnet mask 255.255.255.240 will give us 14 host addresses.

B: Subnet mask 255.255.255.240 will give us a total of 16 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.

D: Subnet mask 255.255.255.224 will give us a total of 32 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.

E: Subnet mask 255.255.255.192 will give us 62 host addresses.

F: Subnet mask 255.255.255.192 will give us a total of 64 addresses. However, we must still subtract two addresses (the network address and the broadcast address) to determine the maximum number of hosts the subnet will support.

Reference:

Certkiller 640-821 Study Guide, Section 2, "IP Addressing and Subnetting"

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### QUESTION 21

In the following is the MAC address of your NIC:

C9-3F-32-B4-DC-19

What is the OUI portion expressed in binary format?

- A. 11001100-00111111-00011000
- B. 11000110-11000000-00011111
- C. 11001110-00011111-01100000
- D. 11001001-00111111-00110010
- E. 11001100-01111000-00011000
- F. 11111000-01100111-00011001

Answer: D

Explanation:

The first half of the address identifies the manufacturer of the card. This code, which is assigned to each manufactory by the IEEE, is called the organizationally unique identifier (OUI). In this example, the OUI is: C9-3F-32. This equates to 11001001-00111111-00110010

Reference:

Certkiller 640-821 Study Guide, Appendix A "Decimal, Hexadecimal and Binary Conversion Table"

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**QUESTION 22**

You are a technician at Certkiller . Your newly appointed Certkiller trainee wants to know what the binary value for 172 is.  
What would your reply be?

- A. 10010010
- B. 10011001
- C. 10101100
- D. 10100110
- E. 11100011

Answer: C

Explanation:

$$10101100 = 128 + 0 + 32 + 0 + 8 + 4 + 0 + 0 = 172$$

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**QUESTION 23**

Study the following exhibit:



Taking the information from the above exhibit; which command line below would correctly configure serial port0 on the Certkiller 2 router with the LAST usable host addresses on the 192.216.32.32 subnet?

- A. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248
- B. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.240
- C. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248
- D. Certkiller 2(config-if)# ip address 192.216.32.63 255.255.255.248 no shut
- E. Certkiller 2(config-if)# ip address 192.216.32.39 255.255.255.248 no shut
- F. Certkiller 2(config-if)# ip address 192.216.32.38 255.255.255.248

Answer: F

Explanation:

F is the correct answer, as the last usable IP address on this subnet is 192.216.32.38. The subnet mask for a /29 is 255.255.255.248

Mask/29 11111111.11111111.11111111.11111000 255.255.255.248

Subnet 11000000.11011000.00100000.00100000 192.216.32.32

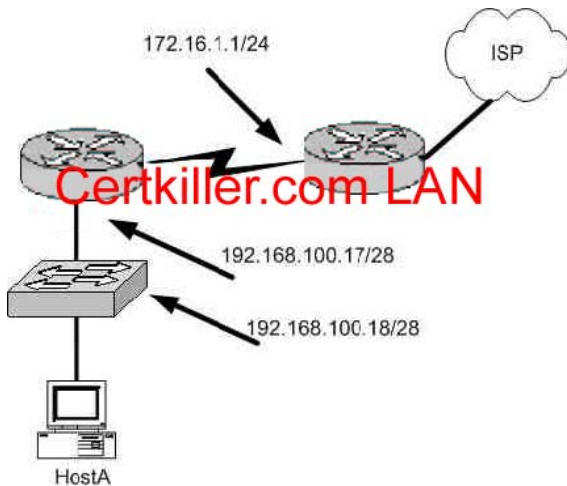
Broadcast 11000000.11011000.00100000.00100111 192.216.32.39

Address range = 192.216.32.33 - 192.216.32.38

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**QUESTION 24**

The Certkiller Network is displayed as follows:



What is a valid possible IP address configuration for Host A?

- A. IP 192.168.100.31 255.255.255.240 default-gateway 192.168.100.18
- B. IP 192.168.100.30 255.255.255.240 default-gateway 172.16.1.1
- C. IP 192.168.100.20 255.255.255.240 default-gateway 192.168.100.17
- D. IP 192.168.100.21 255.255.255.248 default-gateway 192.168.100.17
- E. IP 192.168.100.19 255.255.255.248 default-gateway 172.16.1.1

Answer: C

Explanation:

The network mask for a /28 is 255.255.255.240. The default gateway is always the IP address of the router on the local subnet, and the valid IP range for this network is 192.168.100.17 - 192.168.100.30. Choice C is the only one that meets all of these.

Incorrect Answers:

- A. The IP address 192.168.100.31 is the broadcast address. It cannot be used for the host.
- B. The default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.
- D. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248.
- E. The network uses a 28 bit subnet mask (11111111.11111111.11111111.11110000). This equates to 255.255.255.240, not 255.255.255.248. Also, the default gateway should be the first exit point for the network that the host is on. In this case it should be the router interface address 192.168.100.17.

### QUESTION 25

The Certkiller network is displayed below:



In this network, you must configure router CK1 to provide connectivity to router CK2. The entire network must utilize the 192.1.1.0/24 network. If RIP is being used as the routing protocol, which 3 sets of

commands will need to be completed on CK1 ? (Choose 3).

- A. CK1 (config)# interface ethernet 0  
CK1 (config-if)# ip address 192.1.1.129 255.255.255.192  
CK1 (config-if)# no shutdown
- B. CK1 (config)# interface ethernet 0  
CK1 (config-if)# ip address 192.1.1.97 255.255.255.192  
CK1 (config-if)# no shutdown
- C. CK1 (config)# interface serial 0  
CK1 (config-if)# ip address 192.1.1.4 255.255.255.252  
CK1 (config-if)# clock rate 56000
- D. CK1 (config)# interface serial 0  
CK1 (config-if)# ip address 192.1.1.6 255.255.255.252  
CK1 (config-if)# no shutdown
- E. CK1 (config)# router rip  
CK1 (config-router)# network 192.1.1.4  
CK1 (config-router)# network 192.1.1.128
- F. CK1 (config)# router rip  
CK1 (config-router)# version 2  
CK1 (config-router)# network 192.1.1.0

Answer: A, D, F

Explanation:

Subnetting a Class C Address

We start by using the first subnet mask available with a Class C address, which borrows 2 bits for subnetting. For this example, I'll be using 255.255.255.192. To review the binary translation of 192:

192 = 11000000

Here, the 1s represent the subnet bits, and the 0s represent the host bits available in each subnet. 192 provides 2 bits for subnetting and 6 bits for defining the hosts in each subnet.

What are the subnets? Since the subnet bits can't be both off or on at the same time, the only two valid subnets are these:

01000000 = 64 (all host bits off) revealing host addresses from .65-----.127

10000000 = 128 (all host bits off) revealing host addresses from .129-----.190

The valid hosts would be defined as the numbers between the subnets, minus the all-host-bits-off and all-host-bits-on numbers.

In Choice A, a valid host is configured on E0 interface of the router 192.1.1.129/26 so it is correct. Choice D is correct because each WAN link uses the /30 or 255.255.255.252 mask revealing 2 valid host addresses. Serial 0 is configured with the address 192.1.1.6/30, which comes from the subnet 192.1.1.4/30. Valid hosts in this subnet are 192.1.1.5/30 and 192.1.1.6/30

Choice F is correct because we RIP version 2 will be required in this case as VLSM information needs to be carried throughout the network, and VLSM is not supported on RIP version 1.

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### QUESTION 26

Which of the following addresses can be assigned to a host when using a subnet mask of 255.255.254.0? (Select three)



- A. 113.10.4.0
- B. 186.54.3.0
- C. 175.33.3.255
- D. 26.35.3.255
- E. 152.135.7.0
- F. 17.35.36.0

Answer: B, C, E

Explanation:

These are all valid host IP addresses within the /23 subnet.

Incorrect Answers:

- A. This is the network address for the 113.10.4.0/23 subnet.
- D. This is the broadcast address for the 26.35.2.0/23 subnet.
- F. This is the network address for the 17.35.36.0/23 subnet.

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**QUESTION 27**

Which command will assign the last usable IP address from the 192.168.32.128/28 subnetwork to a router interface?

- A. Certkiller A(config-if)# ip address 192.168.32.142 255.255.255.240
- B. Certkiller A(config-if)# ip address 192.168.32.143 255.255.255.240
- C. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240
- D. Certkiller A(config-if)# ip address 192.168.32.145 255.255.255.240
- E. Certkiller A(config-if)# ip address 192.168.32.144 255.255.255.240
- F. Certkiller A(config-if)# ip address 192.168.32.158 255.255.255.240

Answer: A

Explanation:

The last usable IP address would be  $128 + (16-2) = 142$ . Because only last 4 bits of the last octet are used for host addressing.

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**QUESTION 28**

Network topology exhibit



A Certkiller .com network administrator is adding host Certkiller 3 to the network shown in the exhibit. Which IP address can be assigned this host on this network?

- A. 192.1.1.14
- B. 192.1.1.18
- C. 192.1.1.20
- D. 192.1.1.30
- E. 192.1.1.31
- F. 192.1.1.36

Answer: B, D

Explanation:

Subnet Mask of 255.255.255.240 means 4-bits of subnetting. When we do 4-bits of subnetting, we have a total of 16 subnets having 16 hosts each. Subnets will be

192.1.1.0 ----- 191.1.1.15 (0-15)

192.1.1.16 ---- 191.1.1.31 (16-31)

192.1.1.32 ---- 191.1.1.47 (32-47)

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192.1.1.240---- 192.1.1.255 (240-255)

Only choices B and D are in the valid range 192.1.1.16 ---- 191.1.1.31 (16-31)

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**QUESTION 29**

You have the binary number 10011101. Convert it to its decimal and hexadecimal equivalents. (Select two answer choices)

- A. 158
- B. 0x9D
- C. 156
- D. 157
- E. 0x19
- F. 0x9F

Answer: B, D

Explanation:

$10011101 = 128+0+0+16+8+4+0+1 = 157$

For hexadecimal, we break up the binary number 10011101 into the 2 parts:

1001 = 9 and 1101 = 13, this is D in hexadecimal, so the number is 0x9D. We can further verify by taking the hex number 9D and converting it to decimal by taking 16 times 9, and then adding 13 for D ( $0x9D = (16 \times 9) + 13 = 157$ ).

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**QUESTION 30**

The subnet mask on the serial interface of a router is expressed in binary as 11111000 for the last octet.

How do you express the binary number 11111000 in decimal?

- A. 210
- B. 224
- C. 240
- D. 248
- E. 252

Answer: D

Explanation:

$128 + 64 + 32 + 16 + 8 = 248$ . Since this is the last octet of the interface, the subnet mask would be expressed as a /29.

Reference:

CCNA Self-Study CCNA ICND exam certification Guide (Cisco Press, ISBN 1-58720-083-X) Page 559

Incorrect Answers:

- A. The number 210 would be 11010010 in binary.
  - B. The number 224 would be 11100000 in binary.
  - C. The number 240 would be 11110000 in binary
  - E. The number 252 would be 11111100 in binary. This is known as a /30 and is used often in point-point links, since there are only 2 available addresses for use in this subnet.
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