

ROUTER COMMANDS

1. Identify the command to display the IP routing table?

- A.) show route
- B.) show ip route
- C.) show ip table route
- D.) show ipx route

Answer: B

2. Identify the command to display all the valid commands at the given mode?

- A.) Help all
- B.) Help
- C.) All commands
- D.) ?

Answer: D

3. Identify the keystroke used to terminate the setup mode?

- A.) Ctrl-K
- B.) Ctrl-C
- C.) Ctrl-Z
- D.) Ctrl-End

Answer: C

4. Identify the command to display the IP host table?

- A.) show ip hostnames
- B.) show ip names
- C.) show hosts
- D.) show ip hosts

Answer: D

5. Identify the command to display the configured IP routing protocols?

- A.) show protocols
- B.) show protocols all
- C.) show routing-protocols
- D.) show ip protocols

Answer: D

6. Identify the command to configure ALL the default VTY ports?

- A.) Router(config)# line vty 0 4
- B.) Router# line vty 0 4
- C.) Router(config)# line vty

D.) Router(config)# line vty 0

Answer: A

7. Identify the command to reload the router?

- A.) Router(config)# reload
- B.) Router# reset
- C.) Router# reload
- D.) Router> reload

Answer: C

8. Identify command that configures 'Cisco1' as a secret password?

- A.) Router(config)# enable secret password Cisco1
- B.) Router(config)# enable secret cisco1
- C.) Router(config)# enable password Cisco1
- D.) Router(config)# enable secret Cisco1

Answer: D

9. Identify the statement which connects access-list 101 inbound to interface e0?

- A.) Router(config-if)# ip access-group 101 in
- B.) Router(config-if)# ip access-group 101
- C.) Router(config)# ip access-group 101 e0 in
- D.) Router(config)# ip access-group 101 e0 in

Answer: A

10. Identify the command that displays ethernet0/1 interface status?

- A.) show interface ethernet0/1
- B.) show interface ethernet e0/1
- C.) show interface ethernet0.1
- D.) show ethernet0/1

Answer: A

11. Based upon the exhibit, create a static route to 172.16.10.0 on Router A

- A.) Router# ip route 172.16.10.0 255.255.255.0 10.1.0.2
- B.) Router(config)# ip static route 172.16.10.0 255.255.255.0 10.1.0.2
- C.) Router(config)# ip route 172.16.10.0 10.1.0.2
- D.) Router(config)# ip route 172.16.10.0 255.255.255.0 10.1.0.2

Answer: D

12. Identify the command that saves the configuration stored in RAM to NVRAM?

- A.) copy running-config startup-config

- B.) copy tftp running-config
- C.) copy startup running
- D.) copy active to backup

Answer: A

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13. Identify the command that displays the SAP table?

- A.) show ipx servers
- B.) display SAP table
- C.) display SAP's
- D.) show sap table

Answer: A

14. Identify the command to configure the IP address 172.16.100.5 255.255.255.0?

- A.) Router(config-if)# ip address 172.16.100.5 255.255.255.0
- B.) Router(config)# ip address 172.16.100.5
- C.) Router# ip address 172.16.100.5 255.255.255.0
- D.) Router(config)# ip address 172.16.100.5 255.255.255.0

Answer: A

15. Identify the command to configure the router to boot from an IOS located on a TFTP server?

- A.) boot system tftp IOS.exe 172.16.5.1
- B.) boot system tftp 172.16.5.1 IOS.exe
- C.) boot system flash tftp 172.16.5.1
- D.) boot system IOS.exe 172.16.5.1

Answer: A

16. Identify the command to display the hardware platform information?

- A.) show all
- B.) show platform
- C.) display hardware
- D.) show version

Answer: D

17. Identify the command to display the Frame Relay map table?

- A.) Router# display frame-relay map
- B.) Router# show frame-relay map
- C.) Router(setup)# show frame-relay map
- D.) Router# show map frame-relay

Answer: B

18. Given the command 'cl?', what will it display?

- A.) Syntax of the 'clock' command
- B.) Syntax of the 'clear' command
- C.) All commands that begin with 'cl'
- D.) All commands that begin with 'c'

Answer: C

19. Identify the 2 commands that copies the configuration in NVRAM to RAM?

- A.) copy backup-config running-config
- B.) configure nvram
- C.) copy startup-config running-config
- D.) configure memory

Answer: B, C

20. Identify the 2 commands the saves the running-config to NVRAM?

- A.) write memory
- B.) copy running-config startup-config
- C.) write network
- D.) write backup

Answer: A, B

21. Identify the command that displays traffic statistics on serial0/1?

- A.) display interface serial0/1
- B.) show interface serial0/1
- C.) show seria0/1 stats
- D.) show interface serial0/1 stats

Answer: B

22. Identify the command to determine if CDP is enabled?

- A.) show enable cdp
- B.) show cdp enabled
- C.) show cdp run
- D.) show cdp

Answer: D

23. Which 2 commands shows the Cisco IOS filename?

- A.) show IOS
- B.) show ver
- C.) show flash

- D.) show mem
- E.) show NVRAM

Answer: B,C

24. Identify the command to copy a configuration file from a TFTP server to a routers active configuration?

- A.) Router# copy running-config tftp
- B.) Router# copy tftp running-config
- C.) Router# copy tftp 172.16.0.1 running-config
- D.) Router(config)# copy tftp running-config

Answer: B

25. Identify the command mode necessary to enter the extended ping command?

- A.) Router#
- B.) Router>
- C.) Router(config)#
- D.) Router(ext-ping)#

Answer: A

26. Identify the command to configure the router for IGRP autonomous system 100?

- A.) Router(config)# router igrp 100
- B.) Router> router igrp 100
- C.) Router# router igrp 100
- D.) Router(config)# router igrp

Answer: C

27. Identify the command that forces the router to load into ROM mode upon a reload?

- A.) boot system rom
- B.) rom boot
- C.) boot system flash rom
- D.) boot router rom

Answer: A

28. Identify the command that specifies Serial 0 in slot 1?

- A.) Router(config)# interface serial1/1
- B.) Router(config)# interface serial1/0
- C.) Router(config)# interface serial0.1
- D.) Router(config)# interface serial0/1

Answer: B

29. Identify the command to configure the configuration-register?

- A.) Router# config-register 0x2102
- B.) Router(config)# config-register 0x2102
- C.) Router(config-reg)# 0x2102
- D.) Router> config-register 0x2102

Answer: A

30. Identify the command to disable CDP on an interface?

- A.) Router(config-if)# no cdp enable
- B.) Router(config-if)# no cdp run
- C.) Router# no cdp enable
- D.) Router(config-if)# no cdp

Answer: A

31. Identify the command that will display the RIP routes entering and leaving the router?

- A.) Router(config)# debug ip rip
- B.) Router# debug ip rip
- C.) Router>debug ip rip
- D.) Router# debug rip routes

Answer: B

32. Identify the prompt displayed if in privileged exec mode?

- A.) Router(config)#
- B.) Router#
- C.) Router>
- D.) Router(priv)#

Answer: B

33. 'Show cdp neighbors detail' show the following 3 pieces of information?

- A.) Hardware platform
- B.) Software version
- C.) Same as 'show version' command
- D.) Up to 1 address for each protocol
- E.) Non-direct connected routers

Answer: A, C, D

34. Identify the command mode necessary to enter the standard ping command?

- A.) Router(config)#

- B.) Router>
- C.) Router(std-ping)#
- D.) Router(config-if)#

Answer: B

35. Identify the command to run 'setup'?
- A.) Router(config)#setup
 - B.) Router?setup
 - C.) Router#setup
 - D.) Router>setup

Answer: A

36. Identify the command that configures serial0 for PPP encapsulation?
- A.) Router(config)# encapsulation ppp
 - B.) Router(config-if)# encapsulation serial ppp
 - C.) Router(config-if)# encapsulation ppp
 - D.) Router# encapsulation ppp

Answer: C

37. Identify the command to display the status of the Frame Relay virtual circuit?
- A.) Router# show frame-relay virtual-circuit
 - B.) Router(config)# show frame-relay pvc
 - C.) Router# show frame-relay pvc
 - D.) Router# show virtual

Answer: C

38. Identify the command that disables name-to-address translation?
- A.) Router(config-dns)# no ip domain-lookup
 - B.) Router(config)# no address translation
 - C.) Router(config)# no ip domain-lookup
 - D.) Router(config)# ip domain-lookup

Answer: C

39. What command will not display the status of to1?
- A.) show int to1
 - B.) show to1
 - C.) show interface to1
 - D.) show interface

Answer: B

40. Identify the 2 commands to copy a configuration from a TFTP server to RAM?

- A.) configure network
- B.) configure overwrite
- C.) copy backup-config running-config
- D.) copy tftp running-config

Answer: A,D

41. Identify the following command to configure a secret password to 'cisco'?

- A.) Router(config)#enable password cisco secret
- B.) Router(config)#enable secret cisco
- C.) Router(config)#enable secret password cisco
- D.) Router(config)#set secret = cisco

Answer: B

42. Identify the effect of Ctrl-Z?

- A.) Exits back to privileged exec mode
- B.) Disconnect from the router
- C.) Abort the ping operation
- D.) Exits privileged exec mode

Answer: A

43. Given an IPX network with redundant paths, what command will configure load balancing?

- A.) ipx load-balance
- B.) ip maximum-paths 2
- C.) ipx maximum-paths 2
- D.) ipx load-share

Answer: C

44. Identify the correct IGRP configuration?

- A.) Router# router igrp 100
Router# network 10.0.0.0
- B.) Router(config)# router igrp 100
Router(config-router)# network 10.0.0.0
- C.) Router(config)# router igrp
Router(config-router)# network 10.0.0.0

Answer: B

45. Identify the components in the following command 'interface serial0/1/1'

- A.) Serial interface, port number 0, slot 1, port adapter 1

- B.) Serial interface, slot 1, port number 1, port adapter 0
- C.) Serial interface, slot 0, port adapter 1, port number 1

Answer: C

46. Identify the command to view the configuration-register value?

- A.) show register
- B.) display config-register
- C.) show config
- D.) show version

Answer: D

47. Identify the 2 commands that save the running-config to a TFTP server?

- A.) write running tftp
- B.) copy running network
- C.) copy running tftp
- D.) write network

Answer: C,D

48. Identify the mode reflected by the following prompt 'Router<boot>'?

- A.) Setup
- B.) RXBoot
- C.) Boot mode
- D.) Privileged exec mode

Answer: B

49. How do you disable CDP on the entire Router?

- A.) Router#no cdp run
- B.) Router(config-if)# no cdp enable
- C.) Router(config)# no cdp enable
- D.) Router(config)# no cdp run

Answer: D

50. What command can be used to test IPX connectivity?

- A.) Ping 2e.000.0045.8923
- B.) Ping 192.168.100.1
- C.) Ping ipx 2e.0000.0045.8923
- D.) Ipx ping 2e.0000.0045.8923

Answer: C

51. Identify the 2 commands that display the clock rate configured on the

serial0 interface?

- A.) show serial0
- B.) show interface serial0
- C.) Show clock rate serial 0
- D.) show controllers serial 0
- E.) show running-config

Answer: D,E

52. What is the command to copy the IOS image to a TFTP server?

- A.) copy flash tftp
- B.) copy running-config tftp
- C.) copy ios tftp
- D.) copy startup-config tftp

Answer: A

53. Identify the command that configures the bandwidth to 56K?

- A.) Router(config-if)# bandwidth 56000
- B.) Router(config-if)# bandwidth 56k
- C.) Router(config)# bandwidth 56
- D.) Router(config-if)# bandwidth 56

Answer: D

54. Identify the command to configure DLCI 100 on an interface e0?

- A.) Router(config)# frame-relay local-dlci 100
- B.) Router(config)# frame-relay local-dlci 100 int e0
- C.) Router(config-if)# frame-relay local-dlci 100
- D.) Router(config-if)# frame-relay local-dlci 100 int e0

Answer: ALL ANSWERS ARE WRONG

55. Identify the command to configure the router to boot from an alternate IOS located in flash?

- A.) boot system flash IOS.exe
- B.) boot system tftp IOS.exe 172.16.5.1
- C.) boot system alternate IOS.exe
- D.) boot system rom IOS.exe

Answer: A

56. Identify the command to configure a description on an interface?

- A.) Router> description Finance department
- B.) Router(config)# description Finance department
- C.) Router(config-if)# description Finance department

D.) Router# description Finance department

Answer: C

57. Identify the 2 commands that will display the status and information about interface E0 only?

- A.) show interface ethernet E0
- B.) show interface E0
- C.) show E0
- D.) show int E0
- E.) show interface

Answer: B,D

58. In order to configure a Frame Relay subinterface with IP identify the 2 commands that must be configured on the physical interface?

- A.) Router(config-if)# encapsulation frame-relay
- B.) Router(config-if)# no ip address
- C.) Router(config-if)# encapsulation subinterface frame-relay
- D.) Router(config)# subinterface s0 encapsulation frame-relay

Answer: A,D

59. Identify the command to determine if an IP access-list is grouped on interface e0?

- A.) Router(config)# show ip interface e0
- B.) Router> show ip interface e0
- C.) Router# show interface e0
- D.) Router# show ip interface e0

Answer: D

60. Identify the keystroke to position the cursor to the beginning of a command line?

- A.) Ctrl-A
- B.) Ctrl-Ins
- C.) Ctrl-B
- D.) Ctrl-Z

Answer: A

61. Identify the following components of the IPX address 2e.0000.0065.ed43

- A.) Not a valid IPX address
- B.) Network = 2e, Subnet = 0000, Node = 0065.ed43
- C.) Network = 2e.0000, Node = 0065.ed43
- D.) Network = 2e, Node = 0000.0065.ed43

Answer: D

62. What is the syntax to add a banner to the Cisco router?

- A.) motd banner #
- B.) banner
- C.) banner motd #
- D.) banner #

Answer: C

63. What is the command to allow you to type Tokyo instead of the IP address 172.16.30.1 to access a router named Tokyo?

- A.) config t, ip host Tokyo 172.16.30.1
- B.) config t, ip hostname Tokyo 172.16.30.1
- C.) config t, hostname Tokyo 172.16.30.1
- D.) config t, ip hostname 172.16.30.1 Tokyo

Answer: A

64. How do you disable advanced editing?

- A.) terminal editing
- B.) terminal no editing
- C.) disable editing
- D.) no terminal editing

Answer: B

65. Which of the following will show an extended access list 150?

- A.) sh access-list 150
- B.) sh ip int
- C.) sh ip access-list
- D.) sh access-list 150 extended

Answer: A

66. You have a Class B network address divided into 30 subnets. You will add 25 new subnets within the next year. You need 600 host IDs for each subnet. Which subnet mask should you use?

- A.) 255.254.0.0
- B.) 255.192.0.0
- C.) 255.255.252.0
- D.) 255.255.248.0

Answer: C

67. What is the syntax to use to configure the port on a Catalyst 5000 switch?

- A.) slot port/type
- B.) type slot/port
- C.) port slot/type
- D.) port type/slot

Answer: ???/

68. What 3 sources can configuration commands be placed into RAM?

- A.) HP Openview
- B.) Console
- C.) Vterminal
- D.) TFTP server
- E.) NVRAM

Answer: B,D,E

69. Identify the true statements about the following access list:

Access-list 101 deny tcp 192.10.172.0 0.0.0.255 any eq 23

Access-list 101 permit ip any any

- A.) This access list prevents the host 192.10.172.0 from telneting
- B.) This access list prevents any telnet traffic from subnet 192.10.172.0/24
- C.) This access list filters some telnet access
- D.) This access list denies any telnet traffic to subnet 192.10.172.0/24
- E.) This access list is invalid
- F.) The netmask on the this access list is reversed

Answer: B

70. Given the IPX address 4a.0002.1111.a999, what is the network ID and what is the node ID?

- A.) net 4a host 0002.1111.a999
- B.) net a999 node 0002.1111
- C.) net 0002.1111.a999 node 4a
- D.) net 0002.1111 node a999

Answer: A

71. What command do you use to disable domain lookup?

- A.) no domain-lookup
- B.) domain no-lookup
- C.) lookup no-domain
- D.) no ip domain-lookup

Answer: D

72. Which of the following are valid Cisco encapsulation type names?

- A.) arpa = IPX Ethernet
- B.) novell-ether = IPX Ethernet_802.3
- C.) snap = IEEE 802.2 SNAP on Ethernet, FDDI, and Token Ring
- D.) novell-fddi = IPX Fddi_Raw
- E.) sap = IEEE 802.2 on Ethernet, FDDI, and Token Ring
- F.) hdlc = HDLC on serial interfaces

Answer: B,E,F

73. Which of the following is an invalid host address using a netmask of 255.255.255.192?

- A.) 10.1.1.1
- B.) 10.1.1.66
- C.) 10.1.1.130
- D.) 10.1.1.127

Answer: D

74. Which of the following will apply IPX sap access list 1010 for incoming traffic, assume you are at the interface configuration?

- A.) ipx input-sap-filter 1010 in
- B.) ipx input-sap-filter 1010
- C.) ipx access-group 1010 in
- D.) ipx access-list 1010 in

Answer: B

75. What command can you type to view the connections after telneting into multiple routers simultaneously?

- A.) sh users
- B.) sh ports
- C.) sh host
- D.) sh sessions

Answer: D

76. Which of the following is a valid extended IP access-list?

- A.) router(config)# access-list 101 permit tcp host 172.16.30.0 any eq 21 log
- B.) router# access-list 101 permit tcp host 172.16.30.0 any eq 21 log
- C.) router(config)# access-list 101 permit any any 172.16.30.0
- D.) router(config)# access-list 101 permit ip host 172.16.30.0 any eq 21 log

Answer: C???

77. What is the command to manually enter a static route?

- A.) IP route <default gateway> <subnet mask> network
- B.) IP route <destination network> <default gateway>
- C.) IP route < destination network> <subnet mask> <default gateway>
- D.) IP route <destination network> <subnet mask> <source network>

Answer: C

78. What key do you use to view the last command?

- A.) Ctrl+X
- B.) Ctrl+Z
- C.) Ctrl+E
- D.) Ctrl+P

Answer: D

79. What 2 commands verify end to end communications?

- A.) Trace
- B.) debug ip session
- C.) Ping
- D.) Route

Answer: A,C

80. Your Ethernet interface currently has the IP address of 1.1.1.1/24. You would like it to have a second IP address of 2.2.2.2/24. Which command will do that?

- A.) ip address 1.1.1.1 2.2.2.2 255.255.255.0
- B.) ip address 2.2.2.2 255.255.255.0 secondary
- C.) ip address 2.2.2.2 255.255.255.0
- D.) This cannot be done, you can only have 1 IP address per physical interface.
- E.) ip address 2.2.2.2 /24

Answer: B

81. Which command listed below sets the banner message when someone connects to the router?

- A.) message #
- B.) banner #
- C.) login banner #
- D.) description #
- E.) login description #
- F.) banner motd #

Answer: F

82. What should be the first command to create an access-list that prevents all users on subnetwork 10.10.128.0, using subnet mask 255.255.192.0, from being able to telnet anywhere?

- A.) access-list 101 deny tcp 10.10.128.0 0.0.63.255 any eq telnet
- B.) access-list 101 deny tcp 10.10.128.0 255.255.0.0 any eq telnet
- C.) access-list 101 deny tcp 10.10.128.0 255.255.192.0 any eq telnet
- D.) access-list 101 deny tcp 10.10.128.0 0.0.192.255 any eq telnet
- E.) access-list 101 deny tcp 10.10.128.0 0.0.128.255 any eq telnet
- F.) access-list 101 deny tcp 10.10.128.0 0.0.127.255 any eq telnet

Answer: A

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Router(config)#hostname ?

WORD This system's network name

83. The Cisco Discovery Protocol (CDP) periodically sends out a multicast packet (at layer 2). Which command will alter the default interval of 60 seconds?

- A.) cdp hold 111
- B.) cdp wait 111
- C.) cdp interval 111
- D.) cdp 111
- E.) cdp timer 111

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 8, page 290-295

Router(config)#cdp timer ?

<5-900> Rate at which CDP packets are sent (in sec)

84. Which command will start the process for a Cisco IOS file image upgrade?

- A.) download
- B.) copy tftp flash
- C.) copy flash tftp
- D.) download flash
- E.) network

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 8, page 273-276

The IOS is stored in flash. The command format is: copy [source]

[destination]

85. Which command allows a user to see previous commands?

- A.) show command
- B.) CTRL-P
- C.) show history
- D.) CTRL-U
- E.) Up Arrow
- F.) SHIFT-CTRL-6

The correct answer(s): B C E

Sybex CCNA Study Guide: Chapter 5, page 161

CTL+P and Up Arrow walk you step by step through previous commands.

Show History displays all the commands in the history buffer.

```
Router#show history
```

```
en
```

```
sh ru
```

```
conf t
```

```
show history
```

```
configure terminal
```

```
show version
```

```
show interface bri 0
```

```
show history
```

```
Router#
```

86. Which command will display the IPX routing table?

- A.) show routes
- B.) show routes ipx
- C.) show routes protocol=ipx
- D.) show ipx
- E.) show ipx route

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 9, page 341

```
Router#show ipx route
```

Codes: C - Connected primary network, c - Connected secondary network

S - Static, F - Floating static, L - Local (internal), W - IPXWAN

R - RIP, E - EIGRP, N - NLSP, X - External, A - Aggregate

1 Total IPX routes. Up to 1 parallel paths and 16 hops allowed.

C 1000 (NOVELL-ETHER), Et0

87. What is the correct command line syntax for configuring a port on a 7000 or 7500 series Cisco router with a VIP card?

- A.) port
- B.) port adapter/port
- C.) You can't put a VIP card in a 7000 or 7500 router.
- D.) slot/port-adapter/port
- E.) slot/port
- F.) slot

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 5, page 167

The VIP cards have a port adapter, so you must also specify them as well.

The syntax for a VIP card is: 'Interface Serial SLOT/PORT-ADAPTER/PORT', where:

Slot = The big linecard slot # in the 7500 chassis,

Port-Adapter = The PA mini-card slot # inside the larger linecard slot,

Port = The interface port # on the PA mini-card.

Imagine a larger slot (the linecard slot of the chassis) that in turn has two additional smaller slots for mini-cards (the VIP PA slots).

88. How do you view the routers current processor utilization?

- A.) show version
- B.) show processes cpu
- C.) show running-config
- D.) show startup-config
- E.) show cpu
- F.) show utilization

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 8, page 283

Router#sh processes cpu

CPU utilization for five seconds: 2%/2%; one minute: 1%; five minutes: 0%

89. Which command will enable debugging for IPX RIP updates?

- A.) debug ipx
- B.) debug ipx rip
- C.) debug ipx routing activity
- D.) debug rip
- E.) debug ipx packets

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 9, page 344

Router#debug ipx routing activity

IPX routing debugging is on

Router#

90. There is an emergency fall-back 'skeleton' IOS stored in read only memory on all Cisco routers. What command would make the router load the IOS from Read Only Memory?

- A.) reload rom
- B.) boot system rom
- C.) load ios bootflash
- D.) load ios rom
- E.) boot system skeleton

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 8, page 277

Router(config)#boot system ?

WORD TFTP filename or URL

flash Boot from flash memory

mop Boot from a Decnet MOP server

rcp Boot from a server via rcp

rom Boot from rom

tftp Boot from a tftp server

91. Which command would configure Interface E0 with an IP address of 12.23.4.5 using a Subnet mask of 255.255.255.0 ?

- A.) ip address 12.23.4.5 255.255.255.0
- B.) ip address 12.23.4.5 /24
- C.) ip address 12.23.4.5 mask 255.255.255.0
- D.) ip address 12.23.4.5 mask ff:ff:ff:0
- E.) that is an invalid mask for a class 'A' address

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 5, page 175

You can change the way the mask is displayed (bitcount, decimal, hex) but you must enter the subnet mask in dotted decimal.

Router(config-if)#ip address 12.23.4.5 ?

A.B.C.D IP subnet mask

92. Which commands will restart the router?

- A.) system exit
- B.) reload
- C.) shutdown system
- D.) down
- E.) restart
- F.) system restart

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 5, page 163

Router#?

Exec commands:

reload Halt and perform a cold restart

Note: No other command listed above is a valid Cisco command.

93. How do you set the encapsulation type to PPP for an interface?

A.) enable ppp

B.) ppp ietf

C.) encapsulation ppp

D.) ppp cisco

E.) ppp enable

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 11, page 410

Router(config-if)#encapsulation ?

ppp = Point-to-Point protocol

94. Which Standard IP Access list commands will deny only the source address 1.1.1.1?

A.) access-list 9 permit any

B.) access-list 9 permit 1.1.1.1 255.255.255.0

C.) access-list 9 deny 1.1.1.1 0.0.0.0

D.) access-list 9 permit 1.1.1.1 0.255.255.255

E.) access-list 9 deny 1.1.1.1 255.255.255.255

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 10, page 355-360

A 0.0.0.0 wildcard mask means check every bit and make sure that it matches. For our example, the IP host address 1.1.1.1 is a specific address to check on the network. An alternative would be to use the IP network address and a special access-list wildcard mask to check an entire subnetwork.

95. Assume that you are editing a line of text on a Cisco router. What key-stroke combination would take you to the beginning of the line?

A.) CTRL-B

B.) CTRL-Z

C.) CTRL-<space>

D.) CTRL-A

E.) CTRL-<up arrow>

F.) CTRL-<right arrow>

The correct answer(s): D

CTRL-A = Takes you to the st(A)rt of the current line.
CTRL-P = Takes you to the (P)revious command.
CTRL-N = Takes you to the (N)ext command.

96. Which global configuration command will tell the router to load the IOS file 'IOS_filename' from FLASH memory at the next boot?

- A.) boot system rom
- B.) boot system flash IOS_filename
- C.) This can not be done, only the first file in flash can be used.
- D.) boot system tftp IOS_filename tftp_address
- E.) config-register 0x0

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 8, page 277

Router(config)#boot system ?

WORD TFTP filename or URL

flash Boot from flash memory

mop Boot from a Decnet MOP server

rcp Boot from a server via rcp

rom Boot from rom

tftp Boot from a tftp server

97. Which command will display adjacent routers found by the Cisco Discovery Protocol?

- A.) show all
- B.) show OSPF adjacency
- C.) show ip route
- D.) show routers
- E.) show cdp neighbors
- F.) show ip routers

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 8, page 294

Adjacent (physically next to) means the directly connected Neighbor as far as the command-line interface is concerned.

98. Which command line option will determine what traffic is interesting enough to establish a dialup connection?

- A.) dial-tone
- B.) dial-access
- C.) packet control protocol
- D.) dialer-list
- E.) ppp negotiation

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 11, page 392-393

The interface command 'dialer-group 1' references the dialer list number.

In turn, the dialer-list can reference (optionally) an access-list.

Example: dialer-list 1 protocol ip permit

99. Which command switches from User mode to Privileged mode?

A.) login

B.) privilege

C.) admin

D.) enable

E.) su

F.) root

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 5, page 157

Router>?

Exec commands:

enable Turn on privileged commands

disable Turn off privileged commands

100. Extended IP access-lists (100-199) can be used to control traffic. Which command listed below will permit smtp mail to only host 3.4.5.6 ?

A.) It is not possible for SMTP traffic

B.) access-list 102 permit tcp any host 3.4.5.6 eq smtp

C.) access-list 101 deny ip any any lt 89

D.) access-list 102 permit tcp any any eq smtp

E.) This would require an IPX access list?

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 10, page 360-365

Extended IP access lists can base decision criteria on certain protocols and ports.

access-list 102 permit tcp [SOURCE] [DESTINATION] eq smtp

101. Which command-line keywords are valid for choosing Frame-Relay LMI types?

A.) itu-t

B.) dlci

C.) ansi

D.) rfc 1544

E.) cisco

F.) q933a

The correct answer(s): C E F

Sybex CCNA Study Guide: Chapter 11, page 404

There are 3 supported FR LMI types: q933a, ansi, cisco

There are 2 supported FR Encapsulation types: cisco, ietf

In both cases, the pre-standard 'cisco' is the default.

Router(config-if)#frame-relay lmi-type ?

cisco

ansi

q933a

102. Which command will copy the routers configuration from NVRAM to a Network file server?

A.) write startup-config running-config

B.) tftp-copy enable

C.) copy tftp running-config

D.) copy running-config tftp

E.) copy startup-config tftp

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 8, page 279

The startup-config script is stored in NVRAM, and copied to RAM during boot.

The router can load or save its configuration script (either the currently 'running' script from RAM or the saved 'startup' script from NVRAM) to or from a TFTP server.

103. Which command would assign and enable IPX on an interface ?

A.) enable netware

B.) enable novell-ether

C.) enable novell

D.) You must first enable IPX for that individual interface, and then assign the network number.

E.) enable ipx

F.) ipx network 4a

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 9, page 333-335

Router(config-if)#ipx network ?

<1-FFFFFFFFD> IPX network number (default route enabled)

As soon as you press <ENTER>, two things have happened.

1.) You just enabled IPX processing for that interface, and

2.) You just assigned an IPX external network number for the default frame type.

104. I want to configure a serial interface on a 7500 with a VIP card. What global config command would give me access to a serial interface on a 7500?

- A.) int 1/0/0
- B.) int s 1/0/0
- C.) int s 1/1
- D.) int s0.1
- E.) int s1

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 5, page 167

The syntax for a VIP card is: 'Interface Serial SLOT/PORT-ADAPTER/PORT', where:

Slot = The big linecard slot # in the 7500 chassis,

Port-Adapter = The PA mini-card slot # inside the larger linecard slot,

Port = The interface port # on the PA mini-card.

Imagine a larger slot (the linecard slot of the chassis) that in turn has two additional smaller slots for mini-cards (the VIP PA slots).

105. Which command will display Ethernet 0's IP address?

- A.) display ip address e0
- B.) show ip interface e0
- C.) show address e0
- D.) sh ip address e0
- E.) show all

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 5, page 163

Router#show ip interface e0

Ethernet0 is up, line protocol is up

Internet address is 10.10.10.1/8

106. After the command -- router igrp 200 -- what command would enable IGRP on the router for interface E0, with an address of 157.89.4.4 and a mask of 255.255.255.0 ?

- A.) network 157.89.4.0 255.255.255.1
- B.) network 157.89.0.0
- C.) router igrp *
- D.) router igrp 157.89.0.1
- E.) router igrp int e1
- F.) router igrp 157.89.4.1

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 7, page 254

IGRP can only use the classful portion, which in this case is a class B,

so we only enumerate the '157.89' part. All interfaces in that network will be processed. Example:

```
Router(config)#router igrp 200
Router(config-router)#network ?
A.B.C.D Network number
```

107. Which command do you use to set the Privileged mode password to 'clearwater'?

- A.) set password=clearwater
- B.) privilege password clearwater
- C.) enable password clearwater
- D.) login enable clearwater
- E.) password clearwater
- F.) login clearwater

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 5, page 164-165

If there was a secret encrypted password, it would over-ride the normal privileged password. Example:

```
Router(config)#enable ?
password Assign the privileged level password
secret Assign the privileged level secret
```

108. How would you set the clock rate to 64K, on interface serial 0, from the interface configuration mode?

- A.) clock rate 64000
- B.) bandwidth 64
- C.) clock 64
- D.) rate 64
- E.) clock rate 64k
- F.) clock rate 64

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 5, page 177-179

Bandwidth is in Bits (64 = 64k)

Clock Rate is in Kbits (64000 = 64k)

109. Given the following static route command, 'ip route 3.3.3.0 255.255.255.0 4.4.4.4 125', which portion represents the administrative distance?

- A.) 3.3.3.0
- B.) 255.255.255.0
- C.) 4.4.4.4
- D.) route

E.) 125

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 6, page 193

```
Router(config)#ip route 3.3.3.0 255.255.255.0 4.4.4.4 ?  
<1-255> Distance metric for this route
```

110. What does the following line for an access list do? 'access-list 101 deny tcp 3.4.5.0 0.0.0.255 any eq 23'

- A.) deny all ftp traffic
- B.) deny all ftp traffic from subnet 3.4.5.0
- C.) deny all telnet traffic from subnet 3.4.5.0
- D.) deny all ftp traffic to subnet 3.4.5.0
- E.) deny all telnet traffic

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 10, page 360-365

A wild card mask of 0.0.0.255 means that any host on subnet 3.4.5.0 matches.

The extended access list is [Source] [Destination]

So the source is [3.4.5.0 0.0.0.5] the destination is [any]

Port 23 is telnet

111. Although Cisco IOS 11.3 and later can autodetect the LMI type in Frame Relay, which command will force the LMI type to q933a?

- A.) frame-relay lmi-type q933a
- B.) encapsulation frame-relay q933a
- C.) don't need to, it is the default
- D.) encapsulation q933a
- E.) encapsulation frame-relay type=q933a

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 11, page 404

Warning: The Cisco ICRC 11.3 book incorrectly states that a valid LMI-type is q933i.

```
Router(config-if)#frame-relay lmi-type ?
```

cisco

ansi

q933a

112. Which command can verify Application Layer connectivity between 2 hosts?

- A.) plp
- B.) arp

- C.) telnet
- D.) ping
- E.) traceroute

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 1, page 16

Telnet tests the Application layer, ping tests the Network layer.

113. Scenario: You created 2 access-lists for controlling telnet about a year ago, and bound one of them to Serial 0. You can't remember which access-list you used. Which command lets you see all access-lists on Serial 0 for telnet?

- A.) show access-list
- B.) show ip int s0
- C.) show access-list telnet
- D.) show telnet access-list
- E.) show access-list s0
- F.) show int s0

The correct answer(s): B

To see which access-lists are bound to an interface, you must specify the protocol.

Since these were for controlling telnet, and telnet uses IP, the correct answer can only be 'show ip int s0'

show ip int s0

show ipx int s0

show appletalk int s0

114. Cisco routers can secure the enable password with a one-way hash algorithm. What command would encrypt the enable password with the strong encryption method?

- A.) enable encrypt john
- B.) password john
- C.) enable secret john
- D.) enable password john
- E.) secret john
- F.) enable password 5 john

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 5

On current Cisco routers, there are two 'enable' password methods. One is to use the old 'enable' password method, which is very easy to crack. The newer 'Secret' method uses Message Digest 5 (MD5) encryption, and is very

difficult to crack. If both 'Enable' and 'Secret' passwords exist, the 'Secret' will always be used and the 'Enable' will be ignored.

115. Which command will display the encapsulation type on interface serial 0?

- A.) show interface s0
- B.) show all
- C.) show int s0 encap
- D.) show encap s0
- E.) show encap

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 11, page 411

```
Router#show int s0
```

```
SERIAL0 is up, line protocol is up
```

```
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,  
reliability 255/255, txload 1/255, rxload 1/255
```

```
Encapsulation PPP, loopback not set
```

116. What command do you enter at the keyboard to begin a User mode session?

- A.) Type 'CTRL-U'
- B.) Type 'login'
- C.) Just press <ENTER>.
- D.) Type 'enable'
- E.) Press 'Shift + Ctrl + 6' at the same time.

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 5

From the console port you just have to press the <ENTER> key to enter User mode.

Once you are in User mode, you can enter the Enable mode by typing 'enable' Pressing 'Shift + Ctrl + 6' at the same time, and then 'X', is the Cisco break key sequence.

117. You want to set the console password to Boston. What would be the first command you need to execute from global configuration mode?

- A.) line console 0
- B.) enable password boston
- C.) login password boston
- D.) set password=boston
- E.) password boston
- F.) login boston

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 5, page164-165

You must first go to the Console, then use the command 'password boston'
Router(config)#line console 0
Router(config-line)#password boston
Router(config-line)#

118. Which command displays the IPX SAP (Service Advertisement Protocol) table?

- A.) show ipx sap
- B.) show sap
- C.) show all
- D.) show ipx servers
- E.) show ipx

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 9, page 340

Router#show ipx servers

Codes: S - Static, P - Periodic, E - EIGRP, N - NLSP, H - Holddown, + =
detail U - Per-user static

Type Name Net Address Port Route Hops Itf

S 4 FileServ 1000.0000.0c12.3456:0451 conn 3 Et0

Router#

119. Which command will display the current time on a Cisco router?

- A.) date
- B.) show clock
- C.) time
- D.) show time
- E.) show date

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 5, page 159

Router#show clock

10:23:08.062 UTC Sat Mar 13 1993

Router#

120. The default routing protocol for IPX is IPX RIP. How do you view the routing updates sent and received by the router?

- A.) show ipx routing default
- B.) debug ipx routing activity
- C.) debug rip
- D.) show ipx routing
- E.) sh ipx
- F.) debug ipx rip

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 9, page 344

For IPX : debug ipx routing activity

For IP: debug ip rip

Router#debug ipx routing activity

IPX routing debugging is on

121. Using the access-list command, 'access-list 1 deny 2.2.2.2', what else must be done to stop host 2.2.2.2 from sending any traffic out of physical interface E0, while still allowing other traffic?

- A.) In global mode, Add a line - 'access-list 1 permit 0.0.0.0 255.255.255.255'
- B.) On interface E0, Add a line - 'access-group 1 in'
- C.) In global mode, Add a line - 'access-list 1 permit all'
- D.) On interface E0, Add a line - 'access-list 1 in'
- E.) On interface E0, Add a line - 'access-list 1 out'
- F.) On interface E0, Add a line - 'ip access-group 1'

The correct answer(s): A F

There is an implicit deny all at the end of every access list.

You need to add a line to permit other traffic, which can be done one of two ways:

'access-list 1 permit any'

or,

'access-list 1 perm 0.0.0.0 255.255.255.255'

You must bind the access list to the interface with the access-group command. Note that the default access-list direction is outbound.

122. Which command do you use to set the Secret password to 'clearwater'?

- A.) login enable clearwater
- B.) password clearwater
- C.) privilege password clearwater
- D.) set secret=clearwater
- E.) secret login clearwater
- F.) enable secret clearwater

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 5, page 164-165

The highly encrypted Secret password will over-ride the normal privileged password.

Router(config)#enable ?

password Assign the privileged level password

secret Assign the privileged level secret

123. How do you find the parameters that you can use with the SHOW command?

- A.) ? SHOW
- B.) SHOW ?
- C.) DEBUG SHOW
- D.) HELP
- E.) SH?

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 5, page 158-159

Router>show ?

clock Display the system clock

dial-peer Dial Plan Mapping Table for POTS Peers

dialer Dialer parameters and statistics

flash: display information about flash: file system

history Display the session command history

... etc ...

124. Which command would show all Ethernet interfaces with IPX configured on them?

- A.) show interface ipx ethernet
- B.) show ipx interface
- C.) show ipx interface ethernet
- D.) show ipx
- E.) show version
- F.) show interface ethernet ipx

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 9, page 343

Use 'show ipx interface' to show all interfaces configured for IPX.

The command 'show ipx interface ethernet' is lacking the specific interface number, and if it were present, would only show IPX information for that one interface.

Router#show ipx interface ethernet ?

<0-1> Ethernet interface number

125. If you have configured IPX on a Serial interface, which command would display the IPX network and node address on the Serial 1 interface?

- A.) show interface
- B.) show ipx s1
- C.) show interface s1
- D.) show ipx int serial 1
- E.) show ipx int brief

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 9, page 340-345

'show ipx int serial 1' is the only one command that displays both the IPX NETWORK and NODE address.

126. Which command line statement determines the number of seconds a dialup connection can wait without any traffic before the router hangs up?

- A.) time null
- B.) hang-up time
- C.) dialer idle-timeout
- D.) dialer hang-up
- E.) deadtime

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 11, page 392-393

Router(config-if)#dialer idle-timeout ?

<1-2147483> Idle timeout before disconnecting a call (in seconds)

127. The Cisco Catalyst 5000 switch supports full duplex. How would you enable it on the second port of the card in slot 1?

- A.) set port duplex 1/2 full
- B.) set port full duplex 0/2
- C.) set port duplex
- D.) port duplex = full
- E.) set port 1/2 full

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 5, page 167

Catalyst port-specific commands are issued in the SLOT/PORT format.

128. Which command will enable CHAP authentication on a serial interface that is using PPP?

- A.) encapsulation chap
- B.) ppp chap
- C.) ppp enable chap
- D.) ppp encapsulation chap
- E.) ppp authentication chap
- F.) ppp chap enable

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 11, page 410

Router(config-if)#ppp authentication ?

chap Challenge Handshake Authentication Protocol (CHAP)
pap Password Authentication Protocol (PAP)

129. From Enable mode, a user types the letter 'C' and presses enter. There is more than 1 command that starts with 'C'. What message would the router return?

- A.) Nothing would be returned, the command is simply ignored.
- B.) A list of all commands that start with 'C'.
- C.) Ambiguous Command.
- D.) Copy to?
- E.) Configured console from console.

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 5, page 159

```
Router#c
```

```
% Ambiguous command: 'c'
```

```
Router#
```

When more than a single command have beginning letters in common, you must type enough to be unique. The exception is for 'aliases'.

130. You want a message to be displayed every time someone tries to log on to the router. Which command is required to accomplish this task?

- A.) show
- B.) message
- C.) banner motd
- D.) display
- E.) send

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 5, page 165-166

```
Router(config)#banner ?
```

```
motd Set Message of the Day banner
```

131. You create the following standard access-list (please scroll down):

```
-----  
access-list 1 deny 1.1.1.1  
access-list 1 deny 2.2.2.2  
int e0  
ip access-group 1 in  
-----
```

Which of the following statements are true, with regard to traffic flowing into E0?

- A.) This will stop IP packets with a source address of 1.1.1.1 only.
- B.) This will stop all IP packets.
- C.) This is an invalid configuration.
- D.) This will stop no IP packets.
- E.) This will stop IP packets with a source address of 2.2.2.2 only.
- F.) This will stop IP packets with a source address of 1.1.1.1 and 2.2.2.2.

The correct answer(s): B

This is a trick question.

IMPLICIT DENY ALL is at the end of every access-list.

It never makes sense to have an access-list with only DENIES in it!

132. The command 'Debug IP Rip' will do which of the following?

- A.) Show Neighbor Info.
- B.) Display RIP routing updates.
- C.) Show routing table changes.
- D.) Show all IP traffic.
- E.) This is not a valid router command.
- F.) Cause the router to respond with 'Ambiguous command'

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 7, page 251-252

```
Router#debug ip rip
```

```
RIP protocol debugging is on
```

```
Router#
```

133. You would like to have a notation that when a user issues the command 'show interface serial 0', a line is displayed indicating that, 'This is the connection to Corporate.' What interface command would accomplish this?

- A.) You must use the motd command.
- B.) interface This is the connection to Corporate.
- C.) This cannot be done for an individual interface.
- D.) description This is the connection to Corporate.
- E.) banner This is the connection to Corporate.
- F.) display This is the connection to Corporate.

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 5, page 167

```
Router(config-if)#description ?
```

```
LINE Up to 80 characters describing this interface
```

134. What command would show the version of the IOS that you are running?

- A.) show nvram

- B.) show version
- C.) show startup-config
- D.) show ios
- E.) ver -a
- F.) show ram

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 8, page 281-282

Router#show version

Cisco Internetwork Operating System Software

IOS (tm) C800 Software (C800-G3N-MW), Version 12.0(1)XB1

135. When editing a line in the CLI mode, what does 'CTRL-A' do?

- A.) Moves you to the previous command.
- B.) Moves you to the next word.
- C.) Moves you to the end of the line.
- D.) Moves you to the next command.
- E.) Moves you to the beginning of the line.

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 5, page 161

There are many Command Line Interface shortcuts.

CTL-A jumps to the beginning of the line.

CTL-E jumps to the end of the line.

136. When a router knows the IP address, but does not know the MAC address of the device it wishes to contact, it uses the ARP (Address resolution protocol) to determine the MAC address. After it learns the MAC address, it stores this information in the ARP cache. What is the command to view the ARP cache?

- A.) sh mac
- B.) show cache
- C.) show arp
- D.) sh arp interfaces
- E.) show ip cache

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 3, page 100-107

Home#sh arp

Protocol Address Age (min) Hardware Addr Type Interface

Internet 10.0.0.3 3 0040.0526.d7ee ARPA Ethernet0

Internet 10.0.0.1 0 0000.861d.d47e ARPA Ethernet0

Internet 10.10.10.1 - 0050.7307.c70b ARPA Ethernet0

137. Which command can verify only Network layer connectivity between 2 hosts?

- A.) ping
- B.) e-mail
- C.) plp
- D.) arp
- E.) telnet

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 1, page 25-29

Telnet tests the Application layer, ping tests the Network layer.

138. What would be the first command from global configuration mode to enable RIP on your router for interface E0, with an address of 157.89.4.4 and mask of 255.255.255.0 ?

- A.) router rip
- B.) network 157.89.4.0 255.255.255.0
- C.) router rip int e0
- D.) router rip 157.89.0.0
- E.) router rip 157.89.4.0
- F.) network 157.89.0.0

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 7, page 237

You must specify the routing protocol and/or AS# BEFORE any network statement.

Router(config)#router rip

Router(config-router)#network ?

A.B.C.D Network number

139. Which command would you type to show SAP and RIP updates you are receiving on an interface?

- A.) sh ipx servers
- B.) sh ipx traffic
- C.) sh ipx interface
- D.) sh ipx route

The correct answer(s): C

THEORY

What is the default IPX Ethernet encapsulation?

- A.) SNAP
- B.) Arpa

- C.) 802.2
- D.) Novell-Ether
- E.) SAP

The correct answer(s): D

Novell-ether is the default LAN encapsulation. Novell-ether is 802.3.

140. What must be true for two Routers running IGRP to communicate their routes?

- A.) Same autonomous system number
- B.) Connected using Ethernet only
- C.) Use composite metric
- D.) Configured for PPP

The correct answer(s): A

For two routers to exchange IGRP routes they must be configured with the same autonomous system number.

141. The following is partial output from a routing table, identify the 2 numbers in the square brackets; '192.168.10.0 [100/1300] via 10.1.0.1, 00:00:23, Ethernet1'

- A.) 100 = metric, 1300 = administrative distance
- B.) 100 = administrative distance, 1300 = hop count
- C.) 100 = administrative distance, 1300 = metric
- D.) 100 = hop count, 1300 = metric

The correct answer(s): C

The first number is the Administrative distance and the second number is the metric. In this case it is an IGRP metric.

142. Identify 3 methods used to prevent routing loops?

- A.) Split horizon
- B.) Holddown timers
- C.) Poison reverse
- D.) SPF algorithm
- E.) LSP's

The correct answer(s): A B C

Routing loops can be prevented by split horizon, poison reverse and holddown times. The other two choices relate to Link State.

143. Which statement is true regarding full duplex?

- A.) Allows for transmission and receiving of data simultaneously
- B.) Only works in a multipoint configuration

- C.) Does not affect the bandwidth
- D.) Allows for transmission and receiving of data but not at the same time

The correct answer(s): A

Full duplex is just the opposite of half duplex. It handles traffic in both directions simultaneously.

144. Identify the switching method that receives the entire frame then dispatches it?

- A.) Cut-through
- B.) Receive and forward
- C.) Store and forward
- D.) Fast forward

The correct answer(s): C

Store and forward switching receives the entire frame before dispatching it.

145. Identify the purpose of ICMP?

- A.) Avoiding routing loops
- B.) Send error and control messages
- C.) Transporting routing updates
- D.) Collision detection

The correct answer(s): B

ICMP is used to send error and control messages. Ping uses ICMP to carry the echo-request and echo-reply.

146. Which statement is true regarding the user exec and privileged exec mode?

- A.) The '?' only works in Privileged exec
- B.) They are identical
- C.) They both require the enable password
- D.) User exec is a subset of the privileged exec

The correct answer(s): D

The user exec mode is a subset of the privileged exec mode. Only a certain number of commands are available at the user exec mode.

147. Which OSI layer defines end to end communication, segmentation and re-assembly?

- A.) Network
- B.) Transport
- C.) Physical
- D.) Application

- E.) Data-Link
- F.) Presentation

The correct answer(s): B
Layer 4 the Transport layer performs this function.

148. What IP command would you use to test the entire IP stack?

- A.) Stack-test
- B.) Arp
- C.) Telnet
- D.) Ping
- E.) Trace

The correct answer(s): C
Because Telnet is an application and it resides at the top of the stack it traverses down the stack and up the stack at the receiving end.

149. Identify the 2 hardware components used to manage and/or configure a router?

- A.) Auxiliary port
- B.) ROM port
- C.) Management port
- D.) Console port

The correct answer(s): A D
The 2 hardware ports used to configure the router are the console and auxiliary ports.

150. What is the default bandwidth of a serial connection?

- A.) 1200 baud
- B.) 1.544 Mbps (T1)
- C.) 10 Mbps
- D.) 96Kpbs

The correct answer(s): B
The default bandwidth is T1.

151. Identify 2 functions of IPX access-lists?

- A.) Control SAP traffic
- B.) Limit number of Novell servers on a network
- C.) Limit number of workstations on a network
- D.) Block IPX traffic

The correct answer(s): A D

IPX access lists are used to restrict IPX traffic and SAP broadcasts.

152. Identify 2 HDLC characteristics?

- A.) Default serial encapsulation
- B.) Open standard
- C.) Supports Stacker compression
- D.) Supports point-to-point and multipoint

The correct answer(s): A D

HDLC is the default serial encapsulation and supports point-to-point and multipoint. It is not an open standard and does not support compression.

153. Identify 3 IP applications?

- A.) AURP
- B.) ARP
- C.) Telnet
- D.) SMTP
- E.) DNS
- F.) RARP

The correct answer(s): C D E

ARP and AURP are not part the application layer of the TCP/IP stack. SMTP - Simple Mail Transfer Protocol, Telnet, DNS - Domain Name Services (name to IP resolution).

154. Identify 3 LAN technologies?

- A.) FDDI
- B.) HDLC
- C.) HSSI
- D.) X.25
- E.) 802.3
- F.) 802.5

The correct answer(s): A E F

The question is asking for 3 LAN technologies, HDLC, HSSI and X.25 are all WAN technologies.

155. Identify the 4 that are not LAN technologies?

- A.) HDLC
- B.) FDDI

- C.) 802.5
- D.) HSSI
- E.) SDLC
- F.) Frame Relay

The correct answer(s): A D E F
802.5 and FDDI are LAN technologies

156. Which OSI layer supports the communication component of an application?
- A.) Data-Link
 - B.) Physical
 - C.) Session
 - D.) Presentation
 - E.) Application
 - F.) Transport

The correct answer(s): E
Layer 7 the Application layer performs this function.

157. Identify the length of an IPX address and it's components?
- A.) 80 bits, 48 bits network and 32 bits node
 - B.) 32 bits, 16 bits network and 16 bits node
 - C.) None of the above
 - D.) 80 bits, 32 bits network and 48 bits node

The correct answer(s): D
IPX address has 2 components; network and node. The network address is 32 bits and the node is 48 bits, total of 80 bits.

158. Identify the administrative distance and appropriate routing protocol?
- A.) RIP = 255, IGRP = 100
 - B.) RIP = 100, IGRP = 120
 - C.) RIP = 1, IGRP = 0
 - D.) RIP = 120, IGRP = 100

The correct answer(s): D
The administrative distance for RIP is 120 and IGRP is 100. The lower the AD the better the routing information.

159. Which OSI layer incorporates the MAC address and the LLC?
- A.) Data link
 - B.) Network

- C.) Physical
- D.) Transport

The correct answer(s): A

Layer 2 the Data-Link layer incorporates the MAC and LLC sublayers

160. If configuring a Cisco router to connect to a non-Cisco router across a Frame Relay network, which encapsulation type would you select?

- A.) Q933a
- B.) ISDN
- C.) IETF
- D.) CISCO
- E.) ANSI

The correct answer(s): C

There are two types of Frame Relay encapsulations; Cisco and IETF. IETF is required when connecting a Cisco to a non-Cisco router.

161. Identify the 2 items that TCP and UDP share in common?

- A.) Both use port numbers to identify upper level applications
- B.) Operate at the Network layer
- C.) Both are Transport protocols
- D.) Both are reliable communications

The correct answer(s): A C

TCP and UDP are both layer 4 Transport protocols and both use port number to identify upper level applications.

162. Identify 3 characteristics of IP RIP?

- A.) Distance vector
- B.) Administrative distance is 120
- C.) Periodic updates every 60 seconds
- D.) Uses a composite metric
- E.) Can load balance

The correct answer(s): A B E

IP RIP is a distance vector protocol, it can load balance up to 4 equal cost paths and its rating of trustworthiness is 120.

163. Which of the following is a layer 2 device?

- A.) Switch
- B.) Router

- C.) Repeater
- D.) Hub

The correct answer(s): A

A Hub and Repeater are layer 1 devices. A Router is a layer 3 device.

164. Identify the definition of demarcation?

- A.) Date in which the WAN service contract expires
- B.) Cabling which extends from the WAN service provider to the customer
- C.) Division of responsibility, where the CPE ends and the local loop begins
- D.) Equipment which is located at the customer premises

The correct answer(s): C

Demarcation is the point in which responsibility changes hands.

165. Identify the 3 key features of the Cisco Discovery Protocol?

- A.) Off by default
- B.) Will allow for the discovery of layer 3 addresses on neighbor routers
- C.) Verify connectivity
- D.) Open standard
- E.) Does not require any layer 3 protocols to be configured

The correct answer(s): B C E

CDP is used for 2 basic reasons; neighbor connectivity and layer 3 discovery if configured. It is proprietary and is on by default.

166. Identify the 3 characteristics of IPX RIP?

- A.) Distance vector
- B.) Does not support multiple paths
- C.) 60 second updates
- D.) Default encapsulation is SAP
- E.) Uses ticks and hop count as a metric

The correct answer(s): A C E

IPX RIP is a distance vector routing protocol, it does support multiple paths, the default encapsulation is 'novell-ether', it uses tick count as a primary metric and hop count as a tie breaker and it sends its updates every 60 seconds.

167. Identify the access-list range for an extended IP access-list?

- A.) 800 - 899
- B.) 1 - 99

- C.) 1000 - 1099
- D.) 100 - 199

The correct answer(s): D
IP extended access-lists use the number range of 100-199.

168. Identify the X.25 addressing standard?

- A.) X.121
- B.) X.25a
- C.) ITU-1
- D.) Q933a

The correct answer(s): A
The X.25 layer 3 addressing standard is X.121.

169. Identify 3 features of IGRP?

- A.) Composite metric
- B.) New horizon
- C.) Flash (triggered) updates
- D.) 60-second periodic updates
- E.) Poison reverse

The correct answer(s): A C E
IGRP uses a composite metric made up of bandwidth and delay by default, it updates every 60 seconds and will trigger an update if the topology changes.

170. Where is the backup configuration file stored?

- A.) RAM
- B.) ROM
- C.) Console
- D.) NVRAM

The correct answer(s): D
One location to store the backup configuration is NVRAM.

171. Identify the correct pair of Novell Ethernet encapsulation and Cisco terminology?

- A.) Ethernet II, Snap
- B.) Ethernet 802.3, Novell-Ether
- C.) Ethernet SNAP, Arpa
- D.) Ethernet 802.2, Snap

The correct answer(s): B

The default IPX LAN encapsulation is Novell-Ether which is 802.3

172. Identify 3 characteristics regarding IP access-lists?

- A.) Can be configured as a standard access-list
- B.) Can be run from another router running IP
- C.) Can be configured as a named access-list
- D.) Are the same as IPX access-lists
- E.) Can be configured as an extended access-list

The correct answer(s): A C E

There are 3 types of IP access-lists; standard, extended and named. Named access-lists can be either standard or extended depending on how they are configured.

173. Identify 3 ways in which a router can be configured?

- A.) TFTP
- B.) Nvram
- C.) Ping
- D.) Console
- E.) Trace

The correct answer(s): A B D

Changes to the configuration can be entered via the console, a config stored in NVRAM or on a TFTP server. Trace and ping are tools to verify connectivity.

174. A traffic light is an example of what type of mechanism?

- A.) Collision detection
- B.) Flow control
- C.) Sequence numbering
- D.) Network management

The correct answer(s): B

A Traffic light is an example of flow control.

175. Windowing is a type of?

- A.) Negative acknowledgement
- B.) Address resolution
- C.) Layer transition mechanism
- D.) Flow control

The correct answer(s): D

Windowing allow the sender and receiver to dictate how much information that can be received prior to an acknowledgement. It is a form of flow control.

176. Identify the 2 types of access-list filters that control SAP traffic?

- A.) Novell-ether
- B.) Arpa
- C.) Input-sap-filter
- D.) Round-robin
- E.) Output-sap-filter

The correct answer(s): C E

SAP's can be blocked by 2 methods; inbound and outbound.

177. Identify the 3 guidelines for routers in the same autonomous system?

- A.) Must be configured for IGRP or RIP
- B.) Interconnected
- C.) Assigned the same autonomous system number
- D.) Configured for the same routing protocol
- E.) Must be same model of router

The correct answer(s): B C D

Autonomous system must be interconnected, assigned the same AS # and configured with the same routing protocol.

178. Identify the hardware component used to store buffers, tables, running-configuration etc?

- A.) NVRAM
- B.) ROM
- C.) RAM
- D.) Flash

The correct answer(s): C

RAM is the dynamic memory area. ROM contains the boot strap code, NVRAM contains the startup-config and Flash contains the IOS.

179. Identify 3 UDP characteristics?

- A.) Reliable communication protocol
- B.) Applications that use UDP must incorporate reliability
- C.) Connection-less oriented

D.) Incorporates no handshaking

The correct answer(s): B C D

UDP is a layer 4 Transport protocol. It is connection-less because it does not establish a connection therefore the 3 step handshake is not needed, it does NOT implement any flow control or acknowledgments. Any application that uses UDP must incorporate any needed reliability.

180. Identify the IPX standard access-list number range?

- A.) 600 - 699
- B.) 1000 - 1099
- C.) 1 - 99
- D.) 100 - 199
- E.) 800 - 899

The correct answer(s): E

IPX standard access-list range is 800-899.

181. Which OSI layer provides best effort end to end packet delivery?

- A.) Data-Link
- B.) Presentation
- C.) Network
- D.) Transport
- E.) Physical
- F.) Application

The correct answer(s): C

Layer 3 the Network layer performs this function.

182. Identify the 2 methods to modify the routers boot sequence?

- A.) Setup program
- B.) Boot system commands
- C.) RXBoot
- D.) Config-register

The correct answer(s): B D

'Boot system' command and the 'config-register' are used to manipulate the boot sequence.

183. Identify the 3 pieces of hardware you would not install to prevent broadcasts?

- A.) Switch

- B.) Repeater
- C.) Bridge
- D.) Router

The correct answer(s): A B C

Router are implemented not only to break up networks into smaller segments but they are used to block broadcasts.

184. Identify 2 features of PPP PAP authentication?

- A.) Username and password is sent in clear text
- B.) Authentication messages are sent periodically during the connection
- C.) More secure than CHAP
- D.) Remote node is control of authentication process

The correct answer(s): A D

PPP PAP authentication sends the username and passwords in clear text and the remote node initiates the authentication process.

185. Identify the switching method that examines the destination MAC address as the frame is being received then begins forwarding the frame prior to receiving the entire frame?

- A.) Fragment-free
- B.) Store and Forward
- C.) Cut-through
- D.) Fast forward

The correct answer(s): C

Cut through examines the destination MAC address and begins forwarding the frame prior to receiving the entire frame.

186. Identify 1 characteristic of RARP?

- A.) IP to MAC address translation
- B.) Connectionless delivery of packets
- C.) Can be used to initiate remote O/S load sequence
- D.) Generates error and control messages

The correct answer(s): C

Reverse Address Resolution Protocol is used to obtain a layer 3 address if the MAC address is known which then facilitates the loading of the O/S.

187. Identify the protocol to test connectivity without configuring any layer 3 protocols?

- A.) TCP
- B.) Ping
- C.) IP
- D.) CDP
- E.) Telnet

The correct answer(s): D

CDP can be used to verify connectivity prior to any layer 3 protocols being configured.

188. LMI operates between the Frame Switch and what other device?

- A.) CPE device
- B.) Another Frame Switch
- C.) X.25 switch
- D.) Novell File Server

The correct answer(s): A

LMI stands for local management interface. It operates between the Frame Relay switch and the customer equipment.

189. Identify IPX SAP and it's purpose?

- A.) Sonet Access Pipe - interface to Sonet ring
- B.) Service Advertising Protocol - advertise services
- C.) Server Appletalk Protocol - appletalk directory services
- D.) Service Access Point - identify upper layer protocols

The correct answer(s): B

SAP is an Novell protocol to advertise services.

190. Identify the default values that make up IGRP's composite metric?

- A.) Bandwidth
- B.) Load
- C.) Reliability
- D.) MTU
- E.) Delay

The correct answer(s): A E

IGRP can be configured to use all 5 within it's metric. By default it uses bandwidth and delay.

191. Identify the default serial encapsulation?

- A.) ISDN

- B.) HDLC
- C.) SDLC
- D.) Frame Relay
- E.) PPP

The correct answer(s): B
The default serial encapsulation is HDLC.

192. Identify the purpose of ARP?
- A.) Avoiding routing loops
 - B.) Determining a workstation's IP address
 - C.) Sending a directed broadcast
 - D.) Determining a workstation's MAC address

The correct answer(s): D
ARP is used to find a devices MAC address given an IP address.

193. What is the purpose of the DLCI?
- A.) Identifies the remote routers
 - B.) Contained with a 802.2 frame for routing purposes
 - C.) Used with PPP during authentication
 - D.) Identifies the PVC in a Frame Relay network

The correct answer(s): D
DLCI stands for Data Link Connection Identifier. It identifies the local PVC.

194. Identify 3 characteristics of the Network layer (OSI layer 3)?
- A.) Connection oriented
 - B.) Path determination
 - C.) Supports multiplexing
 - D.) Manages sessions
 - E.) Packet forwarding

The correct answer(s): B C E
The network layer is responsible for routing which entails learning the paths, selecting the best path and forwarding the packet. Because it services multiple layer 4 protocols is multiplexes.

195. Identify 3 characteristics of switches?
- A.) Increase available bandwidth
 - B.) Decrease broadcast traffic

- C.) Support full duplex in a multipoint topology
- D.) Make forwarding decision using MAC address
- E.) Create collision domains

The correct answer(s): A D E

Switches operate at layer 2. They increase bandwidth by reducing the number of devices sharing the media. They isolate collisions. Like a bridge they forward traffic based upon layer 2 address/ MAC address.

196. Which OSI layer handles physical address, network topology?

- A.) Presentation
- B.) Physical
- C.) Transport
- D.) Application
- E.) Data-Link
- F.) Network

The correct answer(s): E

Layer 2 the Data-Link layer performs this function.

197. Identify 2 reasons for disabling CDP?

- A.) If the router is not configured for RIP
- B.) Save bandwidth by eliminating overhead
- C.) If the router is configured for Appletalk
- D.) When connected to a non-Cisco router

The correct answer(s): B D

CDP can be disabled here are a couple of reasons. Connecting a Cisco router to a non-Cisco router. Don't want to exchange CDP information to save bandwidth.

198. Identify 3 characteristics of ISDN?

- A.) Transports voice and data
- B.) Transports voice only
- C.) Support both BRI and PRI
- D.) Runs over existing phone lines
- E.) Same as X.25

The correct answer(s): A C D

ISDN supports voice, data, and video. It runs over existing phone lines and supports 128K (BRI) and T1 (PRI).

199. Identify the 3 characteristics of IGRP?

- A.) Uses hop count as a metric
- B.) Supports multiple unequal paths
- C.) Administrative distance is 100
- D.) Configured with an Autonomous system number
- E.) Link state

The correct answer(s): B C D

IGRP is a distance vector routing protocol, it's degree of trustworthiness is 100, it can support up to 6 un-equal paths and must be configured with an autonomous system number.

200. Identify 2 features of PPP CHAP authentication?

- A.) Username and password is sent in clear text
- B.) Authentication messages are sent periodically during the connection
- C.) Less secure than PAP
- D.) Local router 'challenges' the remote router

The correct answer(s): B D

PPP CHAP authentication messages are sent periodically during the connection by challenging the other end of the connection. It is more secure than PAP and passwords and username are encrypted.

201. Identify the default IPX serial encapsulation?

- A.) Novell-Ether
- B.) SDLC
- C.) SNAP
- D.) HDLC

The correct answer(s): D

The default IPX serial encapsulation is HDLC.

202. Identify the hardware component that stores the backup configuration?

- A.) RAM
- B.) NVRAM
- C.) Flash
- D.) ROM

The correct answer(s): B

NVRAM contains the backup config. RAM is the dynamic memory area, ROM contains the boot strap code and Flash contains the IOS.

203. Identify the extended IP access-list number range?

- A.) 600 - 699
- B.) 1 - 99
- C.) 900 - 999
- D.) 100 - 199

The correct answer(s): D

The extended IP access-list range is 100-199.

204. Identify 3 Fast Ethernet technologies?

- A.) 100 Base FastEther
- B.) 100 Base FX
- C.) 100 Base T4
- D.) 100 Base TX

The correct answer(s): B C D

100 BaseFastEther is false. 100 Base FX, TX and T4 are all valid.

205. Identify the OSI layer which is responsible for end-to-end connections?

- A.) Network
- B.) Transport
- C.) Session
- D.) Data link
- E.) TCP

The correct answer(s): B

Layer 4 is the Transport layer and is responsible for end-to-end connections.

206. Identify the 2 characteristics regarding MAC addresses?

- A.) Contains a network portion and host portion
- B.) Always assigned by System Administrator
- C.) 48 bits long
- D.) Contains a vendor code and serial number

The correct answer(s): C D

MAC addresses are assigned by the vendor. Each MAC address is 48 bits long and made up of 24 bits vendor code and 24 bits serial number.

207. Identify the number range for IPX SAP filters?

- A.) 900 - 999

- B.) 1000 - 1099
- C.) 800 -899
- D.) 100 - 199

The correct answer(s): B
The IPX SAP filtering range is 1000-1099.

208. What is the purpose of ARP?
- A.) IP to host name resolution
 - B.) Host name to IP address resolution
 - C.) Mac to IP address resolution
 - D.) IP to Mac address resolution

The correct answer(s): D
Address Resolution Protocol resolves the MAC address if the IP address is known. It is a layer 3 protocol.

209. Which OSI layer establishes, maintains and terminates sessions between hosts?
- A.) Application
 - B.) Physical
 - C.) Data-Link
 - D.) Presentation
 - E.) Network
 - F.) Session

The correct answer(s): F
Layer 5 the Session layer performs this function.

210. Which statement is true regarding Administrative distance?
- A.) It is a metric
 - B.) Number of hops between two routers
 - C.) Trustworthiness of the routing information
 - D.) RIP Administrative distance is 100

The correct answer(s): C
Administrative distance is rating of trustworthiness of the routing information. The lower the AD the better the information.

211. Identify the purpose of the Ping command?
- A.) Share routing information with a neighbor router
 - B.) Transmit user data when buffers are full

- C.) Test connectivity at layer 3
- D.) Test entire protocol stack

The correct answer(s): C

The ping command tests layer 3 connectivity.

212. Identify the order of the 5 step encapsulation?

- 1. Create the segment
 - 2. Convert the frame to bits
 - 3. Create the packet
 - 4. Create the frame
 - 5. User creates the data
- A.) 1,2,4,2,5
 - B.) 2,1,3,4,5
 - C.) 5,1,3,4,2
 - D.) 5,3,4,1,2

The correct answer(s): C

Cisco 5 step encapsulation.

- 1) User creates Data
- 2) Data is converted into a segment at layer 4
- 3) The segment is converted to packet at layer 3
- 4) The packet is converted into a frame at layer 2
- 5) The frame is converted into bits at layer 1

213. The Cisco IOS is stored where?

- A.) ROM
- B.) CD
- C.) Flash
- D.) NVRAM

The correct answer(s): C

By default the Cisco IOS is stored in flash.

214. Sequence and acknowledgement numbers are used for?

- A.) Layer transitioning
- B.) Flow control
- C.) Port number addressing
- D.) Reliability

The correct answer(s): D

TCP uses sequence numbers and acknowledgements to implement reliability.

215. Identify IPX GNS and it's purpose?

- A.) Go Network Server - sends a print job to a network server
- B.) Get Nearest Server - locate the nearest server
- C.) Guaranteed Network Services - allocates resources to users
- D.) Get Notes Server - locates Domino Server

The correct answer(s): B

GNS stands for Get Nearest Server, initiated by a workstation.

216. Identify the true statement regarding subnetting?

- A.) Allows for more host address
- B.) Borrow bits from the network portion of the address
- C.) Allows for unlimited number of networks
- D.) Borrow bits from the host portion of the address

The correct answer(s): D

Subnetting involves borrowing bits for the host portion of the address to be used to subnet addressing.

217. Inverse ARP serves what purpose?

- A.) Method for a local router to introduce itself to the remote end of the connection
- B.) Broadcast a routing table update
- C.) Identify MAC addresses if the IP address is known
- D.) Sent every 10 seconds used to verify the Frame Switch is still active

The correct answer(s): A

Inverse ARP operates in a Frame Relay network so the two end points can identify themselves to each other.

218. Identify 3 characteristics of a MAC address?

- A.) Burned into the NIC
- B.) 48 bits long
- C.) Length is 32 bits
- D.) Used to deliver the frame to the end device
- E.) Contains a network portion and a host portion

The correct answer(s): A B D

The MAC address is 48 bits long not 32. It does NOT contain a network and host portion with the address. It is used to deliver the frame to the destination device.

219. Identify 3 IP routing protocols?

- A.) RIP
- B.) AURP
- C.) OSPF
- D.) IGRP
- E.) ARP
- F.) ICMP

The correct answer(s): A C D
AURP and ICMP are not routing protocols.

220. Identify the type of routing protocol that exchanges entire routing tables at regular intervals?

- A.) Link state
- B.) Interior gateway protocols
- C.) Appletalk routing
- D.) Distance vector

The correct answer(s): D
Distance Vector routing protocols exchange entire routing tables with it's neighbors. Link State routing protocols exchange LSP's to share information regarding the networks they know.

221. Identify the type of hardware required to connect a Token ring network to an Ethernet network?

- A.) Repeater
- B.) TR-Enet
- C.) Router
- D.) Token Ring to Ethernet translation hub

The correct answer(s): C
Routers are used to connect dissimilar networks with different access-methods, like connecting Token Ring to Ethernet.

222. Identify 3 characteristics regarding CDP?

- A.) On by default
- B.) Shows only directly connected neighbors
- C.) Requires IP or IPX
- D.) 60 second update interval by default
- E.) 30 second updates interval by default

The correct answer(s): A B D

CDP stands for Cisco Discovery Protocol. It is used to discover directly connected neighbors, it is on by default and has a 60 second update interval by default.

223. Identify 2 transport layer protocols?

- A.) IP
- B.) TCP
- C.) CDP
- D.) ARP
- E.) UDP

The correct answer(s): B E

TCP and UDP are 2 layer4 Transport protocols.

224. Identify 2 features of X.25?

- A.) Supports only IP
- B.) Utilizes switched and permanent virtual circuits
- C.) Contains minimal flow control and error recovery
- D.) Utilizes LAPB as it's data-link protocol

The correct answer(s): B D

X.25 utilizes LAPB and uses switched and permanent VC's. It supports multiple layer protocols and is heavy laden with error detection and correction mechanisms.

225. Identify the purpose of the Trace command?

- A.) Explorer packet transmitting routing information
- B.) Test connectivity
- C.) Determine the path a packet is taking through the network
- D.) Transmits user data when buffers are full

The correct answer(s): C

The trace command is used to determine the path a packet has taken through the network.

226. Identify the purpose of the TCP 3 step handshake?

- A.) Setup a un-reliable connection
- B.) Initialize routing tables
- C.) Synchronize sequence numbers between hosts
- D.) Connection tear down process

The correct answer(s): C

The 3 step handshake establishes the parameters required for a TCP connection. During the handshake process sequence numbers are synchronized allowing for the end points to properly acknowledge and re-assemble the segments.

227. Identify 2 PPP characteristics?

- A.) Is proprietary to Cisco
- B.) Supports authentication
- C.) Support compression
- D.) Run on a multi-access network

The correct answer(s): B C

PPP supports authentication; PAP and CHAP. It also supports compression; Stacker and Predictor.

228. Which statement is true regarding half duplex?

- A.) Only works in a point-to-point configuration
- B.) Allows for transmitting and receiving but not at the same time
- C.) Allow for transmitting and receiving of data simultaneously
- D.) Doubles the bandwidth

The correct answer(s): B

Half duplex is analogous to a single a lane bridge, it can handle traffic in both directions but not at the same time.

229. Identify the purpose of the wildcard mask?

- A.) Match a certain portion of the IP address while ignoring the rest of the address
- B.) Determine the class of the IP address
- C.) Determine the network portion of an IP address
- D.) Hide the host portion of an IP address

The correct answer(s): A

The purpose of the wildcard mask to match a certain portion of the IP address while ignoring the rest.

230. Identify the OSI layer associated with bits?

- A.) Physical
- B.) Network
- C.) Binary
- D.) Data link

The correct answer(s): A

The Physical layer converts the frames to bits.

231. Identify the type of routing protocol that maintains a topological database of the network?

- A.) Topological state
- B.) Shortest Path First
- C.) Link state
- D.) Distance vector

The correct answer(s): C

Link State routing protocols maintain a database that lists all the networks in the internetwork.

232. Identify the 3 major functions at layer 3 of the OSI model?

- A.) Forwarding process
- B.) Logical addressing
- C.) End-to-end connections
- D.) Path selection
- E.) MAC address examination
- F.) Network monitoring

The correct answer(s): A B D

Layer 3 determines the path, forwards the packet and implements software or logical addressing.

233. Identify the 2 rules used when configuring a Distance Vector routing protocol?

- A.) Physically connected network(s)
- B.) Configure the classful address, no subnets
- C.) Enable CDP so neighbors can be detected
- D.) Configure all networks in Area0

The correct answer(s): A B

When configuring a Distance Vector routing protocol only assign the physically connected networks with the classful address only.

234. Identify 3 characteristics of an IP address?

- A.) Contains a network portion and a host portion
- B.) 32 bits long
- C.) Unique to each network
- D.) Part of the default Cisco configuration

E.) Referred to as the hardware address

The correct answer(s): A B C

An IP address is 32 bits long, it is referred as the logical or software address. It contains a network and host portion. Each IP address is unique.

235. Identify 3 feature of access-lists?

- A.) Implicit deny will deny any packets not matched
- B.) Processed sequentially from bottom to top
- C.) Processed sequentially from top to bottom
- D.) If a packet is denied it would be tested against the remaining statements in the access-list
- E.) Once a match is made the packet is either denied or permitted
- F.) Enabled on all interfaces by default

The correct answer(s): A C E

Access-list are processed from top to bottom, once a match occurs the packet is either denied or permitted and is no longer tested and if no match occurs the packet is denied via the implicit deny.

236. Which OSI layer performs code conversion, code formatting and encryption?

- A.) Physical
- B.) Data-Link
- C.) Application
- D.) Transport
- E.) Presentation
- F.) Network

The correct answer(s): E

Layer 6 the Presentation layers performs this function.

237. Identify the 3 methods routers learn paths to destinations?

- A.) Dynamic routing
- B.) None of the above, configured by default
- C.) Default routes
- D.) Administrative distance
- E.) Static routes

The correct answer(s): A C E

Routers can learn paths via 3 different sources; static routes, dynamic routing protocols (ie RIP) and default routes.

238. Identify the purpose of the following command 'ip route 192.168.100.0 255.255.255.0 10.1.0.1'

- A.) Enabling a dynamic routing protocol
- B.) Creating a static route to the 10.1.0.0 network
- C.) Teaches the router about the distant network 192.168.100.0 and how it can be reached via 10.1.0.1
- D.) Assigning the IP address 192.168.100.0 to an interface

The correct answer(s): C

A static routes teaches the router about a distant network and the next hop to reach that network. Command syntax:

ip route network-address subnet-mask next-hop-address

239. Based upon the 1st octet rule identify the range for a Class A address?

- A.) 1 - 126
- B.) 192 - 223
- C.) 128 - 191
- D.) 1 - 191

The correct answer(s): A

Class A address has the 1st octet between 1 - 126. Class B between 128 - 191 and Class C between 192 - 223.

240. What does a Standard IP Access-list use as test criteria?

- A.) IP source address
- B.) IP source and destination address, protocol numbers and port numbers
- C.) IPX source and destination address
- D.) Source MAC address

The correct answer(s): A

Standard IP access list use only source address.

241. What is the function of the Transport layer and which protocols reside there?

- A.) MAC addressing - IP
- B.) Interhost communication - SQL, NFS
- C.) Best effort Packet delivery - TCP, UDP
- D.) End-to-end connections - TCP, UDP

The correct answer(s): D

Layer 4, the Transport layer, is responsible for end-to-end connections.

The two TCP/IP protocols that reside there are TCP and UDP.

242. Identify the 3 Internet layer IP protocols?

- A.) NetBios
- B.) IPX
- C.) ARP
- D.) IP
- E.) RARP

The correct answer(s): C D E

NetBios and IPX are not layer 3 IP protocols. IP - Internet Protocol, ARP - Address Resolution Protocol and RARP - Reverse Address Resolution Protocol.

243. IPX routing updates occur how often?

- A.) Every 30 seconds
- B.) Every 60 seconds
- C.) Only as needed
- D.) When the remote router asks for an update

The correct answer(s): B

IPX RIP updates are exchanged every 60 seconds.

244. Identify 3 methods not used to prevent routing loops?

- A.) Holddown timers
- B.) Sequence numbers
- C.) Triggered updates
- D.) Split horizon
- E.) Area hierarchies
- F.) Order of router startup

The correct answer(s): B E F

Area hierarchies, sequence numbers and order of router startup all relate to Link State routing protocols which do NOT incur routing loops.

245. Identify the hardware component that stores the bootstrap program?

- A.) ROM
- B.) NVRAM
- C.) Booter load
- D.) RAM
- E.) Flash

The correct answer(s): A

ROM contains the boot strap code.

246. Which OSI layer provides mechanical, electrical, procedural for activating, maintaining physical link?

- A.) Presentation
- B.) Network
- C.) Application
- D.) Physical
- E.) Transport
- F.) Data-Link

The correct answer(s): D

Layer 1 the Physical layer performs this function.

247. Identify 2 characteristics of PPP?

- A.) Uses LLC to establish the link
- B.) Default serial encapsulation
- C.) Support multiple layer 3 protocols
- D.) Offers two types of authentication; PAP and CHAP

The correct answer(s): C D

PPP is not the default encapsulation and uses LCP not LLC to establish the link. It support multiple layer 3 protocols and supports authentication.

248. Identify 3 characteristics of a connection oriented protocol?

- A.) Path determination
- B.) Flow control
- C.) Acknowledgements
- D.) Uses hop count as metric
- E.) 3 step handshake

The correct answer(s): B C E

Connection oriented protocols must first establish the connection (3 step handshake), employ methods to acknowledge the receipt of data (acknowledgements) and slow down the flow of data if required (flow control).

249. What is the maximum hop count for IP RIP?

- A.) Infinity
- B.) 16
- C.) 15
- D.) 1

The correct answer(s): C

15 is the maximum hop count, underscoring the size limitation of RIP.

250. What is Cisco's default encapsulation method on serial interfaces?

- A.) ANSI
- B.) Cisco
- C.) Q933a
- D.) HDLC

The correct answer(s): D

Cisco's implementation of HDLC is only compatible with Cisco routers. It is the default encapsulation type for serial interfaces.

251. Which of the following is a characteristic of a switch, but not of a repeater?

- A.) Switches forward packets based on the IPX or IP address in the frame
- B.) Switches forward packets based on the IP address in the frame
- C.) Switches forward packets based on the MAC address in the frame
- D.) Switches forward packets based only on the IP address in the packet

The correct answer(s): C

A repeater regenerates the signal it receives, a switch makes decisions based upon MAC addresses to determine whether a frame should be forwarded. Repeaters forward all packets.

252. Ping uses which Internet layer protocol?

- A.) RARP
- B.) ICMP
- C.) ARP
- D.) FTP

The correct answer(s): B

Internet Control Message Protocol - ICMP is a management protocol and messaging service provider for IP. Its messages are carried as IP datagrams.

ICMP is used in the following events:

Destination Unreachable - If a router cannot send an IP packet any further, it uses an ICMP echo to send a message back to the sender notifying it that the remote node is unreachable.

Buffer Full - If a routers memory buffer is full ICMP will send out a

message to the originator.

Hops - Each IP datagram is assigned a path. This consists of hops. If it goes through the maximum number of hops, the packet is discarded and the discarding router sends an ICMP echo to the host.

Ping - Ping use ICMP echo message to check connectivity.

253. Which is true regarding store-and-forward switching method?

- A.) Latency varies depending on frame-length
- B.) Latency is constant
- C.) It is default for all Cisco switches
- D.) It only reads the destination hardware address before forwarding the frame

The correct answer(s): A

Store-and-Forward switching copies the entire frame into its buffer and computes the CRC. If a CRC error is detected, the frame is discarded, or if the frame is a runt (less than 64 bytes including the CRC) or a giant (more than 1518 bytes including the CRC). The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then forwarded to the outgoing interface. Cisco Catalyst 5000 switches uses the Store-and-Forward method. The problem with Store-and-Forward switching is latency is increased. Latency also varies with the size of the frame. The larger the frame, the more latency associated. This of course is due to the fact that the entire frame is copied into its buffer before being forwarded.

254. Which three of the following are true statements about connection-oriented sessions?

- A.) The segments delivered are acknowledged back to the sender upon their reception
- B.) Any segments not acknowledged are retransmitted by the receiver
- C.) A manageable data flow is maintained in order to avoid congestion, overloading and loss of any data
- D.) Segments are sequenced back into their proper order upon arrival at their destination

The correct answer(s): A C D

Connection-oriented services are useful for transmitting data from applications that are intolerant of delays and packet re-sequencing. FTP and Telnet applications are based on connection-oriented services as well as some voice and video programs. Any segment that is not acknowledged by the received is retransmitted by the sender.

What does a metric of 16 hops represent when using RIP?

- A.) Number of hops to the destination
- B.) Destination unreachable
- C.) Number of routers
- D.) Bandwidth

The correct answer(s): B

Routing Information Protocol (RIP) is a distance vector routing protocol that used hop count as its metric. The maximum hop count is 15, 16 hops is considered unreachable. RIP updates are broadcast every 30 seconds by default. RIP has an administrative distance of 120.

255. You need to come up with a TCP/IP addressing scheme for your company. Which two factors must you consider when you define the subnet mask for the network?

- A.) The location of DHCP servers
- B.) The volume of traffic on each subnet
- C.) The number of subnets on the network
- D.) The location of the default gateway
- E.) The number of host IDs on each subnet

The correct answer(s): C E

When determining which subnet mask to use, you must determine how many hosts and how many subnets are required.

256. What is the difference between TCP and UDP?

- A.) TCP is connection-oriented; UDP uses acknowledgements only
- B.) TCP is connection-oriented; UDP is connectionless
- C.) Both TCP and UDP are connection-oriented, but only TCP uses windowing
- D.) TCP and UDP both have sequencing, but UDP is connectionless

The correct answer(s): B

TCP provides guaranteed connection oriented delivery of packets, UDP does not.

257. What does the 'S' mean when looking at the routing table?

- A.) Statically connected
- B.) Directly connected
- C.) Dynamically attached
- D.) Shutdown route

The correct answer(s): A

Statically connected routes are those that an administrator has manually entered into the routing table.

258. Why would you use static routing instead of dynamic routing?

- A.) When you want automatic updates of the routing tables
- B.) All the time
- C.) When you have very few routes and want to conserve bandwidth
- D.) When you have a gateway of last resort

The correct answer(s): C

Static routes are typically used when there are very few routes and you want to conserve bandwidth. Since routing protocols are constantly sending their updates across the wire, it can cause a great deal of congestion.

259. On Cisco catalyst 5000 how would you set the second port on the controller in the first slot to full duplex?

- A.) Set port duplex 1/1 full
- B.) Set port duplex 1/2 full
- C.) Set port duplex 0/1 full
- D.) Set port duplex 0/2 full

The correct answer(s): B

The syntax is: set type duplex slot/port <full/half>

260. What does the acronym ARP stand for?

- A.) Address Resolution Phase
- B.) ARP Resolution Protocol
- C.) Address Resolution Protocol
- D.) Address Recall Protocol

The correct answer(s): C

The Address Resolution Protocol (ARP) resolved IP addresses to MAC addresses.

261. What is the default encapsulation of Netware 3.12?

- A.) Ethernet_II
- B.) 802.5
- C.) 802.2
- D.) 802.3

The correct answer(s): C

The 802.2 Frame Type is the default frame-type for Netware 3.12.

262. Regarding frame relay, which of the following statements are true?
- A.) You must use ANSI encapsulation if connecting to non-Cisco equipment
 - B.) You must use IETF encapsulation if connecting to non-Cisco equipment
 - C.) You must use Q.933a encapsulation if connecting to non-Cisco equipment
 - D.) You must use Cisco encapsulation if connecting to non-Cisco equipment

The correct answer(s): B

Cisco's encapsulation for Frame relay is proprietary. To communicate with non-Cisco equipment when using frame-relay encapsulation, the IETF method must be used.

263. What is required to support full-duplex Ethernet?
- A.) Multiple paths between multiple stations on a link
 - B.) Automatic sensing operation by all connected stations
 - C.) Loopback and collision detection disabled
 - D.) Full-duplex NIC cards

The correct answer(s): C D

Full duplex ethernet requires that the NIC supports full-duplex, and loopback and collision detection are disabled.

264. Which layer is responsible for determining if sufficient resources for the intended communication exists?
- A.) Application
 - B.) Network
 - C.) Session
 - D.) Presentation
 - E.) Transport

The correct answer(s): A

The Application layer is responsible for determining if sufficient resources for the intended communication exists.

265. What are the 2 functions of the Data Link Mac layer?
- A.) Handles access to shared media
 - B.) Manages protocol access to the physical network medium
 - C.) Provides SAPs for higher level protocols
 - D.) Allows multiple devices to uniquely identify one another on the data link layer

The correct answer(s): B D

Media Access Control (MAC) -The MAC sublayer manages protocol access to the physical network medium. The IEEE MAC specification defines MAC addresses, which allow multiple devices to uniquely identify one another at the data link layer.

266. Describe End to End network services: (Choose all that apply)

- A.) Best Route selection
- B.) Accomplished Segment by Segment, each segment is autonomous
- C.) Flow Control & Data Integrity
- D.) Best efforts packet delivery

The correct answer(s): A B C D

All of the above End to End network services.

267. Which of the following provide correct information about a protocol at the transport layer of the OSI model?

- A.) UDP - Provides Connectionless datagrams service
- B.) TCP - Provides Connection Oriented Services
- C.) SMTP - Provides Mail Exchange
- D.) IP - Route determination
- E.) TCP - Provides Flow Control and Error Checking
- F.) FTP - Transfers of Files

The correct answer(s): A B E

Only TCP and UDP work at the Transport layer of the above choices. IP is a Network layer protocol. SMTP and FTP are application layer protocols.

268. Which protocol works at the Internet layer and is responsible for making routing decisions?

- A.) UDP
- B.) IP
- C.) TCP
- D.) ARP

The correct answer(s): B

Internet Protocol - IP provides routing and a single interface to the upper layers. No upper layer protocol and now lower layer protocol have any functions relating to routing. IP receives segments from the transport layer and fragments them into packets including the hosts IP address.

269. Which layer is responsible for providing mechanisms for multiplexing upper-layer application, session establishment, and tear down of virtual

circuits?

- A.) Session
- B.) Network
- C.) Physical
- D.) Transport
- E.) Application
- F.) Presentation

The correct answer(s): D

The Transport layer does the following: Responsible for end-to-end integrity of data transmission. Handles multiplexing upper-layer application, session establishment and tear down of virtual circuits. Hides details of network dependent info from the higher layers by providing transparent data transfer. The 'windows' works at this level to control how much information is transferred before an acknowledgement is required.

270. Which of the following are logged when IP access list logging is enabled?

- A.) source address
- B.) protocol
- C.) source port
- D.) destination address
- E.) access list number
- F.) destination port

The correct answer(s): A B C D E F

All of the above are logged when IP access list logging is enabled.

271. What's the default CDP holdtime in seconds for Cisco routers?

- A.) 30 seconds
- B.) 180 seconds
- C.) 90 seconds
- D.) 60 seconds

The correct answer(s): B

Cisco Discovery Protocol is a proprietary protocol to allow you to access configuration information on other routers and switches with a single command. It uses SNAP at the Data-Link Layer. By default CDP sends out a broadcast every 60 seconds and it holds this information for 180 seconds. CDP is enabled by default.

272. Which two of the following protocols are used at the Transport layer?

- A.) ARP

- B.) UDP
- C.) ICMP
- D.) RARP
- E.) TCP
- F.) BootP

The correct answer(s): B E
TCP and UDP operate at the Transport layer.

273. LAN stands for which of the following?

- A.) Local Area Network
- B.) Local Arena Network
- C.) Local Area News
- D.) Logical Area Network

The correct answer(s): A
LAN stands for Local Area Network

274. Choose three reasons why the networking industry uses a layered model:

- A.) It facilitates systematic troubleshooting
- B.) It allows changes in one layer to occur without changing other layers
- C.) It allows changes to occur in all layers when changing one protocol
- D.) It clarifies how to do it rather than what general function to be done
- E.) It clarifies what general function is to be done rather than how to do it

The correct answer(s): A B E
Why do we have a Layered Model?

- 1) It reduces complexity
- 2) Allows for a standardized interface
- 3) Facilitates modular engineering
- 4) Ensures interoperable technology
- 5) Accelerates evolution
- 6) Simplifies teaching and learning

276. Which layer is responsible for identifying and establishing the availability of the intended communication partner?

- A.) Application
- B.) Presentation
- C.) Transport
- D.) Session
- E.) Network

The correct answer(s): A

The Application layer performs the following: Synchronizing sending and receiving applications. Program-to program communication. Identify and establish the availability of the intended communication partner, and determine if sufficient resources exist for the communication. Popular application protocols include WWW, SMTP, EDI, FTP, Telnet, and SNMP

277. A ISDN PRI circuit can be described as which of the following?

- A.) 24 B channels and 1-64Kbps D channel
- B.) 23 B channels and 1-64Kbps D channel
- C.) 2-D channels and 1-C channel
- D.) 2-64Kbps B channels and 1-16Kbps D channel

The correct answer(s): B

There are two types of ISDN Channels:

BRI (Basic Rate Interface) - is 2 64Kbps B channels for data and one 16Kbps D channel for link management.

PRI (Primary Rate Interface) - is 23Kbps B channels and 1 64Kbps D channel.

278. What are 3 ways to provide login access to router?

- A.) Console
- B.) TFTP
- C.) Rlogin
- D.) Auxiliary Port
- E.) X Windows
- F.) Telnet

The correct answer(s): A D F

The three ways to provide login access to the router are via the Console port, auxiliary port, and virtual terminal (Telnet)

279. Which of the following statements are true?

- A.) Store and forward switching creates variable latency through the switch
- B.) Cut through switching creates variables latency through the switch
- C.) Cut through switching works at wire speed
- D.) Store and forward switching works at wire speed

The correct answer(s): A C

The larger the packet, the greater the latency when using a switch with Store and Forward methods. This is due to the fact that Store and Forward switching copies the entire Frame into its buffer before forwarding the frame. Cut Through switching only examines the destination address before forwarding the packet and does not copy the frame into its buffer.

280. Which of the following can reply to a Novell Get Nearest Server (GNS) request?

- A.) Local Novell server
- B.) Remote Novell Printer
- C.) Cisco router
- D.) Novell client

The correct answer(s): A C

Cisco routers can act like Novell servers to an extent. They can answer Get Nearest Server request by clients. Of course, both Local and Remote Novell servers can reply to the GNS request. As with Novell servers, Cisco routers can be configured to either reply, or not reply to GNS request by clients. Since each Novell server and Cisco router builds a dynamic table of resources, they can reply to a clients request for the available resources closest to them.

281. Identify the 3 kinds of routes IGRP advertises?

- A.) Interior
- B.) Dynamic
- C.) System
- D.) Exterior

The correct answer(s): A C D

IGRP is a distance vector routing protocol designed by Cisco. The maximum hop count is 255, and it uses a combination of variables to determine a composite metric. IGRP has an administrative distance of 100. There are three types of routes IGRP advertises: 1) Interior, 2) Exterior, and 3) System.

282. What is the routing metric used by RIP?

- A.) Route poisoning
- B.) Split horizon
- C.) Hop Count
- D.) TTL

The correct answer(s): C

Routing Information Protocol (RIP) is a distance vector routing protocol that used hop count as its metric. The maximum hop count is 15, 16 hops is considered unreachable. RIP updates are broadcast every 30 seconds by default. RIP has an administrative distance of 120.

283. What is the default encapsulation and frame type on an Ethernet interface when enabling Novell?

- A.) SNAP
- B.) Ethernet_II
- C.) 802.2
- D.) 802.3
- E.) SAP
- F.) Token_SNAP

The correct answer(s): D

By default, when an encapsulation type is not specified, the 802.3 frame type is used.

284. What is true when creating static route?

- A.) The mask parameter is optional
- B.) The administrative distance is required
- C.) The gateway parameter is required
- D.) The administrative distance is optional

The correct answer(s): C D

When creating a static route, the gateway parameter is required, but the administrative distance is optional. The correct syntax is:

```
Router(config)# ip route <network> <mask> <address | interface> <admin distance>
```

285. Of the following switching types, which one has the highest latency?

- A.) Cut-through
- B.) None
- C.) Store-and-forward
- D.) Fragment Free

The correct answer(s): C

Store-and-Forward switching copies the entire frame into its buffer and computes the CRC. If a CRC error is detected, the frame is discarded, or if the frame is a runt (less than 64 bytes including the CRC) or a giant (more than 1518 bytes including the CRC). The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then forwarded to the outgoing interface. Cisco Catalyst 5000 switches uses the Store-and-Forward method. The problem with Store-and-Forward switching is latency is increased. Latency also varies with the size of the frame. The larger the frame, the more latency associated. This of course is due to the fact that the entire frame is

copied into its buffer before being forwarded.

286. What does the IPX maximum path command do?

- A.) Allows you to disable the TTL on an IPX packet
- B.) This parameter is only used in NLSP routing
- C.) Sets the maximum metric that can appear in the routing table
- D.) Configures round robin load sharing over multiple equal metric paths (parallel paths)

The correct answer(s): D

The ipx maximum path command allows you to configure parallel paths for load sharing.

287. What does -1 mean in an extended IPX access-list?

- A.) Any IP address
- B.) Deny all
- C.) Deny host
- D.) Any host or any network

The correct answer(s): D

For IPX access lists, the -1 is a wildcard that signifies Any Host or Any Network.

288. What parameter is used with statically assigned routers to tell packets which interface to use to reach a distant network?

- A.) Mask
- B.) Subnet
- C.) Default gateway
- D.) Interface

The correct answer(s): D

The interface parameter tell a packet which interface to use to reach other networks.

289. Which of the following protocols are used to get an IP address from a known MAC address?

- A.) BootP
- B.) TCP
- C.) IP
- D.) ARP
- E.) RARP
- F.) ICMP

The correct answer(s): A E

Reverse Address Resolution Protocol - RARP is ARP's counterpart, but it resolves IP addresses to MAC addresses typically on diskless workstations. BootP allows a host to resolve its own MAC address to an IP address.

290. What does the Spanning Tree Algorithm (STA) do?

- A.) Restore lost frames
- B.) Builds routing tables for routing through an internetwork
- C.) Forward packets through a switch
- D.) STA is implemented by STP to prevent loops

The correct answer(s): D

IEEE 802.1d Spanning Tree Protocol (STP) was developed to prevent routing loops in a network. If a router, switch, or hub has more than one path to the same destination, a routing problem could occur. To prevent this, the Spanning Tree Protocol is executed between the devices to detect and logically block redundant paths from the network. The main function of the Spanning Tree Protocol is to allow redundant network paths without suffering the effects of loops in the network.

The Spanning Tree Algorithm (STA) implemented by STP prevents loops by calculating a stable Spanning Tree network topology. When creating fault tolerant internetworks, a loop-free path must exist between all Ethernet nodes in the network. Spanning Tree frames called Bridge Protocol Data Units (BPDUs) are sent and received by all switches in the network at regular intervals.

291. IP extended access lists use which of the following as a basis for permitting or denying packets?

- A.) destination address
- B.) all of the above
- C.) protocol
- D.) source address
- E.) port

The correct answer(s): B

All of the above are basis for permitting or denying IP packets for use with an Extended IP access list.

292. What is the extended IPX access list range?

- A.) 901-1000
- B.) 100-199
- C.) 900-999

D.) 1000-1000

The correct answer(s): C

Cisco has setup ranges of numbers to signify access lists. 900-999 is the range for the Extended IPX access lists.

293. CPE is an acronym for which of the following?

- A.) Customer Premise Equipment
- B.) Central Processing Engineering
- C.) Customer Process Equipment
- D.) Central Processing Equipment

The correct answer(s): A

Customer Premise Equipment (CPE) are devices physically located at the subscriber's premises. Includes both owned and leased equipment.

294. How often does IP RIP send out routing table updates by default?

- A.) They send complete updates every 30 seconds
- B.) They send partial updates every 30 seconds
- C.) They send complete updates every 60 seconds
- D.) They send partial updates every 60 seconds

The correct answer(s): A

Routing Information Protocol (RIP) is a distance vector routing protocol that used hop count as it's metric. The maximum hop count is 15, 16 hops is considered unreachable. RIP updates are broadcast every 30 seconds by default. RIP has an administrative distance of 120.

295. Which ISDN protocol prefix specifies switching and signalling?

- A.) I
- B.) E
- C.) Q
- D.) S

The correct answer(s): C

These protocols deal with ISDN issues:

E - Specifies ISDN on the existing telephone network.

I - Specifies concepts, terminology, and services.

Q - Specifies switching and signaling.

296. CSMA/CD stand for which of the following?

- A.) Carrier Sense, Multiple Access with Collision Detection

- B.) Collision Sense, Multiple Access with Collision Detection
- C.) Collision Sense, Multiple Access with Carrier Detection
- D.) Carrier Sense, MAC address with Collision Detection

The correct answer(s): A

The IEEE standard for Carrier Sense Multiple Acces / Collision Detection is 802.3. Also know as Ethernet.

297. Which of the following are Distance Vector protocols?

- A.) IGRP
- B.) RIP
- C.) OSFP
- D.) EIGRP

The correct answer(s): A B

RIP and IGRP are Distance Vectoring protocols that send their entire routing tables to their neighbors.

In some Cisco literature, EIGRP is listed as an 'advanced disance vector' routing protocol. However, the official curriculum courseware considers EIGRP a 'hybrid' protocol.

298. UDP works at which layer of the DOD model?

- A.) Internet
- B.) Host-to-Host
- C.) Transport
- D.) Data Link

The correct answer(s): B

The TCP/IP Transport Layer (OSI) and Host to Host (DOD) protocols use TCP and UDP. Notice this question asks for DOD model.

299. Of the following switching types, which one has the lowest latency?

- A.) Cut-through
- B.) Fragment Free
- C.) None
- D.) Store-and-forward

The correct answer(s): A

Cut-Through switching copies only the destination address which is the first 6 bytes after the frame preamble into its buffer. The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then sent to the interface. A cut-through switch provides reduced latency because it begins

to forward the frame as soon as it read the destination address and determines the outgoing interface.

300. What is an administrative distance of 0 mean?

- A.) 0 means unbelievable
- B.) 0 is for EIGRP
- C.) 0 is the default distance for directly connected networks
- D.) 0 means unreachable

The correct answer(s): C

Directly connected network have the lowest administrative distance of 0. They are considered the most reliable.

301. Which of the following describe full-duplex transmission?

- A.) Uses a single wire
- B.) Data transmission in both directions, but only one way at a time
- C.) Uses a point-to-point connection from the transmitter of the transmitting station to the receiver of the receiving station
- D.) Data transmission in only one direction

The correct answer(s): C

Full Duplex - Capability for simultaneous data transmission between a sending station and a receiving station. It requires a workstation be attached to a switch, the NIC must support it, and collision detection and loopback must be disabled.

302. Which of the following is a connectionless protocol at the Transport layer?

- A.) UDP
- B.) ARP
- C.) ICMP
- D.) RARP
- E.) IP
- F.) FTP

The correct answer(s): A

User Datagram Protocol - UDP is a connectionless oriented transport protocol for use when the upper layers provide error-recovery and reliability. UDP does not sequence data or re-assemble it into any order after transmission. This protocol uses Port 17.

303. What is the routing metric used by IGRP?

- A.) MTU, delay, bandwidth, reliability, and loading
- B.) Count to infinity

- C.) TTL
- D.) Hop count

The correct answer(s): A

IGRP is a distance vector routing protocol designed by Cisco. The maximum hop count is 255, and it uses a combination of variables to determine a composite metric. IGRP has an administrative distance of 100.

304. What does 'P' mean when running a Trace?

- A.) Good route
- B.) Protocol unreachable
- C.) Source Quench
- D.) Destination unreachable

The correct answer(s): B

When a P is returned when a Trace is run, it means the Protocol is unreachable.

305. What is the Network Layer of the OSI responsible for?

- A.) Bridging
- B.) Routing packets through an internetwork
- C.) Regenerating the digital signal
- D.) Gateway services

The correct answer(s): B

The Network Layer routes data from one node to another, sends data from the source network to the destination network. The router will use packet switching to move a packet from one interface or port, to another through the network cloud.

306. Which layer is responsible for routing through an internetwork?

- A.) Physical
- B.) Session
- C.) Network
- D.) Transport
- E.) Application
- F.) Data Link

The correct answer(s): C

The Network layer is responsible for routing. This is the primary job of routers, which operate at the Network layer.

307. What three occurrences will reset the holddown timer after a triggered update?

- A.) Infinity is finally defined as some max number
- B.) HD Timer expires
- C.) Another update is received indicating a better metric
- D.) The router receives a processing task proportional to the number of links in the internetwork
- E.) The router detects fault LSP's propagating through the internetwork
- F.) Another update is received indicating net status changed

The correct answer(s): B D F

The HD Timer expires, another update is received indicating net status change, or if the router receives a processing task proportional to the number of links in the internetwork, this resets the holddown timer. These are all triggered updates.

308. Which layer is responsible for putting 1s and 0s into a logical group?

- A.) Session
- B.) Application
- C.) Transport
- D.) Data Link
- E.) Physical
- F.) Network

The correct answer(s): D

Frames are broken down into 1s and 0s and placed onto the physical medium by the Data Link layer.

309. How many LMI types are available on Cisco routers?

- A.) Four
- B.) Two
- C.) Five
- D.) Three

The correct answer(s): D

There are three types of LMI standards:

ANSI - Annex D defined by ANSI standard T1.617

ITU-T (Q.933A) - Annex A defined by Q933A

Cisco (default) - LMI defined by the gang of four

310. Which layer is responsible for framing?

- A.) Application
- B.) Data Link

- C.) Physical
- D.) Network
- E.) Transport

The correct answer(s): B

The Data link layer performs the following: Responsible for physically passing data from one node to another. Translates messages from the upper layers into data frames and adds customized headers containing the Hardware destination and source address.

311. What ISDN protocol specifies concepts, terminology, and services?

- A.) Q
- B.) S
- C.) I
- D.) E

The correct answer(s): C

These protocols deal with ISDN issues:

E - Specifies ISDN on the existing telephone network.

I - Specifies concepts, terminology, and services.

Q - Specifies switching and signaling.

312. What is the purpose of Split Horizons?

- A.) It prevents the regular update messages from reinstating a route that has gone down
- B.) Information received on an interface cannot be sent back out the same interface
- C.) Informs all neighbor routers that two routes exist
- D.) Tells the router the destination is unreachable

The correct answer(s): B

Split Horizon - If you learn a protocol's route on an interface, do not send information about that route back out that interface.

313. WAN stands for which of the following?

- A.) Wide Arena Network
- B.) World Area Network
- C.) Wide Area News
- D.) Wide Area Network

The correct answer(s): D

WAN stands for Wide Area Network

314. Which of the following provide connection-oriented transport to upper layer protocols?

- A.) SPX
- B.) RIP
- C.) NLSP
- D.) NCP

The correct answer(s): A

SPX is similar to TCP in that it provides reliable delivery of packets and provides connection-oriented transport to the upper layer protocols.

315. Which two does 100BaseT use?

- A.) CSMA/CD
- B.) IEEE 802.5
- C.) 802.3u
- D.) Switching with 53-byte cells

The correct answer(s): A C

100BaseT - 100BaseT uses two-pair Category 5 UTP cable with an RJ45 connector and the same pin out as in 10BaseT. 100BaseT supports full duplex operation. 100BaseT is limited to 100 meters distance.

316. Which layer is responsible for flow control, acknowledgement, and windowing?

- A.) Transport
- B.) Network
- C.) Application
- D.) Session
- E.) Physical
- F.) Data Link

The correct answer(s): A

The Transport layer performs the following: Responsible for end-to-end integrity of data transmission. Handles multiplexing upper-layer application, session establishment and tear down of virtual circuits. Hides details of network dependent info from the higher layers by providing transparent data transfer. The 'windows' works at this level to control how much information is transferred before an acknowledgement is required.

317. Which of the following is used to manage and monitor the network?

- A.) SNMP
- B.) HTTP

- C.) IP
- D.) FTP

The correct answer(s): A

The Simple Network Management Protocol (SNMP) is used to manage and monitor traps.

318. What is true about Link-State protocols?

- A.) They maintain a more complex table than distant vector protocols
- B.) They maintain a less complex table than distant vector protocols
- C.) They use routing ports
- D.) They maintain backup copies of the IOS

The correct answer(s): A

Whereas the distance vector algorithm has non-specific information about distant networks and no knowledge of distant routers, a link-state routing algorithm maintains full knowledge of distant routers and how they interconnect.

319. The maximum distance on a 10BaseT network from the hub to a workstation is which of the following?

- A.) 500 meters
- B.) 1000 meters
- C.) 100 meters
- D.) 1500 meters

The correct answer(s): C

The standard for 10BaseT networks is 100 meters, or approximately 330 feet.

320. Which of the following use PVCs at layer 2?

- A.) X.25
- B.) HDLC
- C.) Frame relay
- D.) ISDN

The correct answer(s): C

321. Of the above choices, only Frame relay uses Permanent Virtual Circuits (PVCs) at layer 2. PVC is the key word in this question.

What is the routing algorithm used by RIP and IGRP?

- A.) OSPF
- B.) Link-state
- C.) Dynamic

D.) Distance Vector

The correct answer(s): D

Distance vector-based routing algorithms (also known as Bellman-Ford algorithms) pass periodic copies of a routing table from router to router. Regular updates between routers communicate topology changes. Each router receives a routing table from its direct neighbor and increments all learned routes by one. By this method, each router learns the internetwork topology via second hand information.

322. Which layer is responsible for negotiating data transfer syntax?

- A.) Network
- B.) Session
- C.) Application
- D.) Transport
- E.) Presentation

The correct answer(s): E

The Presentation layer performs the following: Manages data representation conversions, or data transfer syntax. For example, the Presentation layer would be responsible for converting from EBCDIC to ASCII. Data compression, decompression, encryption, and decryption are presentation layer. Presentation layer standards include MPEG, MIDI, PICT, TIFF, JPEG, ASCII, and EBCDIC

323. What are hold-downs used for?

- A.) To prevent regular update messages from reinstating a route that has come back up
- B.) Information received on an interface cannot be sent back out the same interface
- C.) To prevent regular update messages from reinstating a route that has gone down
- D.) To hold the routing table from being sent to another router

The correct answer(s): C

Hold-Down Timers - Routers ignore network update information for some period.

324. Which of the following protocols are used for logical network addressing?

- A.) IP
- B.) TCP
- C.) ARP
- D.) ICMP

- E.) RARP
- F.) BootP

The correct answer(s): A

Internet Protocol - IP provides routing and a single interface to the upper layers. No upper layer protocol and now lower layer protocol have any functions relating to routing. IP receives segments from the transport layer and fragments them into packets including the hosts IP address. IP addressing is logical, not physical.

325. Which can be logged by IPX extended access lists?

- A.) source address
- B.) protocol
- C.) source socket
- D.) access list number
- E.) destination socket
- F.) destination address

The correct answer(s): A B C D E F

All of the above can be logged by IPX extended access lists.

326. Put the following steps of encapsulation into the correct order:

- 1) The data is broken into segments to be organized
 - 2) Frames are converted to 1s and 0s to be put on the wire
 - 3) Packets are converted into frames
 - 4) Information that users enter is converted into data
 - 5) The segments are changed to packets to be routed
- A.) 4, 1, 3, 2, 5
 - B.) 4, 5, 1, 3, 2
 - C.) 2, 3, 1, 4, 5
 - D.) 4, 1, 5, 3, 2

The correct answer(s): D

Follow the steps through the Layers of the OSI model to get the answer.

Watch the key words in each line to help you determine the steps.

Remember the following: Data, Segments, Packets, Frames, Bits (from the top down).

327. Which port numbers are used by TCP and UDP to set up sessions with other hosts?

- A.) 1024 and above
- B.) 6 and 17 respectively
- C.) 1-25
- D.) 6-17

The correct answer(s): A

TCP and UDP use random port number above 1023 for establishing communications.

328. Repeaters work at which layer of the OSI model?

- A.) Network
- B.) Session
- C.) Transport
- D.) Physical

The correct answer(s): D

Repeaters work at the Physical layer of the OSI model by regenerating the signal to extend the distance it can travel.

329. What protocols can you use while testing Trace?

- A.) DECnet
- B.) CLNS
- C.) IP
- D.) Old Vines
- E.) Vines
- F.) Chaos

The correct answer(s): B C D E

Type Trace ? At the router command prompt to see a list of available supported protocols for tracing routes to IP addresses or Name addresses.

330. What utility can you use to see the path a packet takes through an internetwork?

- A.) Route
- B.) SNMP
- C.) Trace
- D.) Ping

The correct answer(s): C

Trace - Uses Time-To-Live (TTL) values to generate messages from each router used along the path. This is very powerful in its ability to locate failures in the path from the source to the destination.

331. What is true about frame-relay DLCI?

- A.) DLCI represents a single physical circuit
- B.) DLCI is optional in all frame-relay networks
- C.) DLCI identifies a logical connection between DTE devices

D.) DLCI is used to tag the beginning of a frame with VLAN information

The correct answer(s): C

Data Link Connection Identifier (DLCI). A frame-relay service provider typically assigns DLCI values that are used by frame-relay to distinguish between different virtual circuits on the network. For the IP devices at each end of a virtual circuit to communicate, their IP addresses are mapped to DLCIs. Every DLCI value can have a global or local meaning.

332. Which frame has a Type field to identify the upper-layer protocol?

A.) 802.3

B.) 802.2

C.) 802.5

D.) Ethernet_II

The correct answer(s): D

Ethernet_II has a Type field to identify the upper-layer protocol. This is best seen by capturing packets with a sniffer and examining the packet.

333. Which protocol will let neighbor routers know if your internetwork experienced congestion on a serial port?

A.) BootP

B.) IP

C.) ICMP

D.) ARP

E.) FTP

F.) RARP

The correct answer(s): C

Internet Control Message Protocol - ICMP is a management protocol and messaging service provider for IP. Its messages are carried as IP datagrams.

ICMP is used in the following events:

Destination Unreachable - If a router cannot send an IP packet any further, it uses an ICMP echo to send a message back to the sender notifying it that the remote node is unreachable.

Buffer Full - If a routers memory buffer is full ICMP will send out a message to the originator.

Hops - Each IP datagram is assigned a path. This consists of hops. If it goes through the maximum number of hops, the packet is discarded and the

discarding router sends an ICMP echo to the host.

Ping - Ping use ICMP echo message to check connectivity.

334. What do you use the Aux port for?

- A.) Console
- B.) Terminal editing
- C.) Modem
- D.) Backup logging

The correct answer(s): C

The auxiliary port is used to connect a modem for dial backups.

335. The CSMA/CD Ethernet IEEE committee is defined as which of the following?

- A.) 802.2
- B.) 802.3
- C.) 802.4
- D.) 802.5

The correct answer(s): B

The IEEE standard for Carrier Sense Multiple Acces / Collision Detection is 802.3. Also know as Ethernet.

336. How many Frame-relay encapsulation types are available with Cisco routers?

- A.) Four
- B.) Two
- C.) Five
- D.) Three

The correct answer(s): B

The two types of Frame relay encapsulation are Cisco and IETF.

337. What is the maximum hop count for Link-State protocols?

- A.) 15
- B.) there is no hop count limit
- C.) 256
- D.) 16

The correct answer(s): B

Link-state-based routing algorithms – also known as shortest path first (SPF) algorithms, maintain a complex database of topology information. Whereas the distance vector algorithm has non-specific information about distant networks and no knowledge of distant routers, a link-state routing

algorithm maintains full knowledge of distant routers and how they interconnect.

338. What information can you get from CDP info: (choose all that apply)

- A.) Hardware platform
- B.) One address per protocol
- C.) Software platform
- D.) Hostname
- E.) The same info as show version
- F.) Incoming/outgoing port

The correct answer(s): A B D E F

All of the above except the software platform can be seen with the CDP information.

How does the cut-through switching technique work?

- A.) By using broadcast address as source addresses
- B.) The switch waits only for the header to be received before it checks the destination address and starts forwarding the packets
- C.) The LAN switch copies the entire frame into its onboard buffers and then looks up the destination address in its forwarding, or switching, table and determines the outgoing interface
- D.) By using a Class I repeater in a collision domain

The correct answer(s): B

Cut-Through switching copies only the destination address which is the first 6 bytes after the frame preamble into its buffer. The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then sent to the interface. A cut-through switch provides reduced latency because it begins to forward the frame as soon as it read the destination address and determines the outgoing interface.

339. What is the protocol number for TCP?

- A.) 80
- B.) 21
- C.) 11
- D.) 6

The correct answer(s): D

Transmission Control Protocol - TCP is a connection oriented transport layer protocol with built in reliability. It takes a large block of data and breaks it down into segments. It numbers and sequences each segment so

the destination's TCP protocol can re-assemble it back into the original order. TCP uses acknowledgements via sliding windows. It has a large overhead due to built in error checking. The protocol use protocol # 6.

340. Which of the following are Presentation Layer standards?

- A.) JPEG and PICT
- B.) MPEG and MIDI
- C.) ASCII and EBCDIC
- D.) NFS and SQL

The correct answer(s): A B C

For example, the Presentation layer would be responsible for converting from EDCDIC to ASCII. Data compression, decompression, encryption, and decryption are presentation layer. Presentation layer standards include MPEG, MIDI, PICT, TIFF, JPEG, ASCII, and EBCDIC.

341. What is the administrative distance for RIP?

- A.) 100
- B.) 90
- C.) 120
- D.) 110

The correct answer(s): C

Routing Information Protocol (RIP) is a distance vector routing protocol that uses hop count as its metric. The maximum hop count is 15, 16 hops is considered unreachable. RIP updates are broadcast every 30 seconds by default. RIP has an administrative distance of 120.

342. IP standard access lists use which of the following as a basis for permitting or denying packets?

- A.) destination address
- B.) port
- C.) protocol
- D.) source address

The correct answer(s): D

For Standard access lists, only the source address is used as a basis for permitting or denying packets.

343. If a frame is received at a switch and only the destination hardware address is read before the frame is forwarded, what type of switching method is this?

- A.) Store-and-drop
- B.) Latency
- C.) Store-and-forward
- D.) Cut-through

The correct answer(s): D

Cut-Through switching copies only the destination address which is the first 6 bytes after the frame preamble into its buffer. The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then sent to the interface. A cut-through switch provides reduced latency because it begins to forward the frame as soon as it read the destination address and determines the outgoing interface.

344. What is the purpose and default value of the CDP timer command?

- A.) 90 seconds; interval before an entry expires
- B.) 60 seconds; interval between updates
- C.) 60 seconds; interval before an entry expires
- D.) 90 seconds; interval between updates

The correct answer(s): B

The CDP timer controls when the update of CDP information should be sent to the neighbor router.

345. Choose the following that are benefits to segmenting with router:

- A.) Flow Control
- B.) Manageability
- C.) Multiple Active Paths
- D.) Explicit packet lifetime control

The correct answer(s): A B C D

All of the above are benefits of segmenting with a router.

346. When discussing static routes, what is the gateway parameter used for?

- A.) Determining the dynamic route
- B.) Defining the subnet
- C.) Defining the Administrative Distance
- D.) Determining the next hop

The correct answer(s): D

The gateway parameter determines the path to the next router.

347. Which layer hides details of network dependent information from the higher layers by providing transparent data transfer?

- A.) Transport
- B.) Physical
- C.) Data Link
- D.) Session
- E.) Application
- F.) Network

The correct answer(s): A

The Transport layer does the following: Responsible for end-to-end integrity of data transmission. Handles multiplexing upper-layer application, session establishment and tear down of virtual circuits. Hides details of network dependent info from the higher layers by providing transparent data transfer. The 'windows' works at this level to control how much information is transferred before an acknowledgement is required.

348. What information is provided by the local management interface (LMI)?

- A.) LMI encapsulation type
- B.) The current DLCI values
- C.) The status of virtual circuits
- D.) The global or local significance of the DLCI values

The correct answer(s): B C D

LMI is a standard related to Frame Relay. It provides information related to PVCs.

349. Which layer defines the physical topology?

- A.) Application
- B.) Transport
- C.) Network
- D.) Data Link
- E.) Physical
- F.) Session

The correct answer(s): E

The Physical layer deals with the actual physical medium and the method of transporting 1s and 0s.

350. What key do you use to view the last command?

- A.) Left Arrow
- B.) Space Bar

- C.) Up Arrow
- D.) Right Arrow

The correct answer(s): C

CTRL+P as well as the Up Arrow keyboard commands will show the last command.

351. Which of the follow do not belong to the customer?

- A.) CO
- B.) DCE
- C.) Router
- D.) CPE
- E.) Demarc
- F.) DTE

The correct answer(s): A E

Central Office (CO) - A switching facility that provides the nearest point of presence for a provider's WAN service.

Demarcation (Demarc) - The point at which the CPE ends and the local loop portion of the service begins. Usually the telecommunications closet at the subscriber's location.

CPE, DTE, DCE, and the router are all typically owned by the customer. DTE devices are usually routers, DCE devices are CSUs/DSUs, or WAN interfaces that have a built in CSU/DSU in the router. CPE stands for Customer Premise Equipment.

352. What is the IEEE specification for Spanning Tree Protocol?

- A.) 802.9
- B.) 803.ud
- C.) 803
- D.) 802.1d

The correct answer(s): D

IEEE 802.1d Spanning Tree Protocol (STP) was developed to prevent routing loops in a network. If a router, switch, or hub has more than one path to the same destination, a routing problem could occur. To prevent this, the Spanning Tree Protocol is executed between the devices to detect and logically block redundant paths from the network. The main function of the Spanning Tree Protocol is to allow redundant network paths without suffering the effects of loops in the network.

The Spanning Tree Algorithm (STA) implemented by STP prevents loops by

calculating a stable Spanning Tree network topology. When creating fault tolerant internetworks, a loop-free path must exist between all Ethernet nodes in the network. Spanning Tree frames called Bridge Protocol Data Units (BPDUs) are sent and received by all switches in the network at regular intervals.

353. CO is an acronym for which of the following?

- A.) Central Office
- B.) Capital Office
- C.) Central Operator
- D.) Company Office

The correct answer(s): A

Central Office (CO) - A switching facility that provides the nearest point of presence for a provider's WAN service.

354. What is convergence time?

- A.) The update time
- B.) The time it takes to reload a router
- C.) The time it takes for a packet to reach its destination
- D.) The time it takes for all routers update their tables after a change takes place

The correct answer(s): D

Convergence is slower for Distant Vector routing and is faster for Link State routing.

355. Which of the following are Session Layer standards?

- A.) ASCII and EBCDIC
- B.) MPEG and MIDI
- C.) NFS and SQL
- D.) JPEG and PICT

The correct answer(s): C

Session layer protocols include NFS, SQL, RPC, Appletalk Session Protocol (ASP), XWindows, and NetBEUI.

356. What is the IP extended access list range?

- A.) 1000-1099
- B.) 100-199
- C.) 1-99
- D.) 101-200

The correct answer(s): B

100-199 is the range for Extended IP access lists.

357. Define Poison Reverse?

- A.) To prevent regular update messages from reinstating a route that has gone down
- B.) Packets sent out that are not destined for a network go to the default network
- C.) Information received on an interface cannot be sent back out the same interface
- D.) When a network goes down, the router enters in its table the number 16 to signify destination unreachable

The correct answer(s): D

By entering a 16 as the hop count, the other routers know that the destination is unreachable.

358. What is the default interval for SAP updates?

- A.) 60 seconds
- B.) 15 seconds
- C.) 30 seconds
- D.) 120 seconds

The correct answer(s): A

By default, the SAP (Service Access Protocol) sends out updates every 60 seconds. This value can be changed to alter the update interval. To decrease WAN traffic, the update interval could be increased to every 5 minutes.

359. What does a router do with a packet that it does not have a destination network for?

- A.) Sends it to the Serial port
- B.) Drops the packet
- C.) Sends it back out the same interface it received it in
- D.) Forwards the packet to the next hop

The correct answer(s): B

When a router does not have a destination for a packet, it drops the packet into the bit bucket.

360. What type of frame does CDP use to gather information about its neighbors?

- A.) TCP/IP
- B.) Novell-ether

- C.) Subnetwork Access Protocol (SNAP)
- D.) Ethernet_II

The correct answer(s): C

Cisco Discovery Protocol is a proprietary protocol to allow you to access configuration information on other routers and switches with a single command. It uses SNAP at the Data-Link Layer. By default CDP sends out a broadcast every 60 seconds and it holds this information for 180 seconds. CDP is enabled by default.

361. Which protocol is used for booting diskless workstations?

- A.) IP
- B.) ARP
- C.) RARP
- D.) TCP
- E.) SNMP

The correct answer(s): C

Reverse Address Resolution Protocol - RARP is ARP's counterpart, but it resolves IP addresses to MAC addresses typically on diskless workstations.

362. Which layer is responsible for synchronizing sending and receiving applications?

- A.) Presentation
- B.) Session
- C.) Transport
- D.) Application
- E.) Network

The correct answer(s): D

The Application layer performs the following: Synchronizing sending and receiving applications. Program-to program communication. Identify and establish the availability of the intended communication partner, and determine if sufficient resources exist for the communication. Popular application protocols include WWW, SMTP, EDI, FTP, Telnet, and SNMP

363. Which protocol gets a hardware address from a known IP address?

- A.) RARP
- B.) TCP
- C.) IP
- D.) BootP
- E.) ARP
- F.) ICMP

The correct answer(s): E

Address Resolution Protocol - ARP is responsible for resolving MAC addresses to IP address. It stores these in its arp cache for later use. It does this to inform a lower layer of the destination's MAC address.

364. Which layer defines bit synchronization?

- A.) Application
- B.) Network
- C.) Transport
- D.) Physical
- E.) Session
- F.) Session

The correct answer(s): D

The Physical layer deals with synchronizing the 1s and 0s on the wire.

365. Which is true regarding half duplex Ethernet operation?

- A.) Half Duplex ethernet technology provides a transmit circuit connection wired directly to the receiver circuit at the other end
- B.) Half duplex transmission between stations is achieved by using point to multipoint Ethernet and Fast Ethernet
- C.) With Half Duplex transmission logically circuits feed into a single cable creating a situation similar to a one way bridge
- D.) Half Duplex transmission between stations is achieved using Point to Point Ethernet & Fast Ethernet

The correct answer(s): C

Half-Duplex - Capability for data transmission in only one direction at a time between sending station and a receiving station.

366. When would you use ISDN?

- A.) To connect LANs using POTS
- B.) To support applications requiring voice, data, and video
- C.) When you need a consistent and very high rate of data speed
- D.) To connect to IBM mainframes

The correct answer(s): B

ISDN supports high speed voice, data and video and is a good choice for many small businesses.

367. Which protocol will send a message to routers if a network outage or

congestion occurs?

- A.) ARP
- B.) TCP
- C.) IP
- D.) ICMP

The correct answer(s): D

Internet Control Message Protocol - ICMP is a management protocol and messaging service provider for IP. Its messages are carried as IP datagrams.

ICMP is used in the following events:

Destination Unreachable - If a router cannot send an IP packet any further, it uses an ICMP echo to send a message back to the sender notifying it that the remote node is unreachable.

Buffer Full - If a routers memory buffer is full ICMP will send out a message to the originator.

Hops - Each IP datagram is assigned a path. This consists of hops. If it goes through the maximum number of hops, the packet is discarded and the discarding router sends an ICMP echo to the host.

Ping - Ping use ICMP echo message to check connectivity.

368. What are the 2 functions of the Data Link Mac layer?

- A.) Handles access to shared media
- B.) Manages protocol access to the physical network medium
- C.) Provides SAPs for higher level protocols
- D.) Allows multiple devices to uniquely identify one another on the data link layer

The correct answer(s): B D

These are the two primary functions of the MAC layer.

369. Which layer is responsible for coordinating communication between systems?

- A.) Application
- B.) Network
- C.) Session
- D.) Transport
- E.) Physical
- F.) Data Link

The correct answer(s): C

The Session layer performs the following: Responsible for establishing and maintaining communications channels. In practice, this layer is often combined with the Transport Layer. Dialog control between devices or nodes. Organizes the communication through simplex, half and full duplex modes. Deals with connection establishment, data transfer, and connection release.

370. What is the default CDP broadcast update rate for Cisco routers?

- A.) 120 seconds
- B.) 60 seconds
- C.) 30 seconds
- D.) 90 seconds

The correct answer(s): B

Cisco Discovery Protocol is a proprietary protocol to allow you to access configuration information on other routers and switches with a single command. It uses SNAP at the Data-Link Layer. By default CDP sends out a broadcast every 60 seconds and it holds this information for 180 seconds. CDP is enabled by default.

371. You need to come up with a TCP/IP addressing scheme for your company. How many network IDs must you allow for when you define the subnet mask for the network?

- A.) One for each WAN link
- B.) One for each router interface
- C.) One for each NIC installed in each client
- D.) One for each subnet with hosts
- E.) One for each host ID

The correct answer(s): A D

When determining Network Ids, you need to take into account each Subnet and Each WAN link you will have. Add these numbers up and you will find the answer to which Network ID you can use.

372. What is the protocol number for UDP?

- A.) 6
- B.) 17
- C.) 25
- D.) 21

The correct answer(s): B

User Datagram Protocol - UDP is a connectionless oriented transport protocol for use when the upper layers provide error-recovery and reliability. UDP does not sequence data or re-assemble it into any order after transmission. This protocol uses Port 17.

373. What is the default LMI type?

- A.) Cisco
- B.) ANSI
- C.) IETF
- D.) Q933a

The correct answer(s): A

Local Management Interface (LMI) was developed in 1990. LMI messages provide information about the current DLCI values, the global or local significance of the DLCI value, and the status of virtual circuits.

There are three types of LMI standards:

ANSI - Annex D defined by ANSI standard T1.617

ITU-T (Q.933A) - Annex A defined by Q933A

Cisco (default) - LMI defined by the gang of four

374. You have two Cisco routers setup back-to-back in a lab using DTE/DCE cables. To which router would you add the clockrate command?

- A.) The serial port on the DCE router
- B.) The Ethernet port on the DTE router
- C.) The Ethernet port on the DCE router
- D.) The serial port on the DTE router

The correct answer(s): A

In order to connect routers back-to-back, a clock rate must be set on the router with the DCE cable. This will provide the clocking usually performed by a DSU/CSU. It is recommended that a bandwidth statement be added to the interface because some routing protocols, such as IGRP, use this to make routing decisions.

375. How does a switch use store and forward?

- A.) By using a Class I repeater in a collision domain
- B.) The LAN switch copies the entire frame into its onboard buffers and then looks up the destination address in its forwarding, or switching, table and determines the outgoing interface
- C.) By using broadcast addresses as source addresses
- D.) The switch waits only for the header to be received before it checks

the destination address and starts forwarding the packets

The correct answer(s): B

Store-and-Forward switching copies the entire frame into its buffer and computes the CRC. If a CRC error is detected, the frame is discarded, or if the frame is a runt (less than 64 bytes including the CRC) or a giant (more than 1518 bytes including the CRC). The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then forwarded to the outgoing interface. Cisco Catalyst 5000 switches use the Store-and-Forward method. The problem with Store-and-Forward switching is latency is increased. Latency also varies with the size of the frame. The larger the frame, the more latency associated. This of course is due to the fact that the entire frame is copied into its buffer before being forwarded.

376. Which of the following are valid WAN terms?

- A.) DTE
- B.) DCE
- C.) Demarc
- D.) CPE

The correct answer(s): A B C D

All of the above are valid WAN terms.

377. Which two describe frame tagging?

- A.) Examines particular info about each frame
- B.) A unique ID placed in the header of each frame as it traverses the switch fabric
- C.) A user- assigned ID defined to each frame
- D.) The building of filter tables

The correct answer(s): B C

Frame identification (frame tagging) uniquely assigns a user-defined ID to each frame. This technique was chosen by the IEEE standards group because of its scalability.

In this approach, a unique user-defined identifier is placed in the header of each frame as it's forwarded throughout the switch fabric. The identifier is understood and examined by each switch prior to any broadcasts or transmissions to switch ports of other switches, router, or end-station devices. When the frame exits the switch fabric, the switch removes the identifier before the frame is transmitted to the target end-station.

The following points summarize frame tagging:
Used by Catalyst 3000 and 5000 series switches
Specifically developed for multi-VLAN, inter-switch communication
Places a unique identifier in the header of each frame
Functions at layer 2
Requires little processing or administrative overhead

378. An ISDN BRI circuit can be described as which of the following?

- A.) 3B channels
- B.) 2-64Kbps B channels and 1-16Kbps D channel
- C.) none of the above
- D.) 2-64Kbps B channels and 1-16Kbps C channel

The correct answer(s): B

There are two types of ISDN Channels :

BRI (Basic Rate Interface) - is 2 64Kbps B channels for data and one 16Kbps D channel for link management.

PRI (Primary Rate Interface) - is 23Kbps B channels and 1 64Kbps D channel.

379. The two sublayers of the IEEE Data Link Layer are which of the following?

- A.) Link and Logical Control
- B.) Data Link and LLC
- C.) Logical Link Control and Media Access Control
- D.) Data Link and MAC

The correct answer(s): C

Logical Link Control Sublayer - Acts as a managing buffer between the upper layers and the lower layers. Uses Source Service Access Points (SSAPs) and Destination Service Access Points (DSAPs) to help the lower layers talk to the Network Layer.

Media Access Control (MAC) -The MAC sublayer manages protocol access to the physical network medium. The IEEE MAC specification defines MAC addresses, which allow multiple devices to uniquely identify one another at the data link layer.

380. The -- terminal no editing -- command will perform what function?

- A.) Edit the contents of NVRAM
- B.) Allows access to the terminal port
- C.) Stops the advanced editing feature
- D.) Enable password functions

The correct answer(s): C

The command to disable advanced editing feature is: Router(config)#

terminal no editing

381. Which two of the following are valid ways to have multiple encapsulation types on a single interface?

- A.) This is not possible
- B.) subinterfaces
- C.) additional physical interfaces
- D.) secondary addresses

The correct answer(s): B D

Cisco routers do not allow multiple encapsulation types on a single interface. Therefore, it is necessary to create either a Secondary Network, or a Subinterface and assign a new encapsulation type.

382. Which 3 statements describe default encapsulation and LMI type configuration?

- A.) There are only four encapsulations and 3 LMI type options
- B.) The LMI type config term options
- C.) In release 11.3 the LMI type is autosensed
- D.) The default LMI is Cisco
- E.) IETF encap must be configured unless the connecting routers are both cisco

The correct answer(s): C D E

The above 3 statements best describe default encapsulation and LMI type configuration for Cisco routers.

383. Which can be true regarding VLANs?

- A.) They are created by location
- B.) They are created by function
- C.) They are created by department
- D.) They are created by group

The correct answer(s): A B C D

A Virtual LAN (VLAN) is a switched network that is logically segmented by communities of interest without regard to the physical location of the users. Each port on the switch can belong to a VLAN. Ports in a VLAN share broadcasts. A VLAN looks like, and is treated like, it's own subnet.

The benefits of VLANs are as follows:

Simplify moves, adds, and changes

Reduce administrative costs

Have better control of broadcasts

Tighten network security
Microsegment with scalability
Distribute traffic load
Relocate server into secured locations

384. What is true when using DDR?

- A.) HDLC is the preferred encapsulation
- B.) You must use static routing
- C.) You should use dynamic routing
- D.) You should use ISDN

The correct answer(s): B

When using Dial Demand Routing (DDR), static routes must be specified in order to route packets.

385. If you are running Token Ring with Novell IPX routing, which encapsulation should you use?

- A.) SAP
- B.) SNAP
- C.) 802.5
- D.) 802.2

The correct answer(s): B

Token Ring with Novell IPX routing uses the SNAP protocol, not 802.5.

386. What are the 3 ways routers learn paths to destination networks?

- A.) Dynamic
- B.) Static
- C.) Routing tables
- D.) Default

The correct answer(s): A B D

There are three methods in which routers can learn paths to destination networks, they are:

- 1) Static - The administrator manually enters the routes.
- 2) Dynamic - A routing protocol is used.
- 3) Default - A gateway of last resort is set.

387. Bridges work at what layer of the OSI model?

- A.) Data Link
- B.) Network
- C.) Physical

D.) Application

The correct answer(s): A

Bridges work at Layer 2 (Data Link) because they examine the MAC address of the packet which they base decisions upon.

388. What is the default switching method for the Cisco 5000 series?

- A.) Cut-through
- B.) Store-and-splice
- C.) Latency
- D.) Store-and-forward

The correct answer(s): D

Store-and-Forward switching copies the entire frame into its buffer and computes the CRC. If a CRC error is detected, the frame is discarded, or if the frame is a runt (less than 64 bytes including the CRC) or a giant (more than 1518 bytes including the CRC). The LAN switch then looks up the destination address in its switching table and determines the outgoing interface. The frame is then forwarded to the outgoing interface. Cisco Catalyst 5000 switches uses the Store-and-Forward method. The problem with Store-and-Forward switching is latency is increased. Latency also varies with the size of the frame. The larger the frame, the more latency associated. This of course is due to the fact that the entire frame is copied into its buffer before being forwarded.

389. The benefits to segmenting with Bridges are which of the following?

- A.) Scalability
- B.) Datagram filtering
- C.) Manageability
- D.) Reliability

The correct answer(s): A C D

Manageability, reliability and scalability are all benefits to segmenting with bridges.

390. What is the administrative distance for IGRP?

- A.) 90
- B.) 120
- C.) 110
- D.) 100

The correct answer(s): D

IGRP is a distance vector routing protocol designed by Cisco. The maximum hop count is 255, and it uses a combination of variables to determine a composite metric. IGRP has an administrative distance of 100.

391. On an ISDN BRI interface, the control channel is the 'D' channel. What is the rate of this channel?

- A.) 64 Kbps
- B.) 1.544 Mbps
- C.) 128 Kbps
- D.) 2.048 Mbps
- E.) 16 Kbps

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 11, page 413

16K for the D channel (control)

64K for the two B channels (data)

392. MIDI and MPEG are examples of what layer of the OSI seven layer model?

- A.) Session
- B.) Network
- C.) Datalink
- D.) Transport
- E.) Application
- F.) Presentation

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 1, page 17-18

The OSI Presentation layer includes EBCDIC, ASCII, PICT, GIF, MIDI, and MPEG.

Encryption can also occur at this layer.

393. Which ISDN specification series deals with Concepts and Terminology?

- A.) World Series
- B.) I- Series
- C.) Q-Series
- D.) 911-Series
- E.) J-Series
- F.) F-Series

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 11, page 413

The 2 most important ISDN specifications are Q & I:

Q - Call setup and teardown.
I - Concepts and terminology.

394. Which of the following is an example of the Physical Layer?

- A.) SQL
- B.) IP
- C.) LLC
- D.) DDP
- E.) Ethernet

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 1, page 34

FDDI, Token Ring and Ethernet are all physical layer framing standards.

395. In regards to the ISDN BRI standard, which channel is used for control?

- A.) B
- B.) D
- C.) E
- D.) I
- E.) Q

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 11, page 413

B is Bearer for Data (2 channels at 64kb each).

D is for Control (16kb).

396. Which protocol resolves an IP address to a MAC address?

- A.) DHCP
- B.) RARP
- C.) ARP
- D.) NBP
- E.) DNS

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 3, page 93

The Address Resolution Protocol (ARP) sends out a broadcast to determine the MAC address from the IP address.

397. Which of the following is an example of the Network Layer?

- A.) TCP
- B.) IP
- C.) SQL
- D.) Token Ring
- E.) LLC

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 1, page 25-29

Most protocol suites have different OSI layer protocols within them. At layer 3,

IP is for TCP/IP. TCP is layer 4.

IPX is for IPX/SPX. SPX is layer 4.

DDP is for Appletalk

398. The Internet Control Message Protocol occurs at what layer of the seven layer model?

A.) Physical

B.) Transport

C.) Session

D.) Datalink

E.) Presentation

F.) Network

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 3, page 94-95

ICMP is used for error handling and testing at layer 3. Ping and traceroute are examples of ICMP.

399. Which of the following are examples of the Session Layer?

A.) IP

B.) Netbios Names

C.) NFS

D.) Token Ring

E.) SQL

F.) TCP

The correct answer(s): B C E

Sybex CCNA Study Guide: Chapter 1, page 18-20

Session layer examples include Netbios Names, SQL, NFS, X Windows, and RPC.

400. What is the regional telco office called, where the customer's local loop terminates?

A.) Demarc

B.) DTE

C.) DCE

D.) CO

E.) CPE

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 11, page 389

The Central Office (CO) is the Telephone Company (Telco) location nearest you.

401. What is the default LMI type for Cisco Routers that are using Frame-Relay?

- A.) Gandalf5
- B.) Q933A
- C.) Cisco
- D.) IETF
- E.) ARPA
- F.) SAP

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 11, page 404

Local Management Interface (LMI) types are Cisco, ANSI, and Q933A.

402. Most routing protocols recognize that it is never useful to send information about a route back out the direction from which the original packet came. This is an example of which routing technology?

- A.) Split Horizon
- B.) LMI
- C.) Triggered Updates
- D.) Poison Reverse
- E.) SYN, ACK
- F.) DLCI

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 7, page 218-219

The golden rule of Split Horizon: Do not send any update packet back out the same interface that it was received or learned from. Poison Reverse is typically used on larger networks, where a more aggressive routing loop solution is required.

403. Which layer of the 7 layer model is responsible for representing the application information between 2 different OS's? For example, converting ASCII to EBCDIC.

- A.) Transport
- B.) Application
- C.) Physical
- D.) Session
- E.) Presentation

F.) Network

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 1, page 17

The OSI Presentation layer formats the data, which includes encryption services.

404. Which type of switching reads in the entire frame before forwarding it?

- A.) Tabling
- B.) Store-and-Forward
- C.) Inverse ARP
- D.) Fast Forward
- E.) Cut-Through
- F.) Routing

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 2, page 61-62

Store-and-Forward is slower, but it checks the frame for errors before forwarding. This can actually help to improve overall network performance on noisy lines.

405. Which OSI Reference Layer is concerned with path determination?

- A.) Datalink
- B.) Physical
- C.) Network
- D.) Transport
- E.) Session

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 1, page 20-25

The Network layer is where routing occurs.

406. Which of the following are examples of the Datalink Layer?

- A.) LLC
- B.) SQL
- C.) TCP
- D.) Token Ring
- E.) IP

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 1, page 29-34

MAC and LLC are the sublayers of the Datalink layer.

407. What is the standard ISDN term for a non-native analog telephone?

- A.) TE1
- B.) TA
- C.) LE
- D.) TE2
- E.) ET

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 11, page 412-413

Terminal Equipment 2 (TE2) does not support native digital ISDN. The analog device will require an external analog to digital converter.

408. Which Distance Vector characteristic can help to speed up convergence?

- A.) Triggered Updates.
- B.) Split Horizon.
- C.) Poison Reverse.
- D.) Hold Down timers.
- E.) Inverse ARP.

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 7, page 218-219

Instead of waiting on a pre-set periodic interval (before sending the routing table), DV routing protocols can send triggered updates to immediately notify the neighbor routers. Hold down timers, Poison Reverse, and Split Horizon are features that are used to avoid routing loops.

409. Which type of switching is considered to be 'wire speed?'

- A.) Cut-Through
- B.) Multiplexed
- C.) Inverted
- D.) Layer 4
- E.) Store and Forward
- F.) Layer 3

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 2, page 61-62

Cut-Through is the fastest mode of switching. Store and Forward reads in the entire frame, confirms the frame is valid, and then forwards the frame onto the wire. Cut-Through only checks the destination header in the frame and immediately forwards the frame onto the wire, without checking the frame to be valid. Layer-3 switching is actually routing.

410. The Datalink layer works with which of the following:

- A.) Packets
- B.) Bits
- C.) Globules
- D.) Frames
- E.) Segments

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 1, page 29-33

Physical - bits

Datalink - frames

Network - packets

411. What is a characteristic of Store and Forward switches?

- A.) They forward the frame before it is completely read.
- B.) They work at wire speed.
- C.) They are the same as Cut-Through switching.
- D.) They read the entire frame and check CRC before forwarding.
- E.) They decrease latency.

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 2, page 61-62

Store and Forward switch will not forward fragments.

The longer the frame, the longer the delay (latency) before the switch can forward.

412. Station A is transmitting data to station B, and expects an acknowledgment after every 400 bytes. After transmitting data for a while, the two stations determine the line is reliable and change to expecting and acknowledgement every 600 bytes.

This is an example of (pick the best answer only):

- A.) BECN
- B.) Sliding Windows
- C.) Poison Reverse
- D.) Countdown timers
- E.) Split Horizon
- F.) Count to infinity

The correct answer(s): B

A TCP/IP 'window' is the amount of data (number of bytes) that the sending station will transmit before expecting an acknowledgement back.

If the stations can change that window size on the fly, that is called a sliding window. This is done to optimize performance.

413. Which device listed below provides clocking for the line?

- A.) DCE
- B.) CPE
- C.) CO
- D.) DTE
- E.) Demarc

The correct answer(s): A

The Data Circuit-terminating Equipment (DCE) is responsible for providing the clocking on the wire.

HINT: When You see the 'C' in 'DCE', think 'Clocking' t.

414. Which OSI Reference Layer controls application to application communication?

- A.) Datalink
- B.) Network
- C.) Transport
- D.) Session
- E.) Physical

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 1, page 16

The Session layer controls a conversation between applications.

The Transport layer controls communications between hosts.

415. The Datalink Layer is broken down into 2 layers, LLC and MAC. The LLC establishes media independence and what else?

- A.) Provides Windowing.
- B.) Provides flow control.
- C.) Provides SAP's (Service Access Points).
- D.) The Datalink layer does not have sublayers.
- E.) Provides SAP's (Service Advertising Protocol).
- F.) RIP Updates.

The correct answer(s): B C

Sybex CCNA Study Guide: Chapter 1, page 30-31

OSI layer-2 SAP allows the upper layers to encapsulate multiple layer 3 protocols.

IPX SAP is a protocol used to advertise NetWare services every 60 seconds.

416. When a Distance Vector routing protocol detects that a connected network has gone down, it sends out a special routing update packet, telling all

directly connected routers that the distance to the dead network is infinity. This is an example of which routing technology?

- A.) ICMP.
- B.) Only Link State routing protocols have this intelligence.
- C.) Triggered updates.
- D.) Garrison-4.
- E.) Split Horizon.
- F.) Poison Reverse.

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 7, page 218-219

Instead of just removing the route from the routing update, Poison Reverse sets the distance to 'infinity' (for IP RIP this is a hop count of 16).

This immediately makes the route invalid for all neighboring routers.

417. Which of the following would be displayed by the command 'SHOW CDP NEIGHBOR DETAIL'?

- A.) The incoming/outgoing port.
- B.) The hardware platform.
- C.) One address per protocol.
- D.) Amount of Flash Memory Available
- E.) The routers hostname.
- F.) The subnet mask, if IP is configured.

The correct answer(s): A B C E

Sybex CCNA Study Guide: Chapter 8, page 294

CDP shows a lot of the same info that 'show version' does locally, but FLASH memory is not part of it. The 'detail' keyword is optional, but even when used, IP subnet mask information is not displayed by CDP for IP interfaces.

418. Which of the following are characteristics of UDP?

- A.) UDP is connection oriented.
- B.) UDP is used with TFTP.
- C.) UDP is unreliable.
- D.) UDP is connectionless.
- E.) UDP is at the transport layer.
- F.) UDP uses no acknowledgements.

The correct answer(s): B C D E F

Sybex CCNA Study Guide: Chapter 3, page 84-90

UDP sends packets 'blind' down the network, and relies on upper-layer protocols to form connections and detect errors. TCP is a connection-oriented protocol that can provide reliable transport.

419. What is a characteristic of Store and Forward switches?
- A.) They work at wire speed.
 - B.) They are the same as Cut-Through switching in 'prune' mode.
 - C.) They forward based on transport layer info.
 - D.) They forward the frame before it is completely read.
 - E.) They increase latency.

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 2, page 61-62

Store and forward will not forward fragments. The longer the packet, the longer the delay (latency) in the switch. There is no such thing as 'prune' mode.

420. The Internet Protocol (IP) occurs at what layer of the seven layer model?
- A.) Physical
 - B.) Presentation
 - C.) Network
 - D.) Datalink
 - E.) Session
 - F.) Transport

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 3, page 91-92

IP is a routed protocol that occurs at layer 3. Other layer 3 protocols include IPX, APPLE TALK, and DECNET.

421. In regards to TCP/IP, which class of address allows for the fewest valid Internet hosts?
- A.) D
 - B.) E
 - C.) Classes are not used in TCP/IP.
 - D.) B
 - E.) C
 - F.) A

The correct answer(s): E

Class A = 16.7 million hosts

Class B = 65,534 hosts

Class C = 254 hosts

422. For IPX, what is the DEFAULT Cisco Encapsulation on an Ethernet interface?

- A.) novell-ether
- B.) gns
- C.) snap
- D.) arpa
- E.) sap
- F.) dix

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 9, page 334

At the time when Cisco first supported IPX, Novell-Ether (Novell proprietary 802.3 'raw') was the default frame type for NetWare 2.x and 3.x file servers. Now, Novell has changed their default frame type to 802.2 (which is really IEEE 802.3 Ethernet, with LLC 802.2 headers).

423. Novell NetWare has an Ethernet frame type called Ethernet_II. What is the matching Cisco command line keyword for this encapsulation method?

- A.) dix
- B.) sap
- C.) arpa
- D.) gns
- E.) snap
- F.) novell-ether

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 9, page 334-335

Novell 802.2 = sap (contains 802.2 LLC headers)

Novell 802.3 = novell-ether (NetWare proprietary)

Ethernet_II = arpa (the Internet standard)

snap = snap (field type set to 'AA')

424. There are 2 types of PPP authentication supported by the Cisco IOS. What are they?

- A.) PAP
- B.) PREDICTOR
- C.) MD5
- D.) CHAP
- E.) STACKER
- F.) MSCHAP

The correct answer(s): A D

Sybex CCNA Study Guide: Chapter 11, page 410

Router(config-if)#ppp authentication ?

chap Challenge Handshake Authentication Protocol (CHAP)

pap Password Authentication Protocol (PAP)

425. Which of the following are examples of the Transport Layer?

- A.) Token Ring
- B.) UDP
- C.) TCP
- D.) IP
- E.) SQL
- F.) LLC

The correct answer(s): B C

Sybex CCNA Study Guide: Chapter 1, page 20-25

TCP is connection oriented.

UDP is connectionless.

426. Which of the following describe SMTP?

- A.) Used for downloading files to the router.
- B.) Used for sending e-mail.
- C.) Uses TCP.
- D.) Uses UDP.
- E.) Uses port 25.
- F.) Used for managing IP devices.

The correct answer(s): B C E

Send / Simple (depending on literature) Mail Transport Protocol (SMTP) is used for delivering mail to other mail servers. It uses port 25, and relies on TCP.

POP 3 (Post Office Protocol versio 3) is used for retrieving mail from mail servers to clients.

427. What is the standard ISDN term for a native ISDN modem?

- A.) ET
- B.) LE
- C.) TE2
- D.) TE3
- E.) TA

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 11, page 412-413

The marketing term 'ISDN modem' was created to help sell the ISDN idea to America. There is no such thing as an analog modulator demodulator for digital ISDN. The Terminal Adapter (TA) allows you to connect a PC to a digital ISDN line directly. In the real world, ISDN is digital, modems are analog.

428. Which of the following are Transport layer protocols?

- A.) UDP
- B.) TCP
- C.) NBP
- D.) IP
- E.) SPX

The correct answer(s): A B C E

Sybex CCNA Study Guide: Chapter 3, page 84-90

TCP (Transmission Control Protocol) and UDP are used by TCP/IP.

SPX (Sequenced Packet Exchange) is used with IPX.

NBP (Name Binding Protocol) is used with Appletalk.

429. When determining whether or not to route a LAN segment, which rule of thumb do you use?

- A.) 60/40
- B.) 50/50
- C.) 80/20
- D.) 90/10
- E.) 70/30

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 2, page 55

The industry standard rule is 80/20, which means 80% local, 20% over the router.

However, according to Cisco's online documentation, the answer is 70/30.

This makes sense, considering more and more traffic is starting to go from the desktop to an ultimate destination outside the local area network, such as the Internet.

430. Which of the following are examples of the Session Layer?

- A.) TCP
- B.) LLC
- C.) SQL
- D.) NFS
- E.) Token Ring

The correct answer(s): C D

Sybex CCNA Study Guide: Chapter 1, page 18-20

Session layer examples include Netbios Names, SQL, NFS, X Windows, and RPC.

431. Which layer of the 7 layer model provides services to the Application

layer over the Session layer connection?

- A.) Transport
- B.) Application
- C.) Session
- D.) Network
- E.) Datalink
- F.) Presentation

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 1, page 18-19

The OSI Presentation layer is sandwiched between the Application and Session layers.

432. What type of switching creates variable latency through the switch?

- A.) Cut-Through
- B.) Inverted
- C.) Layer 4
- D.) Multiplexed
- E.) Store and Forward

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 2, page 61-62

DEFINITION: Latency = Delay.

Because a store and forward switch reads the whole frame before forwarding, a larger frame takes longer than a shorter frame.

433. The network portion of an address typically represents a:

- A.) Router
- B.) Ethernet MAC address.
- C.) Computer
- D.) Host
- E.) Segment

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 4, page 119-121

Every network segment is represented by a network or subnetwork address.

434. The Physical layer works with which of the following:

- A.) Segments
- B.) Globules
- C.) Packets
- D.) Bits
- E.) Frames

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 1, page 34

Physical - bits

Datalink - frames

Network - packets

435. Which of the following is an example of the Network Layer?

A.) LLC

B.) SQL

C.) Token Ring

D.) IPX

E.) SPX

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 1, page 25-29

Most protocol suites have different OSI layer protocols within them. At layer 3,

IP is for TCP/IP. TCP is layer 4.

IPX is for IPX/SPX. SPX is layer 4.

DDP is for Appletalk

436. When setting up a frame-relay network between a Cisco router and a non-Cisco router, what encapsulation type should you use?

A.) SAP

B.) CISCO

C.) IANA

D.) Apollo

E.) IETF

F.) Q933A

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 11, page 403

The Internet Engineering Task Force (IETF) encapsulation method is the standard encapsulation type for Frame Relay. Cisco routers default to the CISCO encapsulation method, because it was created before there was a standard.

437. A user device that connects to a DCE must be which of the following?

A.) DTE

B.) CPE

C.) Demarc

D.) DCE

E.) CO

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 11, page 389

DTE's are the router side, and receive clocking.

DCE's are the DSU/CSU side, and provide clocking.

It may or may not be Customer Premises equipment.

438. What does the parameter -- LOG -- do on an IPX access list?

A.) The log keyword is not a valid option.

B.) Read the LOG to figure out what traffic to deny.

C.) Logs the creation of the access list.

D.) Logs IPX access control list violations whenever a packet matches a particular access list entry.

E.) Ensures the IPX protocol places a log in the fireplace.

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 10, page 374

Router(config)#access-list 900 deny any ?

log Log matches against this entry

439. Given the global configuration commands:

```
'banner motd # Hello #'
```

When would the message be displayed?

A.) The message of the day banner shows up before login.

B.) The message of the day banner shows up during logoff.

C.) These commands are not the right syntax for MOTD.

D.) Message of the day banners are displayed upon entering global config mode.

E.) Message of the day banners are not possible.

F.) The message of the day would be, 'Hello #'

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 5, page 166

Message of the day banners are displayed when a user logs on to the

router. In the example above, the '#' is the unique delimiting

(terminating) character. In this way, banners can have multiple lines,

terminated not by hitting <ENTER>, but rather by the chosen (unique) delimiting character.

440. Which ISDN specification deals with call Setup and Teardown?

A.) Q-Series

B.) J-Series

C.) I- Series

D.) World Series

E.) F-Series

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 11, page 413

The 2 most important ISDN specifications are Q & I:

Q = Call setup and teardown.

I = Concepts and terminology.

441. All equipment located at the customers site is called:

A.) CPE

B.) CO

C.) DCE

D.) Demarc

E.) DTE

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 11, page 389

CPE - Customer Premise Equipment

442. Which layer allows multiple Ethernet devices to uniquely identify one another on the Datalink layer?

A.) Transport

B.) Session

C.) Network

D.) Datalink - MAC Sublayer

E.) Datalink - LLC Sublayer

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 1, page 29-33

Ethernet MAC addresses are 48 bits long, and provide a unique hardware identifier.

443. Which of the following are examples of ICMP?

A.) Traceroute

B.) Web Browsing

C.) Ping

D.) Telnet

E.) Destination Unreachable message from a router

F.) Inverse Tunnels

The correct answer(s): A C E

Ping and Traceroute are used by ICMP for Testing.

Destination Unreachable messages are generated by a router when it does

not have a route to the network.

444. Novell NetWare has an Ethernet frame type called Ethernet_SNAP. What is the matching Cisco command line keyword for this encapsulation method?

- A.) arpa
- B.) sap
- C.) snap
- D.) gns
- E.) dix
- F.) novell-ether

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 9, page 334-335

Novell 802.2 = sap (contains 802.2 LLC headers)

Novell 802.3 = novell-ether (NetWare proprietary)

Ethernet_II = arpa (the Internet standard)

snap = snap (field type set to 'AA')

445. Given the Novell IPX address 1aceb0b.0000.0c12.3456 which part is the network portion of the address?

- A.) 0000
- B.) 1
- C.) 3456
- D.) 1ace
- E.) 0000.0c12.3456
- F.) 1aceb0b

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 9, page 329

IPX addresses are 80 bits total: The first section of the address is the network portion, the last 3 groups of numbers are the host.

446. In version 11.3 of the IOS, a Cisco router configured for frame-relay can automatically detect the LMI type. What is this known as?

- A.) Psychic
- B.) ESP
- C.) Inverse ARP
- D.) Hello
- E.) Reverse ARP
- F.) Autosense

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 11, page 404

Autosense allows the router to determine which LMI type the frame relay

switch is using. Options include CISCO, ANSI, and Q933A.

447. What type of Ethernet operation allows only one entity to transmit at a time? For example, if someone else is transmitting, they must wait.

- A.) Full-Duplex
- B.) Dual-Duplex
- C.) Half-Duplex
- D.) Latex
- E.) Quarter-Duplex
- F.) Suplex

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 2, page 65

Half-Duplex is like a one-lane bridge. If one car is going over the bridge, all other cars must wait on the other side before crossing.

448. Which of the following are examples of the Application Layer?

- A.) LLC
- B.) Token Ring
- C.) Spreadsheet
- D.) TCP
- E.) IP
- F.) Word Processor

The correct answer(s): C F

Sybex CCNA Study Guide: Chapter 1, page 16-17

Pretty much any end-user program is an example of the Application Layer.

449. Which technologies listed below help prevent network loops in a switched (bridged) environment?

- A.) Store-and-Forward
- B.) IEEE 802.1d
- C.) Dijkstra Algorithm
- D.) Cut-Through
- E.) Spanning Tree Protocol
- F.) Routing

The correct answer(s): B E

Sybex CCNA Study Guide: Chapter 2, page 62-63

The Spanning Tree Protocol (STP) eliminates loops by disabling the port(s) that are causing the bridging loop. This is also called putting a port into 'blocking' mode. The industry standard for STP is IEEE 802.1d

450. Which OSI Reference Layer controls end-to-end (host to host) communication?

- A.) Transport
- B.) Physical
- C.) Datalink
- D.) Network
- E.) Session

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 1, page 20-25

The Session layer controls a conversation between applications.

The Transport layer controls communications between hosts.

451. What is the first step in data encapsulation?

- A.) User information is converted into data.
- B.) Frames are put into bits.
- C.) Data is converted into segments.
- D.) Segments are converted into datagrams and packets.
- E.) Packets are put into logical frame.

The correct answer(s): A

The Five steps to data encapsulation (IN ORDER):

- 1) User information is converted into data.
- 2) Data is converted into segments.
- 3) Segments are converted into datagrams and packets.
- 4) Packets are put into logical frame.
- 5) Frames are put into bits.

452. We know that TCP provides connection oriented services, what else does it provide?

- A.) FECN & BECN
- B.) Path discovery.
- C.) Flow control and error checking.
- D.) Name resolution.
- E.) File manipulation.

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 1, page 20-25

The transmission control protocol uses acknowledgements and windowing to handle flow control and error checking.

453. With distance vector routing protocols, it is never useful to send the same routing update packet back out the same interface that it was

learned. This concept is called what?

- A.) Holddown timers
- B.) Poison Reverse
- C.) Count to infinity
- D.) Split Horizon
- E.) Link State

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 7, page 218-219

Split horizon is the concept of: 'Don't tell me what I just told you.'

454. Which of the following are ways to provide login access to a router?

- A.) HTTP
- B.) Console
- C.) Telnet
- D.) Aux Port
- E.) SNMP
- F.) LLC

The correct answer(s): A B C D

Sybex CCNA Study Guide: Chapter 5, page 157

You can connect via Aux, Console, Telnet, or HTTP to a Cisco router.

SNMP can support Community (password protected) SET and PUT commands, but you can not issue a command line interface command with it.

455. What two types of PPP data compression are available using Cisco IOS?

- A.) Predictor
- B.) DoubleSpace
- C.) Stacker
- D.) PAP
- E.) ZIP
- F.) CHAP

The correct answer(s): A C

Stacker and predictor have similar compression rates.

Stacker uses more CPU, while predictor uses more RAM.

456. In regards to the OSI seven-layer model, at which layer is EBCDIC and ASCII?

- A.) Presentation
- B.) Application
- C.) Transport
- D.) Session

- E.) Datalink
- F.) Network

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 1, page 17-18

The OSI Presentation layer includes EBCDIC, ASCII, PICT, GIF, MIDI, and MPEG.

Encryption can also occur at this layer.

457. Which of the following are examples of the Transport Layer?

- A.) SQL
- B.) UDP
- C.) IP
- D.) LLC
- E.) ARP

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 1, page 20-25

TCP is connection oriented.

UDP is connectionless.

458. Given the global configuration command 'banner motd #7 Hello #', what do the '#' symbols represent?

- A.) Escape sequence to exit the menu.
- B.) Nothing, just part of the banner.
- C.) Tic Tac Toe Macro.
- D.) Delimiting Character
- E.) Message border character.
- F.) Number of times message to be displayed.

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 5, page 166

Delimiting characters allow you to have a message that is more than one line. You simply type as many lines as you want, ending with the delimiting (terminating) character.

459. There is a process in Frame-Relay where LMI resolves an IP address from a DLCI number. What is this called?

- A.) aarp
- B.) inverse arp
- C.) rarp
- D.) automap
- E.) reverse arp

F.) arp

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 11, page 406-407

Inverse Arp maps the Local DLCI number to the remote IP address.

Inverse Arp is a function of LMI.

460. When setting up a WAN network, everything outside of the Demarc is not owned by the customer. Which of the following are not owned by the customer?

A.) The T1 line.

B.) LAN

C.) The Router

D.) DTE

E.) PC's

F.) CO

The correct answer(s): A F

Sybex CCNA Study Guide: Chapter 11, page 389

The Central Office is where phone people work.

The Telco maintains ownership of its physical wiring, and leases their use to their customers.

461. You want to segment a network. The network is running SNA and Netbios. Which device should NOT be used to segment the network?

A.) A store and forward switch.

B.) A router.

C.) A Catalyst 5000.

D.) A cut-through switch.

E.) A bridge.

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 2, page 56-57

SNA and Netbios are non-routable, you should bridge them.

The most correct answer for this question is 'A Router.'

The purpose here is to recognize that Layer 2 protocols can not be routed.

However, there are ways to turn a non-routable protocol into a routable protocol via a protocol gateway, DLSW+, RSRB and other technologies.

462. Name a major component of the Point-to-Point Protocol (PPP) to negotiate and set up control options on the WAN data link.

A.) RFC 1661

B.) High Level Datalink Protocol (HDLC)

- C.) Challenge Handshake Authentication Protocol (CHAP)
- D.) SS7
- E.) Link Control Protocol (LCP)

The correct answer(s): E

LCP negotiates many of the PPP settings during call setup.

463. Which of the following is an example of the Physical Layer?

- A.) SQL
- B.) IP
- C.) LLC
- D.) Token Ring
- E.) FDDI
- F.) TCP

The correct answer(s): D E

Sybex CCNA Study Guide: Chapter 1, page 34

FDDI, Token Ring and Ethernet are all physical layer framing standards.

464. Cisco's implementation of ISDN BRI has multiprotocol support, SNMP MIB support, and what other features?

- A.) Call waiting
- B.) Compression
- C.) ADSL
- D.) 1.544 Mbps
- E.) Call screening
- F.) Negative 'G' support

The correct answer(s): B E

Sybex CCNA Study Guide: Chapter 11, page 413

Caller ID is part of ISDN and you can screen calls based on it.

Cisco can compress with Stacker or Predictor.

465. The Network layer works with which of the following:

- A.) Globules
- B.) Bits
- C.) Packets
- D.) Segments
- E.) Frames

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 1, page 25-27

Physical - bits

Datalink - frames
Network - packets

466. An optional parameter on an IPX access is the 'LOG' parameter. This records access-list violations when a packet matches. What else does the 'LOG' option do?

- A.) Records the number of times that a packet matches the list.
- B.) Return a message to user who is denied access the by list.
- C.) Notifies an SNMP Agent.
- D.) Saves the log to NVRAM.
- E.) Send an SNMP Trap.

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 10, page 374

It will record to the log. By default a Cisco router logs to RAM and can display the offense to the console, which is not recommended. It is suggested that you log to a syslog server, for less router CPU impact.

467. Which is not a common problem with Distance-Vector routing?

- A.) Slow convergence.
- B.) Complex configuration.
- C.) Routing loops.
- D.) Periodic updates can slow convergence.
- E.) Counting to infinity.

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 7, page 215

Easy Config:

```
Router(config)#router rip
```

```
Router(config-router)#network 10.0.0.0
```

```
Router(config-router)#
```

That's it! (Remember that the network is followed by the CLASSFUL address.)

468. Which routing protocols uses connection-oriented routing updates?

- A.) IGRP
- B.) UDP
- C.) RIP
- D.) IP
- E.) BGP

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 7, page 228-229

BGP (Border Gateway Protocol) uses TCP to reliably deliver its routing updates.

469. At which layer of the OSI Reference Model do bridges operate?

- A.) Physical
- B.) Session
- C.) Datalink
- D.) Transport
- E.) Network

The correct answer(s): C

Sybex CCNA Study Guide: Chapter 2, page 56-57

Bridges and switches work at layer 2 and forward frames based on the MAC address.

Repeaters work at the physical layer.

470. Where is the point between the customers site and the phone carrier that responsibility changes?

- A.) CO
- B.) Demarc
- C.) DCE
- D.) DTE
- E.) CPE

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 11, page 389

The DEMARCATION POINT (Demarc) in North America is between the customers CSU/DSU and the Local Telco Office, because Americans own the DSU/CSU.

Elsewhere in the world, the Demarc is between the Router and the CSU/DSU, because outside the USA the Telco owns the DSU/CSU.

471. Novell NetWare has an Ethernet frame type called Ethernet_802.2. What is the matching Cisco command line keyword for this encapsulation method?

- A.) gns
- B.) arpa
- C.) snap
- D.) sap
- E.) novell-ether
- F.) dix

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 9, page 334-335

Novell 802.2 = sap (contains 802.2 LLC headers)

Novell 802.3 = novell-ether (NetWare proprietary)

Ethernet_II = arpa (the Internet standard)

sap = snap (field type set to 'AA')

472. Which of the following is an example of the Physical Layer?

- A.) TCP
- B.) ARP
- C.) IP
- D.) FDDI
- E.) LLC
- F.) Fast Ethernet

The correct answer(s): D F

Sybex CCNA Study Guide: Chapter 1, page 34

FDDI, Token Ring and Ethernet are all physical layer framing standards.

473. Which of the following is true regarding standard ISDN BRI service?

- A.) ISDN BRI B channels are typically 64K.
- B.) ISDN BRI can handle only voice.
- C.) ISDN BRI can handle only data.
- D.) ISDN BRI has 2B and 1D channels.
- E.) ISDN BRI D channels are 16K.
- F.) ISDN BRI can handle voice and data.

The correct answer(s): A D E F

2 64K B channels carry the data.

1 16K D channel is used for control.

Note: In certain parts of the world, it is possible that the 'B' channels are only 56k each instead of 64k each.

474. In distance-vector routing, there is a problem known as the 'count to infinity' problem. What is the most direct solution to this?

- A.) Defining a Maximum.
- B.) You can not solve the 'count to infinity' problem with a distance vector protocol.
- C.) Poison Reverse.
- D.) Triggered Updates.
- E.) Split Horizon.

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 7, page 218-219

The most direct solution to the count to infinity problem is to lower what infinity is.

For RIP, the default maximum number of hops is 16. It takes a lot less time to count to 16 than infinity.

475. Which of the following are examples of the Network Layer?

- A.) Token Ring
- B.) LLC
- C.) SQL
- D.) IP
- E.) TCP
- F.) IPX

The correct answer(s): D F

Sybex CCNA Study Guide: Chapter 1, page 25-29

Other Network Layer protocols also include Appletalk and DECnet. TCP is considered to be at a higher Layer, because it provides guaranteed data delivery.

476. Which type of switching reads just the address portion of the frame and then immediately starts forwarding it?

- A.) Cut-Through
- B.) Store-and-Forward
- C.) Tabling
- D.) Routing
- E.) Inverse ARP
- F.) Fast Forward

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 2, page 61-62

Cut-Through is fast, but it does not read the entire frame and perform any error checking before forwarding. This can result in forwarding errors, such as fragments.

477. Which feature of PPP (Point to Point Protocol) allows the router to bind multiple channels together, to form a single logical channel?

- A.) multi-link ppp
- B.) multi-channel ppp
- C.) can't be done
- D.) omni-ppp
- E.) plp

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 11, page 410

Multilink PPP binds separate physical lines into one logical line. This feature is especially useful for ISDN BRI, where you are provided 2 different circuits at 64k each (so you can bind them together for 128k).

478. Which of the following are solutions to the problems encountered with Distance-Vector routing?

- A.) Defining a Maximum
- B.) Poison Reverse
- C.) Triggered Updates
- D.) Shortest path first algorithm.
- E.) Split Horizon

The correct answer(s): A B C E

Sybex CCNA Study Guide: Chapter 7, page 218-219

The Shortest Path First (SPF) algorithm is used only with Link-State protocols such as OSPF.

479. Classful routing protocols do not include subnet masks in their routing updates. Which of the following routing protocols are considered classful?

- A.) EIGRP
- B.) OSPF
- C.) TCP
- D.) IGRP
- E.) RIP
- F.) IP

The correct answer(s): D E

Sybex CCNA Study Guide: Chapter 7, page 214

IGRP & RIP do NOT include the subnet mask in their routing updates.

OSPF & EIGRP are classless routing protocols and DO INCLUDE the subnet mask in updates.

TCP and IP are not routing protocols.

480. What is the standard ISDN term for a native ISDN telephone?

- A.) ET
- B.) TE1
- C.) TE2
- D.) LE
- E.) TA

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 11, page 412-413

Terminal Equipment 1 (TE1) understands what native digital ISDN is, and has built-in analog to digital converters.

481. PICT & JPEG are examples of what layer in the OSI seven layer model?

- A.) Transport
- B.) Presentation
- C.) Application
- D.) Datalink
- E.) Network
- F.) Session

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 1, page 17-18

The OSI Presentation layer includes EBCDIC, ASCII, PICT, GIF, MIDI, and MPEG.

Encryption can also occur at this layer.

482. Which of the following is an example of the Session Layer?

- A.) TCP
- B.) SQL
- C.) IP
- D.) X-Windows
- E.) Token Ring
- F.) LLC

The correct answer(s): B D

Sybex CCNA Study Guide: Chapter 1, page 18-20

Netbios Names, SQL, NFS, X-Windows are examples of the Session layer.

483. Which global configuration command will tell the router to load the IOS file 'IOS_filename' from the Network File server at 1.2.3.4 during the next boot?

- A.) boot system flash IOS_filename 1.2.3.4
- B.) boot system tftp IOS_filename 1.2.3.4
- C.) config-register 0x0 1.2.3.4
- D.) boot system rom 1.2.3.4
- E.) This can not be done, only the first file in flash can be used.

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 8, page 277

Router(config)#boot system ?

WORD TFTP filename or URL

flash Boot from flash memory

mop Boot from a Decnet MOP server

rcp Boot from a server via rcp

rom Boot from rom

tftp Boot from a tftp server

484. At what layer of the OSI reference model does FRAME-RELAY map to?

- A.) Session
- B.) Physical
- C.) Network
- D.) Presentation
- E.) Transport
- F.) Datalink

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 11, page 402

Remember, layer 2 deals with 'frames', and Frame-Relay is purely a layer 2 protocol.

485. X.25 is characterized by layer 2 identifiers, and what else?

- A.) Virtual Lan's
- B.) Session Layer
- C.) Transport Layer
- D.) Routing Updates
- E.) PVC's

The correct answer(s): E

Sybex CCNA Study Guide: Chapter 11, page 396

Permanent Virtual Circuits and Layer 2 identifiers are typical in X.25.

486. Which of the following is an example of the Network Layer?

- A.) Token Ring
- B.) RARP
- C.) LLC
- D.) DDP
- E.) TCP

The correct answer(s): B D

Sybex CCNA Study Guide: Chapter 1, page 25-29

The following two are layer 3 protocols:

DDP - Datagram Delivery Protocol. AppleTalk network layer protocol that is responsible for delivery of datagrams.

RARP - Reverse Address Resolution Protocol. Protocol in the TCP/IP that allow a client to get assigned an IP address based on it's own MAC address.

487. What is an advantage of LAN segmentation?

- A.) Increases broadcasts.
- B.) Increases collisions.

- C.) Provides more protocol support.
- D.) Decreases broadcasts.
- E.) Routing protocol support.

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 2, page 55

Broadcast containment is a primary motive for LAN segmentation.

488. What does the User Datagram Protocol (UDP) provide?

- A.) Connectionless datagram service.
- B.) FECN & BECN
- C.) Flow control and error checking.
- D.) Name resolution.
- E.) Path discovery.

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 3, page 88-90

UDP is connectionless, and does not provide error checking. But remember, error checking can occur at other layers too.

489. Which OSI Reference Layer is concerned with logical addressing?

- A.) Network
- B.) Transport
- C.) Datalink
- D.) Physical
- E.) Session

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 1, page 20-25

Datalink is physical (hardware) addressing.

Network is logical (software) addressing.

490. What layer can optionally support reliability?

- A.) Transport
- B.) IP
- C.) Physical
- D.) Network
- E.) Sub-physical layer

The correct answer(s): A

Sybex CCNA Study Guide: Chapter 1, page 20-25

The Transport Layer:

Segments upper-layer applications.

Establishes an end-to-end connection.
Sends segments from one end host to another.
Optionally, ensures data reliability.

491. Which of the following is an example of the Datalink Layer?

- A.) LLC
- B.) TCP
- C.) SQL
- D.) IPX
- E.) Token Ring
- F.) MAC

The correct answer(s): A F

Sybex CCNA Study Guide: Chapter 1, page 29-33

MAC (media access control) and LLC (logical link control) are both layer 2 protocols.

492. What is the last step in data encapsulation?

- A.) User information is converted into data.
- B.) Segments are converted into datagrams and packets.
- C.) Frames are put into bits.
- D.) Data is converted into segments.
- E.) Packets are put into logical frame.

The correct answer(s): C

The Five steps to data encapsulation (IN ORDER):

- 1) User information is converted into data.
- 2) Data is converted into segments.
- 3) Segments are converted into datagrams and packets.
- 4) Packets are put into logical frame.
- 5) Frames are put into bits.

493. Which switching technology can reduce the size of a broadcast domain?

- A.) Cut-Through
- B.) Store-and-Forward
- C.) Spanning Tree Protocol
- D.) RARP
- E.) ARP
- F.) VLAN

The correct answer(s): F

Sybex CCNA Study Guide: Chapter 2, page 64

VLAN's are logical ways to break up a large broadcast domain.

To get from VLAN to VLAN you must have a router.

494. Station A is transmitting data to station B faster than station B can handle it. When station B's buffer fills up, it sends out a message to station A to stop sending data. After B empties out its buffer, station B sends a message to station A to start sending data again.

This is most directly an example of (pick the best answer only):

- A.) Poison Reverse
- B.) Connectionless protocol
- C.) Windowing
- D.) Connection oriented protocol
- E.) Flow Control
- F.) Split Horizon

The correct answer(s): E

Flow control is when a station is being overloaded with data and tells the other station to stop for a while, so the receiving station can process the data that it has in its buffer.

495. The Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) provides which of the following?

- A.) 1.544 Mbps
- B.) 23B + 1D Channel
- C.) 24B + 1D Channel
- D.) 2B + 1D Channel
- E.) 23B + the Disney Channel

The correct answer(s): D

Sybex CCNA Study Guide: Chapter 11, page 413

Each B (Bearer) Data channel is 64K

The D (Control) channel is 16K

496. Which layer manages protocol access to the Network layer?

- A.) Datalink - MAC Sublayer
- B.) Datalink - LLC Sublayer
- C.) Transport
- D.) Session
- E.) Network

The correct answer(s): B

Sybex CCNA Study Guide: Chapter 1, page 34

Having two Datalink sublayers provides physical media independence.

The MAC sublayer encapsulates to the Physical Layer.
The LLC sublayer encapsulates to the Network Layer.