**CIS 420 Mid-term exam topics**

1. Simple LAN concepts
2. VLANs
   1. Router-on-a-stick configuration and trouble-shooting
3. STP
4. VTP
5. Port security
6. IP subnetting and number conversions (binary to decimal and decimal to binary)
   1. /25
   2. /26
   3. /27
7. Router basics
   1. Types of routes found in routing tables
8. Static routing
9. Dynamic routing
10. OSPF concepts
11. Trouble-shooting questions similar the trouble-shooting labs.

Quiz Questions

Which of the following protocols are examples of the TCP/IP transport layer protocols?

SMTP

HTTP

Ethernet

**UDP**

**TCP**

IP

Which of the following are examples of TCP/IP network access/interface layer protocols?

HTTP

IP

**Ethernet**

SMTP

UDP

TCP

**PPP**

The process of HTTP asking TCP to send some data and to make sure that it is delivered correctly is an example of:

Same Layer Interaction

**Adjacent Layer Interaction**

OSI model

All of the above are correct

Which OSI layer defines the functions of logical network-wide addressing and routing?

Layer 4

**Layer 3**

Layer 6

Layer 1

Layer 2

Layer 7

Layer 5

TCP performs what three functions?

**error correction**

IP addressing

**flow control**

**sequencing**

HTTP requests

Which OSI layer defines the standards for data formats and encryption?

Layer 3

**Layer 6**

Layer 1

Layer 2

Layer 7

Layer 4

Layer 5

Which of the following terms are not valid terms for layers of the OSI seven layer model?

**Internet**

Application

Data Link

Session

**Transmission**

Presentation

The process of a Web server adding a TCP header to the contents of a Web page, followed by adding an IP header, and then adding a data link header and trailer is an example of

all of these answers are correct

same-layer interaction

**data encapsulation**

OSI Model

The process of a computer marking a TCP segment as segment 1, and the receiving computer acknowledging the receipt of segment 1 is an example of

All of these are correct

Data Encapsulation

Adjancent-layer interaction

OSI

**Same-layer interaction**

Which of the terms is used specifically to identify of the entity created when encapsulating data inside data link headers and trailers?

Data

Packet

Segment

**Frame**

Chunk

Which OSI layer defines the standards for cabling and connectors?

Layer 5

Layer 4

Layer 3

**Layer 1**

Layer 7

Layer 2

Layer 6

Which two layers from the hybrid TCP-IP networking model become the network access layer in the original 4-layer model?

application

network

**data link**

**Physical**

Which Data Link sub layer contains addressing information for frames that travel on a LAN?

Network

LLC

**MAC**

Physical

Which statement about a MAC address is accurate?

**A MAC address is a number in hexadecimal format that is physically located on the NIC**

A MAC address is represented by binary digits that are organized in pairs

**It is a layer 2 address**

The MAC address can never be changed

Which Data Link sub layer contains information regarding the Network layer protocol used.?

Network

**LLC**

MAC

IPSec

Which of the following CLI commands will stop echo messages when entering commands?

logging synchronous

**no console logging**

stop echo

no echo

Which of the following UTP/RJ-45 pins connect together in a crossover cable?

1 to 1, 2 to 2, 3 to 3, 4 to 4

1 to 1, 2 to 2, 3 to 3, 6 to 6

1 to 3, 2 to 5, 3 to 1, 5 to 2

**1 to 3, 2 to 6, 3 to 1, 6 to 2**

What feature of modern switches permits you to connect the wrong type of UTP cable from one device to another and have the device still communicate?

Auto-Detect

**Auto-MDIX**

Cable-Detect

Cable-MDIX

Which of the following is true regarding multi-mode fiber or MMF versus single-mode fiber or SMF?

higher bandwidth

**shorter distances**

**less expensive**

higher powered light source

1000BaseT copper wire has a maximum range of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meters between devices.

1000

**100**

50

500

1000BaseLX multi-mode fiber has a maximum range of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meters between devices.

1000

100

50

**500**

UTP copper cable commonly uses which connector?

SFP

LC

RJ-11

**RJ-45**

A newer connector used in 10Gbps copper wire connection is

RJ-45

RJ-10

**SFP+**

LC

In copper cabling, Routers and workstations transmit on pins \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and receive on pins \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2, 3 4, 6

**1, 2 3, 6**

3, 6 1, 2

4, 5 6,2

In copper cabling, switches and hubs transmit on pins \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and receive on pins \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**3, 6 1, 2**

1, 2 3, 6

4, 5 2, 3

2, 3 4, 5

Switches transmit in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mode to workstations.

broadcast

half-duplex

**full-duplex**

partial-duplex

Which port is used to connect a laptop to a switch or router to access the command line interface to program the devices?

Gigabit Ethernet

Fast Ethernet

Auxiliary

**Console**

Which command do you elevate CLI mode to the Executive Privileged mode?

elevate

**enable**

exec

priv

Which key is used to repeat a previous command in the CLI?

down arrow

tab

**up arrow**

enter

A switch or router's start-up configuration file is stored in the

**NVRAM**

Flash

ROM

RAM

Which command creates a password for the Exec Privileged Mode that is encrypted in the start-up configuration file?

password

**enable secret**

line console 0

line vty

Which of the following commands would be necessary to configure the IPv4 address of 172.16.10.2 on a switch so that the switch can be remotely managed?

**configure terminal**

ip access permit

**interface vlan 1**

**ip address 172.16.10.2 255.255.255.0**

**no shutdown**

remote configure

When a switch receives a frame with a destination MAC address that is not in its switching table, it will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the frame.

filter

forward

**flood**

drop

When a switch receives a frame with a destination MAC address that is in its switching table, it will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the frame.

filter

**forward**

flood

drop

Switches will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ switching tables periodically to maintain current information regarding network devices.

**age/delete**

store

append

revise

A switch receives a frame in port fa0/2 with the source MAC address of 00-23-A6-56-89-21 and a destination MAC address of 24-68-F2-00-36-DB. It does not have an entry in its MAC table for either of one of these MAC addresses. What two steps will it take?

drops the frame

floods the frame out all connected ports

**enters 00-23-A6-56-89-21 into its MAC table linked to port fa0/2**

**floods the frame out all connected ports except for the one that it had received the frame from**

What are the two basic ways to assign MAC address restrictions to switch ports?

**static**

revised

designated

**dynamic**

If I wish to assign a static MAC address to a specific port before plugging any device into that port, Which of the following commands would be included in the configuration?

switchport static port-security

switchport port-security mac-address sticky

**switchport port-security mac-address 00-88-34-AB-23-11**

switchport port-secuirty initial

We can only assign one device MAC address per switch port for port security.

True

**False**

Which configuration mode permits us to allow the switch to learn device MAC addresses and save them so that they are retained upon switch reload or restart?

dynamic

dynamic static save

**dynamic sticky**

dynamic MAC

Which violation mode will restrict non-permitted traffic on a switch and send a notification to network management software?

Protect

**Restrict**

Shutdown

filtered

Which violation mode shuts the port down completely?

Protect

Restricted

**Shutdown**

Terminate

If two connected switches are configured with Vlans 10, 20 and 30 and they connect a total of 10 workstations in two offices and no router or layer 3 switch is involved, which of the following statements is true?

workstations on VLAN 10 and VLAN 20 can send messages to one another

workstations on VLAN 20 and VLAN 30 can send messages to one another

Workstations on VLAN 10 can only send messages to workstations on VLAN 20 if the workstations are connected to the same switch

**Workstations in each VLAN can only communicate with other workstations in the same VLAN**

The default native VLAN on Cisco switches is

99

**1**

101

there is no default native VLAN configured by default

I am using VTP to configure switches in my LAN. I have a total of three switches (two access and one distribution level switches) and 35 workstations connected to the two access switches. Which switch would be the most likely switch to be configured as the server switch?

**the distribution switch**

one of the access switches

this physical configuration will not support VTP

VTP requires at least two of the switches be configured as servers

Which of the following statements regarding VLANs is true? Assume that we are using Router-on-a-stick configuration to permit inter-VLAN communications.

All VLANs will be on the same subnet

No subnets are necessary for this configuration

**Each VLAN must be on its own subnet**

The correct answer is dependent on whether or not we are using VTP

When using VTP, what needs to be reset or verified before connecting a new or replacement switch into a LAN to prevent major disruption to VLAN settings within the LAN?

Server/Client mode

Transparent mode

VTP password

**Configuration number**

Port fa0/10 on an access switch is assigned to VLAN 20. If I remove fa0/10 from VLAN 20, what happens to it?

It is impossible to remove a port from a previously assigned VLAN

Port fa0/10 will not be assigned to any VLAN

**Port fa0/10 will become part of VLAN 1**

We need to know what other VLANs exist before making a determination

If I have ports fa0/10 through fa0/20 assigned to VLAN 30 and I delete VLAN 30, what will happen to these ports with respect to VLAN assignment?

All of the ports in the assigned range will revert to VLAN 1

**All of the ports in the assigned range will become inactive**

All of the ports in the range will default to VLAN 101

none of the above are correct

I am using VTP on a my LAN and I wish to delete the VLAN configuration on my designated server switch. What action will accomplish this?

erase the startup configuration file

erase the running configuration file

**erase the VLAN.dat file**

erase the switch's ROM

Which show command will show VLANs and assigned ports?

Show run

Show interfaces

Show VLAN summary

**Show VLAN brief**

When adding a new switch to a network that is configured as the VTP server, what number has to be set to 0?

VLAN number

**Configuration number**

Switch IP address

Nothing needs to be set to 0

How can you reset the revision number to 0 in a Cisco VTP server switch?

change the domain name associated with the switch

**change the domain name on the switch**

change the IP address of the switch

reset the management VLAN to 1

Inter-VLAN routing using router-on-a-stick is possible because of router

IP addresses

router VLAN addresses

**router subinterfaces**

router routing tables

Without STP, switches with redundant connections to one another would experience:

Forwarding

**Broadcast Storms**

Filtering Storms

no problems

A switch is elected the root switch or bridge if it has the lowest

MAC address

IP address

**BID**

Cost

A port on a switch that is connected to the root switch directly or indirectly is a

**root port**

designated port

forward port

cross-over port

What are the two states that switches using STP and RSTP use, respectively, to block traffic between switch ports?

**blocking**

filtering

forwarding

**discarding**

Switch 2 has two connections to other switches that connect directly to the root switch. Port fa/02 is one of the ports used on Switch 2 to connect to one of the other switches and Gi/01 is the other port on switch 2 that connects to one of the other switches. Which port will Switch 2 designate as the root port?

fa/02

fa/01

**Gi/01**

it will choose randomly

An IEEE standard that permits active redundant links for switching efficiency in SDN is

RSTP

RSP

TCN

**shortest bridge path**

For a /25 subnetted 192.168.10.0 network, which subnet would host 192.168.10.130 belong to?

1

**2**

neither

this is a broadcast address

For a /26 subnetted 192.168.10.0 network, which subnet would host 192.168.10.191 belong to?

1

2

2

4

this is a network address

**this is a broadcast address**

What is the broadcast address of subnet 2 in a 192.168.10.0/26 network?

192.168.10.126

**192.168.10.127**

192.168.10.128

192.168.10.129

What is the network address of subnet 3 in a 192.168.10.0/26 network?

**192.168.10.128**

192.168.10.126

192.168.10.191

192.168.10.254

How many host addresses are in each subnet in a /27 network?

62

63

**30**

126

Which of the following are valid interfaces on a router?

**ethernet**

console

aux

**serial**

Convert 194 decimal to binary.

1010 0010

1110 0001

1100 0100

**1100 0010**

Which of the following is a route configured to provide a path for any packet with a destination IP address whose network address is not in a router's routing table?

static route

dynamic route

directly connected route

**default route**

Which of the following is a route that is manually configured in a router's routing table and does not change until manually reconfigured?

**static route**

dynamic route

directly connected route

default route

Which of the following routes is configured by routing protocols such as OSPF?

static routes

**dynamic routes**

directly connected routes

default routes

Which of the following routes is discovered by a router when it is connected to another device and has its respective interface configured?

static route

dynamic route

**directly connected route**

default route

Which of the following commands would be entered into our gateway router to handle default routes? Assume that the interface to the ISP is s0/0.

ip route default route

ip route 0.0.0.0 s0/0

**ip route 0.0.0.0 0.0.0.0 s0/0**

none of the above

When configuring a static route, the path for the assigned destination network can be which of the following?

**IP address of the next-hop router's interface that leads to the destination network**

IP address of the exit interface on the router

**Exit interface of the router that leads to the destination network**

Exit interface of the next-hop router

Which category of dynamic routing protocol is characterized by determining path to a network using a topological map of the network to calculate best path?

**link-state**

path vector

distance vector

map vector

Where would a default route be statically configured?

**gateway router**

internal router in the center of the network

**stub network router**

MPLS router

Convert 0101 1100 binary to decimal.

96

93

**92**

124

Which show command in a Cisco router will display routing table information?

show run

**show ip route**

show route

show routing table

The following is true regarding OSPF.

OSPF routers send LSAs using TCP segments

**OSPF routers send LSAs using IP packets**

**OSPF LSAs are sent multicast using 224.0.0.5 or 224.0.0.6**

OSPF routers send LSAs via broadcast 255.255.255.255

OSPF routers form adjacencies by

**exchanging Hello packets**

**agreeing upon dead interval**

**agreeing upon network type**

connecting using Ethernet only

Which network type features more than one router connected to a switch?

Point-to-Point

**Broadcast multiaccess**

Point to Multipoint

Virtual Circuit

In a Point-to-Point link between two routers, which router sets the clock rate?

**DCE**

DTE

FA0/0

S0/1

The wild card mask for a 255.255.255.248 network is:

255.255.255.248

0.0.0.3

**0.0.0.7**

0.0.0.248

The cost reference for the OSPF metric is

**10^8**

10^9

10^10

10^11

The most common way to configure a router ID in OSPF is:

use the router-id command

use the highest interface IP address

**use loopback addresses on the routers**

there is no need to do this

When modifying OSPF link costs on interfaces of OSPF routers in a multi-vendor environment, which is the best command to use?

Bandwidth kbps

**ip ospf cost cost**

ip ospf route

auto-cost reference-bandwidth

In a broadcast multi-access network, how many adjacencies will be formed if I have 9 routers?

18

24

32

**36**

Which command can be used to influence DR and BDR elections between OSPF routers?

auto-cost reference-bandwidth

bandwidth

router-id

**ip ospf priority**

The default-information originate command will do what to the routers in an OSPF area?

**distribute the default route to area routers**

cancel the default route on the ABR

Reset the default route on the ABR

distribute the BGP route from the ISP

Given the following routing table entry from a router configured with OSPF, which of the following statements are true?

O 192.168.10.0/24 [110/65] via 172.16.10.1 00:00:03 Serial0/1

This is a directly connected route

**The administrative distance is 110**

**the total OSPF cost of this route is 65**

**This network is reachable via another router**