

CONTESTANT ID# \_\_\_\_\_

Time \_\_\_\_\_

Rank \_\_\_\_\_

# CISCO SYSTEM ADMINISTRATION (41)

## Regional 2012

**TOTAL POINTS** \_\_\_\_\_ (500)

***Failure to adhere to any of the following rules will result in disqualification:***

- 1. Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.***
- 2. No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.***
- 3. Electronic devices will be monitored according to ACT standards.***

Property of Business Professionals of America.  
May be reproduced only for use in the Business Professionals of America  
*Workplace Skills Assessment Program* competition.

**1. Both switches and hubs are being utilized within the network. Which of the following is true regarding the use of switches and hubs for network connectivity in this network?**

- A) Switches take less time to process frames than hubs take
- B) Hubs can filter frames
- C) Switches do not forward broadcasts
- D) Switches increase the number of collision domains in the network

**2. Which one of the following characteristics is true regarding the use of hubs and switches?**

- A) Hubs can have their ports be configured with VLANs
- B) Using hubs is costly with regard to bandwidth availability.
- C) Switches can not forward broadcasts.
- D) Switches increase the number of collision domains in the network.

**3. The LAN needs are expanding at the corporate office, which is quickly growing. You are instructed to enlarge the area covered by a single LAN segment on the network. Which of the following are layer 1 devices that you can use?**

- A) A switch
- B) A hub
- C) A repeater
- D) Both B and C

**4. What basic functions do routers perform in a network?**

- A) The micro-segmentation of broadcast domains
- B) Path selection
- C) Bridging between LAN segments
- D) Access layer security

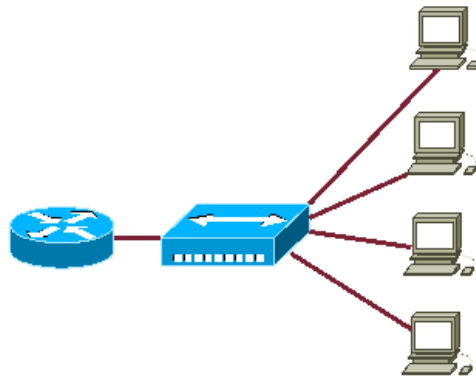
**5. Both bridges and switches are being used throughout the LAN. Which of the following statements is true regarding bridges and switches in this network?**

- A) Switches are primarily software based while bridges are hardware based.
- B) Switches usually have a higher number of ports than most bridges.
- C) Bridges are frequently faster than switches.
- D) Bridges define broadcast domains while switches define collision domains

**6. The network administrator needs to determine what LAN devices to install on the network. What is an advantage of using Layer 2 Ethernet switches over hubs?**

- A) Allowing simultaneous frame transmissions
- B) Increasing the size of broadcast domains
- C) Increasing the maximum length of UTP cabling between devices
- D) Decreasing the number of collision domains

**7. In the network segment shown, you are considering replacing the hub with a new Cisco switch. What result would occur if this hub were to be replaced with a switch that is configured with one Ethernet VLAN?**



- A) The number of broadcast domains would increase.
- B) The number of broadcast domains would remain the same.
- C) The number of broadcast domains would decrease.
- D) The number of collision domains would remain the same.

**8. What is the maximum number of hops that OSPF allows before marking a network as unreachable?**

- A) 15
- B) 16
- C) 255
- D) Unlimited

**9. What switching method examines the destination MAC address as the frame is being received and then begins forwarding the frame prior to receiving the entire frame?**

- A) Modified Cut Through
- B) Store and Forward
- C) Cut Through
- D) Fragment Free

**10. Which protocol is used to look up an IP address from a known Ethernet address?**

- A) TCP
- B) RARP
- C) ARP
- D) IP

**11. If an Ethernet port on router was assigned an IP address of 172.16.112.1/20, what is the maximum number of hosts allowed on this subnet?**

- A) 2046
- B) 8190
- C) 4094
- D) 4096

**12. At which OSI layer does data translation and code formatting occur?**

- A) Network
- B) Physical
- C) Data link
- D) Presentation

**13. Which one of the following is a reason to use a hardware address?**

- A) To transmit a packet from one local device to another local device.
- B) To transmit a frame from one interface to another interface.
- C) To obtain a vendor code/serial number from the user.
- D) To transmit data from one local device to remote device across Internet.

**14. Ethernet networks are broadcast domains and collision domains. How the hosts on an Ethernet network will know when to resume transmissions after a collision has occurred?**

- A) The router on the segment will signal that the collision has cleared.
- B) The jam signal indicates that the collision has been cleared.
- C) The hosts will attempt to resume transmission after a time delay has expired.
- D) The destination host sends a request to the source for retransmission.

**15. What term refers to where a router stores the information that tells it how to forward packets?**

- A. Running config
- B. NVRAM
- C. Routing Table
- D. ARP Cache

**16. How many wires are needed for a PC to successfully send and receive**

**data to another PC using an Ethernet LAN cable with RJ-45 connections?**

- A) 8 wires
- B) 2 wires
- C) 4 wires
- D) 4 pairs

**17. What does the CD stand for in the CSMA/CD?**

- A. Carrier Device
- B. Collision Device
- C. Carrier Detect
- D. Collision Detect

**18. How many bytes are in the source Ethernet hardware address?**

- A. 32 bits
- B. 8 bytes
- C. 6 bytes
- D. 12 bytes

**19. Identify a MAC address:**

- A) 1111.FFFF.2222
- B) 1111.FE6G.3333
- C) 1111.EEEE.22111
- D) FFFF.AAAA.F66

**20. How many more bytes did the IEEE add to the address field in the Gigabit Ethernet header, as compared to Ethernet, when it created the Gigabit standards?**

- A) Increased by 2 bytes
- B) Increased by 10 bytes
- C) Decreased by 2 bytes
- D) The size was not changed

**21. Define the term broadcast domain.**

- A) A set of devices for which a broadcast frame sent by one device is received by all other devices in the set
- B) The devices in the physical LAN that includes cabling, nics, switches
- C) The set of WAN devices for which a broadcast frame is sent.
- D) A set of devices for which an application is used by all other devices

**22. A standalone switch with no VLANs configured, with 24 physical ports, each connected to a different PC is turned on. How many broadcast domains exist?**

- A) 24
- B) none
- C) 23
- D) one

**23. In a typical network, which e-mail protocol does a client use to retrieve messages from a server?**

- A) SNMP
- B) SSH
- C) POP3
- D) SMTP

**24. Which layer of the TCP/IP networking model do the e-mail protocols fall?**

- A) Network
- B) Application
- C) Transport
- D) Internet

**25. What is the name of the other TCP/IP transport layer protocol?**

- A) IP
- B) UTP
- C) FTP
- D) UDP

**26. A TCP header, along with the application data, is called what?**

- A) TCP frame
- B) TCP Packet
- C) TCP Port
- D) TCP Segment

**27. What port numbers are used by DHCP?**

- A) 20, 21
- B) 53, 54
- C) 23, 22
- D) 67, 68

**28. What contact does IPv4 make with the destination before sending a packet?**

- A) It sends a message to say that a packet will be arriving.
- B) It negotiates speed and timing parameters for the transfer.
- C) It checks that the destination host exists.
- D) It does not make any contact before sending.

**29. A student in a CCNA lab configures a router with the command enable secret class. The student captures the running configuration as a text file and notes that it includes the line: enable secret 5 \$1\$v0/3\$QyQWmJyT7zCa/yaBRasJm0. The next week, the student wants to put the same configuration back on the router, which has had its configuration cleared. What should the student do before using the text file to put the configuration back on a router?**

- A) Nothing. The configuration file must be put back on a router exactly as it was captured.
- B) Add the line “service password-encryption” to the text file so that the encrypted password is recognized.
- C) Change the line to “enable secret class” because otherwise it will be necessary to type in \$1\$v0/3\$QyQWmJyT7zCa/yaBRasJm0 as the password.
- D) A text file cannot be used to configure a router.

**30. Where should a crossover UTP cable be used?**

1. To connect two PCs together directly.
2. To connect a router to an Ethernet switch.
3. To connect a PC to an Ethernet switch.
4. To make a console connection to a router.
5. To connect two routers together using their Ethernet ports.
6. To connect the serial port of a router to a switch.

**Possible Answers:**

- A) 2, 4
- B) 1, 5
- C) 1, 3
- D) 3, 5

**31. Where might static routing be preferred to dynamic routing?**

- A) In a small star topology where there is only one possible route to each destination
- B) In a topology where several possible routes exist and changes are likely
- C) In a very large group of networks where bandwidth is an issue and its use must be restricted
- D) In a group of networks where the routers are modern and powerful

**32. What is the routing metric used for?**

- A) If a router learns more than one route to the same destination and the routes have the same administrative distance then the route with the highest routing metric will be used
- B) If a router learns more than one route to the same destination and the routes have different administrative distances then the route with the lowest routing metric will be used
- C) If a router learns more than one route to the same destination and the routes have different administrative distances then the route with the lowest routing metric will be used
- D) If a router learns more than one route to the same destination and the routes have the same administrative distance then the route with the lowest routing metric will be used

**33. Which two commands could you use to find the administrative distance of the routing protocol and when the last update was received or when the next is due?**

- 1. RouterA# show ip route
- 2. RouterA(config)# show ip route
- 3. RouterA# show ip protocols
- 4. RouterA(config)# show ip protocols
- 5. RouterA# show routing updates
- 6. RouterA(config)# show routing updates
- 7. RouterA# router rip
- 8. RouterA(config)# router rip

**Possible answers:**

- A) 1, 4
- B) 1, 3
- C) 3, 4
- D) 1, 6

**34. Which command will let you watch RIP updates being sent and received?**

- A) show ip protocols
- B) show ip updates
- C) show debug rip
- D) debug ip rip

**35. Which routing algorithm does RIP v1 use?**

- A) DUAL
- B) Shortest path first
- C) Dijkstra
- D) Bellman-Ford

**36. Which command will show whether a router is sending RIP v1 or RIP v2**



**updates and whether any interfaces have been configured as passive?**

- A) Show ip route
- B) Show version
- C) Show ip rip
- D) Show ip protocols

**37. NAT is available in three forms: Static NAT, Dynamic NAT, and \_\_\_\_.**

- A) WINS
- B) PAT
- C) DHCP
- D) IP-AT

**38. The command to configure a DNS lookup on a Cisco router is \_\_\_\_.**

- A) ip domain-lookup
- B) ip name-server
- C) ip dns
- D) ip dns-server

**39. Cisco's DHCP server implementation prefers to save the IP configuration parameters it has sent to a particular host. These are called**

**\_\_\_\_\_.**

- A) tokens
- B) bindings
- C) overlapping
- D) enablings

**40. For information on the specific DHCP address pool, use the \_\_\_\_ command.**

- A) show ip pool
- B) show domain pool
- C) show ip dhcp pool
- D) show address pool

**41. You can point your router to a DNS server for name resolution simply by configuring the \_\_\_\_ command.**

- A) ip name-server
- B) ip dns-server
- C) ip domain dns
- D) ip domain-server

**42. Routers use \_\_\_\_\_ to determine which bits in an address will be significant.**

- A) wildcard masks
- B) list numbers
- C) access masks
- D) address rules

**43. It is possible to replace the 0.0.0.0 255.255.255.255 entry, which represents all hosts and all networks, with the \_\_\_\_\_ keyword.**

- A) all
- B) each
- C) any
- D) none

**44. Which command must be entered when connecting two routers without external DCE devices via a serial link?**

- A) Serial up
- B) dce rate
- C) clock rate
- D) line protocol up

**45. Ethernet networks are broadcast domains and collision domains. How will the hosts on an Ethernet network know when to resume transmissions after a collision has occurred?**

- A) The router on the segment will signal that the collision has cleared.
- B) The jam signal indicates that the collision has been cleared.
- C) The hosts will attempt to resume transmission after a time delay has expired.
- D) The destination host sends a request to the source for retransmission.

**46. What is a trunk link?**

- A) A link that is only part of one VLAN and is referred to as the native VLAN of the port.
- B) A link that can carry multiple VLANs
- C) A switch port connected to the internet.
- D) Data and voice capability on the same interface.

**47. What OSI layer is Frame-Relay mapped to?**

- A) Network
- B) Transport
- C) Data-Link
- D) Physical

**48. What is the disadvantage to using bridges in your network?**

- A) Filters by MAC address.
- B) Stops broadcast storms.
- C) Doesn't stop broadcast storms.
- D) Can only use up to 4 bridges in any LAN

**49. What is the basic characteristic of switches and hubs?**

- A) Hubs cannot filter frames.
- B) Using hubs is costly in regard to bandwidth availability.
- C) Switches do and hubs can not forward broadcasts.
- D) Switches increase the number of collision domains in the network.

**50. If NVRAM lacks boot system commands, where does the router look for the Cisco IOS by default?**

- A) ROM
- B) RAM
- C) Flash
- D) Bootstrap