

# SYSTEMS ADMINISTRATION USING CISCO® (315)

## REGIONAL – 2017

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

**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.**

No more than sixty (60) minutes testing time

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

**Identify the letter of the choice that best completes the statement or answers the question.**

1. Which OSI layer header contains the IP address of a destination host?
  - A. transport
  - B. network
  - C. data link
  - D. physical
  
2. Which protocol uses a connection-oriented service to deliver files between end systems?
  - A. TFTP
  - B. DNS
  - C. FTP
  - D. RIP
  
3. What kind of traffic does port 53 allow?
  - A. DNS traffic
  - B. FTP traffic
  - C. TFTP traffic
  - D. Telnet traffic
  
4. Which protocol will a host use to resolve a known destination IP address to a destination MAC address?
  - A. ARP
  - B. DHCP
  - C. DNS
  - D. RARP
  
5. What is the maximum number of bits that can be borrowed to create subnets for a Class B network address?
  - A. 2
  - B. 6
  - C. 14
  - D. 16
  
6. What is the network address for the host with IP address 196.148.13.59/28?
  - A. 196.148.13.0
  - B. 196.148.13.32
  - C. 196.148.13.48
  - D. 196.148.13.63

7. Which three network addresses are reserved for private network use?
  1. 10.20.57.0
  2. 172.15.8.0
  3. 172.31.65.0
  4. 192.152.28.0
  5. 192.168.200.0
  6. 224.182.6.0
  - A. 1, 3, 4
  - B. 1, 3, 5
  - C. 2, 4, 6
  - D. 4, 5, 6
  
8. What is the default boot sequence order a router uses to locate and load an operating system?
  - A. Flash, TFTP, ROM
  - B. Flash, TFTP, RAM
  - C. ROM, TFTP, Flash
  - D. Flash, ROM, TFTP
  
9. What is the effect of using the `service password-encryption` command?
  - A. only the enable password will be encrypted
  - B. only the enable secret password will be encrypted
  - C. it will encrypt the secret password and enable password but no others
  - D. it will encrypt all passwords
  
10. Which statement describes the HDLC protocol?
  - A. HDLC is compatible between all network vendors
  - B. HDLC utilizes sophisticated flow control mechanisms to ensure reliable data transfer
  - C. On Cisco routers it is the default encapsulation for serial interfaces
  - D. All of the above
  
11. Which command will assign the last usable IP address from the 92.15.30.128/28 subnetwork to a router interface?
  - A. Router(config-if)# ip address 92.15.30.142 255.255.255.240
  - B. Router(config-if)# ip address 92.15.30.143 255.255.255.240
  - C. Router(config-if)# ip address 92.15.30.142 255.255.255.248
  - D. Router(config-if)# ip address 92.15.30.143 255.255.255.224
  
12. Which command will verify the operational status of router interfaces?
  - A. Router# show ip route
  - B. Router# show ip protocols
  - C. Router# show ip interface brief
  - D. Router# show start

13. What is the result of starting a new router that has no files saved in NVRAM?
- A. the router starts up in global configuration mode
  - B. the router starts up in user EXEC mode
  - C. the router starts up in privileged EXEC mode
  - D. the router starts up in setup mode
14. What is the subnet address for the IP address 172.19.20.23/29?
- A. 172.19.20.0
  - B. 172.19.20.15
  - C. 172.19.20.16
  - D. 172.19.20.20
  - E. 172.19.20.32
15. A computer has a NIC card installed that can run in either half or full-duplex mode. It is only communicating in half-duplex mode with a hub in the wiring closet. Which action could be taken to enable full-duplex operation?
- A. replace the host NIC
  - B. replace the hub with a Fast Ethernet switch
  - C. replace the cable between the PC and hub port
  - D. install a second NIC card in the host and connect it to another port on the hub
16. What is ROM Monitor (ROMMON) mode?
- A. a memory component for storing the saved configuration file
  - B. a minimal operating system used for hardware troubleshooting and for password recovery
  - C. it is part of IOS and runs in the background until accessed by issuing rommon
  - D. temporary storage space for the router operating files
17. Which two devices will help to solve the problem of a network that is suffering a broadcast storm?
- 1. a router
  - 2. a hub
  - 3. a Layer 3 switch
  - 4. an access point
- A. 1, 2
  - B. 1, 3
  - C. 1, 4
  - D. 2, 3
18. What is the function of the configuration register?
- A. controls how the router boots
  - B. starts and maintains the router
  - C. holds the router run-time configuration
  - D. verifies that all router components are operational

19. What does a host on an Ethernet network do when it is creating a frame, and it does not have the destination address?
- A. drops the frame
  - B. sends out a Layer 3 broadcast message
  - C. sends a message to the router requesting the address
  - D. sends out an ARP request to the destination IP address
20. Which layer of the OSI model is responsible for segmenting data?
- A. Presentation
  - B. Session
  - C. Transport
  - D. Network
21. Which layer of the OSI model controls the reliability of communications?
- A. Transport
  - B. Network
  - A. Physical
  - B. Data-link
22. Which address type does a switch use to make forwarding decisions?
- A. source IP address
  - B. destination IP address
  - C. source MAC address
  - D. destination MAC address
23. Why would you configure port security on a switch?
- A. to prevent unauthorized Telnet access to a switch port
  - B. to prevent unauthorized hosts from accessing the LAN
  - C. to limit the number of Layer 2 broadcasts on a particular switch port
  - D. to block unauthorized access to the switch management interfaces
24. Which one of the following IP addresses is the *last* valid host in the subnet using mask 255.255.255.224?
- A. 196.173.16.61
  - B. 196.173.16.62
  - C. 196.173.16.63
  - D. 196.173.16.64
25. Which transport layer protocol is used for Voice over IP services?
- A. SMTP
  - B. ICMP
  - C. TCP
  - D. UDP

26. When should the `clock rate` command be used on a router's interface?
- A. during diagnostic functions such as a loopback test
  - B. when the router's interface is connected to a DCE cable
  - C. when the router's interface is connected to a switch
  - D. when the router's interface is connected to a DTC cable
27. Which tool can provide a secure communication between two devices over the Internet?
- A. IDS
  - B. IPS
  - C. VPN
  - D. Firewall
28. You need to configure 52 hosts for a computer lab. Which subnet mask is appropriate?
- A. 255.255.255.248
  - B. 255.255.255.240
  - C. 255.255.254.224
  - D. 255.255.255.192
29. Which subnet mask would be used for a Class C address that requires 10 subnets and 12 hosts per subnet?
- A. 255.255.255.0
  - B. 255.255.255.224
  - C. 255.255.255.240
  - D. 255.255.255.248
30. Which two characteristics apply to Layer 2 switches?
- 1. increases the number of collision domains
  - 2. decreases the number of collision domains
  - 3. implements VLAN
  - 4. decreases the number of broadcast domains
  - 5. uses the IP address to make decisions for forwarding data packets
- A. 1, 2
  - B. 1, 3
  - C. 2, 3
  - D. 3, 4
31. In which default order would a router load a configuration file?
- A. Flash, TFTP, ROM
  - B. NVRAM, SETUP, TFTP
  - C. NVRAM, TFTP, SETUP
  - D. Flash, NVRAM, TFTP

32. Which three statements about microsegmentations are correct?
1. microsegmentation increases bandwidth availability
  2. microsegmentation uses half-duplex operation
  3. microsegmentation eliminates collisions
  4. each device on a network segment is connected directly to a switch port
  5. microsegmentation limits the number of segments on a network
- A. 1, 3, 4  
B. 1, 4, 5  
C. 2, 3, 4  
D. 3, 4, 5
33. The `ip helper-address` command does what?
- A. assigns an IP address to a host  
B. resolves an IP address from a DNS server  
C. relays a DHCP request across networks  
D. resolves an IP address overlapping issue
34. What is the purpose of a default route?
- A. It is a route to be used when the routing protocol fails.  
B. It is a route configured by an ISP that sends traffic into a network.  
C. It is a route used when a packet is destined for a remote network that is not listed in the routing table.  
D. It is a route manually configured for a specific remote network for which a routing protocol is not configured.
35. What is administrative distance?
- A. the reliability of a link between two connected routers  
B. the distance between two networks  
C. the cost to reach a network  
D. a measure of the trustworthiness of a route
36. What process is used to establish a connection-oriented virtual circuit between two communicating hosts?
- A. flow control  
B. windowing  
C. three-way handshake  
D. duplexing
37. Which IP address is a private address?
- A. 172.0.0.1  
B. 172.0.19.39  
C. 172.20.14.36  
D. 172.33.194.30

38. Which three IP addresses are valid for hosts belonging to the 101.10.160.0/20 subnet?
1. 101.10.168.0
  2. 101.10.176.1
  3. 101.10.174.255
  4. 101.10.160.255
  5. 101.10.160.0
  6. 101.10.175.255
- A. 1, 2, 3  
B. 1, 3, 4  
C. 1, 3, 5  
D. 1, 4, 6
39. Which layer of the TCP/IP stack combines the OSI model physical and data link layers?
- A. Internet layer  
B. transport layer  
C. application layer  
D. network access layer
40. What is the purpose of assigning an IP address to a switch?
- A. provides local hosts with a default gateway address  
B. allows remote management of the switch  
C. allows the switch to respond to ARP requests between two hosts  
D. ensures that hosts on the same LAN can communicate with each other
41. Which command will set the default gateway to 192.168.12.1 on a switch?
- A. Switch(config)# ip default-network 192.168.12.1  
B. Switch(config)# ip route-default 192.168.12.1  
C. Switch(config)# ip default-gateway 192.168.12.1  
D. Switch(config)# ip route 192.168.12.1 0.0.0.0
42. What will cause a router to enter setup mode?
1. The setup command was issued from the privileged mode prompt.
  2. The IOS is missing.
  3. The configuration file is missing in NVRAM.
  4. The configuration register is set to 0x2100.
- A. 1, 2  
B. 1, 3  
C. 2, 3  
D. 3, 4



43. What two things does a router do when it forwards a packet?
1. switches the packet to the appropriate outgoing interfaces
  2. computes the destination host address
  3. determines the next hop on the path
  4. updates the destination IP address
- A. 1, 2  
B. 1, 3  
C. 1, 4  
D. 3, 4
44. Which two router modes can be protected by a password?
1. user mode
  2. privileged mode
  3. global configuration mode
  4. router configuration mode
- A. 1, 2  
B. 1, 3  
C. 2, 3  
D. 2, 4
45. Which command can be used to determine the type of cable attached to the Serial 0/0/0 interface on a router?
- A. show interfaces serial 0/0/0  
B. show controllers serial 0/0/0  
C. show ip interface  
D. show line serial 0/0/0
46. Which command will configure a default route to any destination network *not* found in the routing table?
- A. Router(config)# ip route 0.0.0.0 255.255.255.255 s0/0/0  
B. Router(config)# ip default-route 0.0.0.0 s0/0/0  
C. Router(config)# ip route 0.0.0.0 0.0.0.0 s0/0/0  
D. Router(config)# ip route any any fa0/0
47. Which protocol uses both TCP and UDP ports?
- A. FTP  
B. SMTP  
C. Telnet  
D. DNS
48. How many simultaneous Telnet sessions does a router support by default?
- A. 3  
B. 4  
C. 5  
D. 6

49. What is the default configuration register setting on most Cisco routers?
- A. 0x2104
  - B. 0x2102
  - C. 0x2012
  - D. 0x2142
50. Where is the start-up configuration file normally stored?
- A. RAM
  - B. ROM
  - C. FLASH
  - D. NVRAM