Contestant Number: _____

Time: _____

Rank: _____

SYSTEMS ADMINISTRATION USING CISCO® (315)

REGIONAL – 2019

TOTAL POINTS _____ *(500 points)*

No more than sixty (60) minutes testing time

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

1. At which layer of the OSI model does PPP perform?
   A. Layer 2
   B. Layer 3
   C. Layer 4
   D. Layer 5

2. Which layer in the OSI reference model is responsible for determining the availability of the receiving program and checking to see if enough resources exist for that communication?
   A. transport
   B. network
   C. presentation
   D. application

3. A national retail chain needs to design an IP addressing scheme to support a nationwide network. The company needs a minimum of 300 sub-networks and a maximum of 50 host addresses per subnet. Working with only one Class B address, which of the following subnet masks will support an appropriate addressing scheme?
   A. 255.255.255.0
   B. 255.255.255.128
   C. 255.255.252.0
   D. 255.255.248.0

4. Which type of address is the public IP address of a NAT device?
   A. Outside global
   B. Outside local
   C. Inside global
   D. Inside public

5. What parameter can be different on ports within EtherChannel?
   A. speed
   B. DTP negotiation settings
   C. Trunk encapsulation
   D. duplex

6. What is the effect of using the service password-encryption command?
   A. Only the enable password will be encrypted
   B. Only passwords configured after the command has been entered will be encrypted
   C. It will encrypt all current and future passwords.
   D. It will encrypt the secret password and remove the enable secret password from the configuration.

7. Which of these represents an Ipv6 link-local address?
   A. FE80::380e:611a:e14f:3d69
   B. FE81::280f:512b:e14f:3d69
   C. FEFE:0345:5f1b::e14d:3d69
   D. FE08::280e:611:a:f14f:3d69

8. What command visualizes the general NetFlow data on the command line?
   A. show ip flow export
   B. show mls netflow ip
   C. show ip cache flow
   D. show mls sampling

9. Which command sets and automatically encrypts the privileged enable mode password?
   A. Enable password c1sc0
   B. Secret enable c1sc0
   C. Password enable c1sc0
   D. Enable secret c1sc0

10. What is a global command?
    A. A command that is set once and affects the entire router
    B. A command that is implemented in all foreign and domestic IOS versions
    C. A command that is universal in application and supports all protocols
    D. A command that is available in every release of IOS, regardless of the version or deployment status

11. What is the correct routing match to reach 172.16.1.5/32?
    A. 172.16.1.0/26
    B. 172.16.1.0/25
    C. 172.16.1.0/24
    D. The default route

12. Refer to the exhibit. What is the result of setting the no login command?

```
Router#config 1
Router(config)#line vty 0 4
Router(config-line)#password c1sc0
Router(config-line)#no login
```

    A. Telnet access is denied
    B. Telnet access requires a new password at the first login
    C. Telnet access requires a new password
    D. No password is required for telnet access

13. Which step in the router boot process searches for an IOS image to load into the router?
    A. bootstrap
    B. POST
    C. mini-IOS
    D. ROMMON mode

14. Which command reveals the last method used to powercycle a router?
    A. show reload
    B. show boot
    C. show running-config
    D. show version

15. What is the difference between a CSU/DSU and a modem?
    A. A CSU/DSU converts analog signals from a router to a leased line; a modem converts analog signals from a router to a leased line.
    B. A CSU/DSU converts analog signals from a router to a phone line; a modem converts digital signals from a router to a leased line.
    C. A CSU/DSU converts digital signals from a router to a phone line; a modem converts analog signals from a router to a phone line.
    D. A CSU/DSU converts digital signals from a router to a leased line; a modem converts digital signals from a router to a phone line.

16. Which statement about LLDP is true?
    A. It is a Cisco proprietary protocol.
    B. It is configured in global configuration mode.
    C. The LLDP update frequency is a fixed value.
    D. It runs over the transport layer.

17. What Cisco IOS feature can be enabled to pinpoint an application that is causing slow network performance.
    A. SNMP
    B. Netflow
    C. WCCP
    D. IP SLA

18. A network administrator needs to allow only one Telnet connection to a router. For anyone viewing the configuration and issuing the show run command, the password for Telnet access should be encrypted. Which set of commands will accomplish this task?
    A. service password-encryption
        access-list 1 permit 192.168.1.0 0.0.0.255
        line vty 0 4
        login
        password cisco
        access-class 1
    B. enable password secret
        line vty 0
        login
        password cisco
    C. service password-encryption
        line vty 1
        login
        password cisco
    D. service password-encryption
        line vty 0 4
        login
        password cisco

19. How does a DHCP server dynamically assign IP addresses to hosts?
    A. Addresses are permanently assigned so that the host uses the same address at all times.
    B. Addresses are assigned for a fixed period of time. At the end of the period, a new request for an address must be made, and another address is then assigned.
    C. Addresses are leased to hosts. A host will usually keep the same address by periodically contacting the DHCP server to renew the lease.
    D. Addresses are allocated after a negotiation between the server and the host to determine the length of the agreement.

20. Which IEEE standard protocol is initiated as a result of successful DTP completion in a switch over Fast Ethernet?
    A. 802.3ad
    B. 802.1w
    C. 802.1D
    D. 802.1Q

21. Refer to the exhibit. Which subnet mask will place all hosts on Network B in the same subnet with the least amount of wasted addresses?
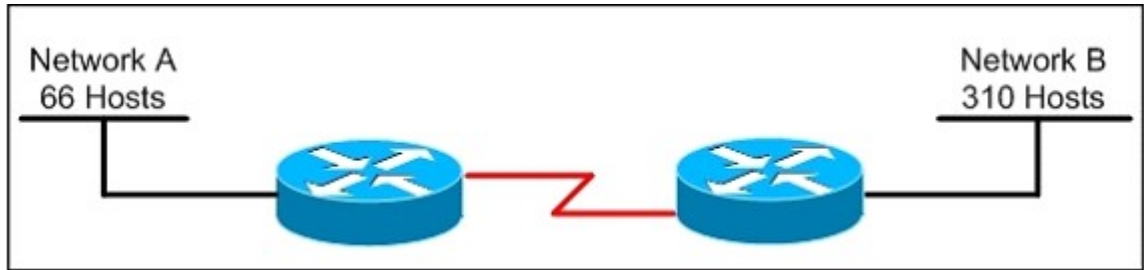

A. 255.255.255.0
B. 255.255.254.0
C. 255.255.252.0
D. 255.255.248.0

22. You have been asked to come up with a subnet mask that will allow all three web servers to be on the same network while providing the maximum number of subnets. Which network address and subnet mask meet this requirement?
A. 192.168.252.0 255.255.255.252
B. 192.168.252.8 255.255.255.248
C. 192.168.252.8 255.255.255.252
D. 192.168.252.16 255.255.255.240

23. Which command can you enter to display duplicate IP addresses that the DHCP server assigns?
A. show ip dhcp conflict 10.0.2.12
B. show ip dhcp database 10.0.2.12
C. show ip dhcp server statistics
D. show ip dhcp binding 10.0.2.12

24. Which interface counter can you use to diagnose a duplex mismatch problem?
A. no earner
B. late collisions
C. giants
D. CRC errors

25. How is an EUI-64 format interface ID created from a 48-bit MAC address?
A. by appending 0xFF to the MAC address
B. by prefixing the MAC address with 0xFFEE
C. by prefixing the MAC address with 0xFF and appending 0xFF to it
D. by inserting 0xFFFE between the upper three bytes and the lower three bytes of the MAC address

26. Which layer is found in *both* the OSI model and the TCP/IP Model?
    A. Session
    B. Internet
    C. Network Access
    D. Transport

27. Which condition does the err-disabled status indicate on an Ethernet interface?
    A. There is a duplex mismatch
    B. The device at the other end of the connection is powered off
    C. The serial interface is disabled
    D. The interface is fully functioning

28. A router receives information about network 192.168.10.0/24 from multiple sources. What will the router consider the most reliable information about the path to that network?
    A. a directly connected interface with an address of 192.168.10.254/24
    B. a static route to network 192.168.10.0/24
    C. a RIP update for network 192.168.10.0/24
    D. a default route with a next hop address of 192.168.10.1

29. What Cisco memory type is used to store crucial operating instructions?
    A. RAM
    B. ROM
    C. NVRAM
    D. Flash

30. What is the danger of the permit any entry in a NAT access list?
    A. It can lead to overloaded resources on the router.
    B. It can cause too many addresses to be assigned to the same interface.
    C. It can disable the overload command.
    D. It prevents the correct translation of IP addresses on the inside network.

31. What is the purpose of the POST operation on a router?
    A. determine whether additional hardware has been added
    B. locate an IOS image for booting
    C. enable a TFTP server
    D. set the configuration register

32. Which Ipv6 address is valid?
    A. 2001:0db8:0000:130F:0000:0000:08GC:140B
    B. 2001:0db8:0:130H::87C:140B
    C. 2031::130F::9C0:876A:130B
    D. 2031:0:130F::9C0:876A:130B

33. Which command can be used from a PC to verify the connectivity between hosts that connect through a switch in the same LAN?
    A. ping address
    B. tracert address
    C. traceroute address
    D. arp address

34. Refer to the exhibit. What is the most efficient summarization that R1 can use to advertise its networks to R2?
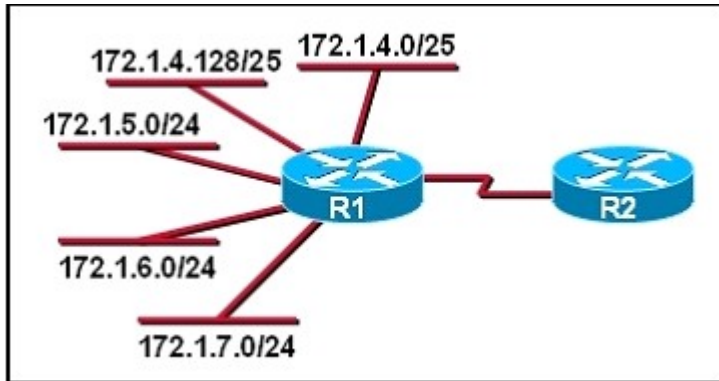
    A. 172.1.0.0/22
    B. 172.1.0.0/21
    C. 172.1.4.0/22
    D. 172.1.4.0/24
       172.1.5.0/24
       172.1.6.0/24
       172.1.7.0/24

35. The enable secret command is used to secure access to which CLI mode?
    A. global configuration mode
    B. privileged EXEC mode
    C. user EXEC mode
    D. auxiliary setup mode

36. What is the *correct* order for the OSI model, layer 7 through 1?
    A. Application, Physical, Session, Transport, Data Link, Network, Internet
    B. Application, Session, Network, Transport, Data Link, Physical, Internet
    C. Application, Presentation, Session, Transport, Network, Data Link, Physical
    D. Application, Session, Network, Transport, Data Link, Physical, Presentation

37. Which command can you use to manually assign a static Ipv6 address to a router interface?
   A. ipv6 autoconfig 2001:db8:2222:7272::72/64
   B. ipv6 address 2001:db8:2222:7272::72/64
   C. ipv6 address PREFIX_1::1/64
   D. ipv6 autoconfig

38. Which command can you execute to set the user inactivity timer to 10 seconds?
   A. SW1(config-line)#exec-timeout 0 10
   B. SW1(config-line)#exec-timeout 10
   C. SW1(config-line)#absolute-timeout 0 10
   D. SW1(config-line)#absolute-timeout 10

39. What is the authoritative source for an address lookup?
   A. a recursive DNS search
   B. the operating system cache
   C. the ISP local cache
   D. the browser cache

40. What is the decimal number for 11101011?
   A. 220
   B. 224
   C. 227
   D. 235

41. Which command can you enter to route all traffic that is destined for 192.168.0.0/20 to a specific interface?
   A. router(config)#ip route 192.168.0.0 255.255.240.0 GigabitEthernet0/1
   B. router(config)#ip route 0.0.0.0 255.255.255.0 GigabitEthernet0/1
   C. router(config)#ip route 0.0.0.0 0.0.0.0 GigabitEthernet0/1
   D. router(config)#ip route 192.168.0.0 255.255.255.0 GigabitEthernet0/1

42. Given an IP address 172.16.28.252 with a subnet mask of 255.255.240.0, what is the correct network address?
   A. 172.16.16.0
   B. 172.16.0.0
   C. 172.16.24.0
   D. 172.16.28.0

43. Refer to the exhibit. What is the reason that the interface status is "administratively down, line protocol down"?

```
Router#show interface s0/0/0
Serial 0/0/0 is administratively down, line protocol is down
```

    A. The interface needs to be configured as a DTE device
    B. The wrong type of cable is connected to the interface.
    C. The interface has been configured with the shutdown command
    D. There is no encapsulation type configured.

44. What SNMP message alerts the manager to a condition on the network?
    A. Response
    B. Get
    C. Trap
    D. capture

45. Which NAT function can map multiple inside addresses to a single outside address?
    A. PAT
    B. SFTP
    C. RARP
    D. ARP

46. Which command would you use on a Cisco router to verify the Layer 3 path to a host?
    A. tracert address
    B. traceroute address
    C. telnet address
    D. ssh address

47. What is the first 24 bits in a MAC address called?
    A. NIC
    B. BIA
    C. OUI
    D. VAI

48. Which IPv6 header field is equivalent to the TTL?
    A. Hop Limit
    B. Flow Label
    C. TTD
    D. Scan Timer

49. If a router has four interfaces and each interface is connected to four switches, how many broadcast domains are present on the router?
    A. 1
    B. 2
    C. 4
    D. 8

50. Which subnet mask would be appropriate for a network address range to be subnetted for up to eight LANs, with each LAN containing 5 to 26 hosts?
    A. 0.0.0.240
    B. 255.255.255.252
    C. 255.255.255.0
    D. 255.255.255.224