Exam Name HCIA-Routing & Switching

Exam Code H12-211

Exam Duration 90 mins

Exam Format Multiple Choice

HCIA-Routing & Switching is intended for the development of networking professionals who possess basic knowledge and skills in enterprise networks. The certification focuses on technologies involved in small-sized enterprise networks. HCIA-Routing & Switching certified engineers have a basic knowledge in the general technologies involved in small-sized enterprise networks and possess the basic network design abilities.

1.(alphabetic)The LAN network is running the 802.1D spanning tree protocol. Which of the following are parameters that a bridge will receive from the root bridge?
A. Maxage.
B. Forward delay.
C. Root Cost.
→ D. A, B, and C.
E. None of the above.

2. (alphabetic)If a port configured with stp loop-protection stops receiving BPDUs, which of the following states will the port be put into?
A. Forwarding.
B. Learning.
→ C. Discarding.
D. None of all.

3.(multiple alphabetic)Which two port states are used by RSTP?
→ A. Discarding.
B. Blocking.
C. Listening.
→ D. Forwarding.

4. (alphabetic)STP Root Bridge selection is based on which of the following?
→ A. Bridge Priority and MAC address
B. Bridge Priority
C. MAC address
D. Cost of interfaces

5.(alphabetic)Serial 0 on an OSPF router is added to area 1, you then configure serial 0 as silent. What is the effect of this configuration change?
A. OSPF will form all the available adjacencies out of that interface
B. OSPF will accept the routing updates from neighbors.
C. OSPF will not insert any of the learned routes in the local routing table.
→ D. OSPF will not form any adjacency out of that interface.
E. None of the above.

6. (multiple alphabetic)When the Huawei VRP OSPF command ospf timer dead 20 is configured, which of the following are right?
→ A.OSPF hello interval is 5 seconds
B.OSPF hello interval is 20 seconds
→ C.OSPF dead interval is 20 seconds
D.OSPF dead interval is 80 seconds

7.(alphabetic)How many bits dose EXP occupy in the MPLS label header?
A.1
B.2
→ C.3
D.4

8. (alphabetic)A new user is complaining about poor network performance, collisions and intermittent communication problems between a PC and a switch port may be the result of:
A. The port being err disabled on the switch
→ B. Mismatching duplex modes
C. The wrong wire category being used
D. Mismatching speeds
E. All of the above

9. (multiple alphabetic) Routers A and B are directly connected and running OSPF, however they cannot form a neighbor relationship. Which of the following are possible reasons?

→ A.The hello and dead interval does not match

→ B. The network mask does not match

→ C. The authentication does not match

→ D. The area does not match

E. OSPF process does not match

10. (Single Answer) An administrator has implemented the following configuration in VRP.

<huawei>system-view
[huawei]user-interface maximum-vty 7

What effect will the above command have on user access?

A. A maximum of 7 users are permitted to log into the device via the asynchronous serial port

→ B. A maximum of 7 users are permitted to access the device using telnet.

C. A maximum of 7 users are permitted to access the device via the console port.

D. Users interfacing with VRP have a maximum of 7 password retries before user access is locked.

11. (Multiple Choice) An administrator has been requested to assign hosts to the 172.16.4.32/29 network. Which of the following IP addresses may be assigned by the administrator to these hosts?

A. 172.16.4.32 255.255.255.240

→ B. 172.16.4.33 255.255.255.248

C. 172.16.4.34 255.255.255.240

→ D. 172.16.4.35 255.255.255.248

12. (Multiple Choice) In order to determine the reason for a change in the spanning tree topology, the following port information was extracted by an administrator from one of the switches.

```
----[Port1(GigabitEthernet0/0/1)][FORWARDING]----
Port Protocol       :Enabled
Port Role           :Designated Port
Port Priority       :128
Port Cost(Dot1T )     :Config=100 / Active=100
Designated Bridge/Port :32768.4c1f-cc4f-26df / 128.1
Port Edged          :Config=default / Active=disabled
Point-to-point      :Config=auto / Active=true
Transit Limit       :147 packets/hello-time
Protection Type     :None
Port STP Mode       :STP
```

From the given output, what is the administrator able to determine?
A. The port cost of the port interface has been assigned automatically by the 802.1t path cost standard.
B. The bridge priority is using the default priority.
C. The port cost of the port interface has been manually assigned using the *stp path cost* command.
D. The bridge priority has been changed from the default priority of 32767.

13. (Single Answer) The following routes have been configured within the IP routing table of a router.

Destination/Mask	Proto	Pre	Cost	Flags	NextHop	Interface
172.16.1.0/24	OSPF	10	200	D	192.168.1.2	Gigabit Ethernet0/0/0
172.16.0.0/16	Static	5	0	RD	192.168.1.2	Gigabit Ethernet0/0/0
172.16.1.0/24	Static	80	0	RD	192.168.1.2	Gigabit Ethernet0/0/0

Which of the routes will be used in order to forward traffic to the destination host address of 172.16.1.1?

A. Static route 172.16.0.0/16 containing a preference of 5 and a cost of 0
B. Static route 172.16.1.0/24 containing a preference of 80 and a cost of 0
C. OSPF route 172.16.1.0/24 containing a preference of 10 and a cost of 200.
D. The two static routes will be active at the same time based on the cost value of 0.

14. (Single Answer) Three AR2200 routers (RTA, RTB and RTC) have been configured as part of OSPF Area 0 via interface Gigabit Ethernet 0/0/0 in all instances. The default **broadcast** network type has been maintained. In addition, the three routers have been assigned the following parameters:

For RTA: A Router ID of 1.1.1.1 and an interface Gigabit Ethernet 0/0/0 dr-priority of 0 are used.
For RTB: A Router ID of 2.2.2.2 and an interface Gigabit Ethernet 0/0/0 dr-priority of 255 are used.
For RTC: A Router ID of 3.3.3.3 and the default interface Gigabit Ethernet 0/0/0 dr-priority are used.
For the given scenario, which of the following statements are true?

A. Router RTA will adopt the role of DR and RTB will adopt the role of BDR.
B. Router RTB will adopt the role of DR and RTC will adopt the role of BDR.
C. Router RTB will adopt the role of DR and RTA will adopt the role of BDR.
D. Router RTC will adopt the role of DR and RTB will adopt the role of BDR

15. (Multiple Choice) The following commands are implemented while configuring an Eth-trunk interface in VRP.

[huawei]interface eth-trunk 1
[huawei-Eth-Trunk1]undo portswitch
What is the effect of configuring the undo portswitch command on the Eth-trunk interface?
A. The undo portswitch command will allow the L3 switch to perform layer 2 link aggregation.
B. The undo portswitch command will allow the L3 switch to perform layer 3 link aggregation.
C. The undo portswitch command will allow the router to perform layer 2 link aggregation.
D. The undo portswitch command will allow the router to perform layer 3 link aggregation.

16. (Single Answer) The following VLAN command has been configured on the switch.

[huawei]vlan batch 2 to 9 10

With regards to the configured command, which of the following statements is correct?
→ A. VLANs 2, 3, 4, 5, 6, 7, 8, 9 and 10 will be created on the switch
B. VLANs 2, 9 and 10 will be created on the switch.
C. The switch will generate an error stating that the format of the command is incorrect.
D. VLANs from 2 through to 910 will be created on the switch.

17. (Multiple Choice) Which of the following statements regarding access ports behavior are FALSE?
A. Untagged frames are tagged with the default VLAN ID of the port on which the frame was received.
→ B. Untagged frames are tagged with the default VLAN ID of the port on which the frame is to be transmitted
C. Tagged frames are accepted if the frame VLAN ID matches the default VLAN ID of the port on which the frame is received.
→ D. Tagged frames are discarded if the frame VLAN ID matches the default VLAN ID of the port on which the frame is received.

18. (Multiple Choice) Upon attempting to establish a PPPoE connection, the administrator experienced difficulties. As such, the following information was captured on the PPPoE client by the administrator.

<Huawei>display pppoe-client session summary
PPPoE Client Session:
ID Bundle Dialer Intf   Client-MAC   Server-MAC   State
0 1   1   GE0/0/0   00e0fc2c4704 000000000000 PADI

From the given display output, what is the administrator able to determine regarding the state of the PPPoE connection?
A. The PPPoE client is not active.
→ B. A PPPoE Active Discovery Initiation packet has been sent by the client.
C. A PPPoE Active Discovery Request packet has been sent by the client.
→ D. The PPPoE server is currently not responding.

19. (Multiple Choice) IP traffic originating from the internal network host of 192.168.1.1/24 destined for the public server with the address of 160.131.20.1. The administrator has configured the following command

[RTA]interface GigabitEthernet 0/0/0
[RTA-GigabitEthernet0/0/0]nat outbound 2000

From the given command output, what can be determined regarding the implemented NAT configuration?
A. Internal host address 192.168.1.1 will be translated to the public IP address associated with interface GigabitEthernet 0/0/0.
B. Internal host address 192.168.1.1 will be translated to a public IP address from an assigned address pool.
C. The administrator has configured Internal Server based NAT.
D. The administrator has configured easyIP based NAT

20. (Multiple Choice) Which of the following represent parameters supported by Advanced Access Control Lists?
A. Source & Destination IP addresses
B. Source & Destination Port numbers
C. Source & Destination MAC addresses
D. The ICMP protocol type

21. (Single Answer) As part of the AAA scheme for user access to the network, the administrator configures the following commands:

[Huawei-aaa]authorization-scheme A2
[Huawei-aaa-author-A2]authorization-mode if-authenticated hwtacacs local

What effect will be applied to users associated with this scheme?
⟹ A. Authenticated users will be authorized using hwtacacs authorization, if this fails local authorization will be used.
B. Authenticated users will be authorized using local authorization, if this fails hwtacacs authorization will be used.
C. Users will be authenticated using hwtacacs authentication, and if authenticated successfully, will be authorized using local authorization.
D. Users will be authenticated using local authentication, and if authenticated successfully, will be authorized using hwtacacs authorization.

22. (Multiple Choice) Which of the following represent features provided by the Authentication Header?
⟹ A. Data Origin Authentication
B. Data Confidentiality
⟹ C. Data Integrity Checking
⟹ D. Anti-Replay Service.

23. (Single Answer) What is the recommended tunnel MTU that should be set for supporting GRE traffic carried over Ethernet to prevent packet fragmentation?
A. 1492
B. 1480
⟹ C. 1476
D. 1430

24. (Multiple Choice) Which two message protocol data units are supported as of SNMPv2c?
A. SetRequest
⟹ B. GetBulkRequest
C. GetNextRequest
⟹ D. InformRequest

25. (Multiple Choice) For the IPv6 address 2000:002A:0000:0000:0000:000A:020C:023D, which of the following represent valid condensed forms.
⟹ A. 2000:2A::A:20C:23D
⟹ B. 2000:2A:0:0:0:A:20C:23D
C. 2000:2A::A:2C:23D
D. 2000:2A:0:0:0:A:2C:23D

26. (Multiple Choice) For the router responsible for generating Router Advertisements (RA) on the link, the Managed (M) flag has been set to 0 and the Other (O) flag has been set 1. Based on the configuration options set, what IPv6 addressing behavior will be applied on the link?
⟹ A. Hosts on the link will generate stateless IPv6 addresses based on a prefix advertised by the router.
B. Hosts on the link will support stateful IPv6 address allocation through a DHCPv6 server.
⟹ C. A DHCPv6 server on the link will provide stateless configuration settings to hosts.
D. Configuration settings will be required to be manually set by the administrator.

27. When the default route is configured, the destination netowrk address is 255.255.255.255

A. True

⟹ B. false

28. After the "interface loopback 0" command is run, the physic layer of the loopback 0 interface is UP and the protocol layer is Down
   A. True
→ B. False

29 The IPSec VPN forward the protected data flows through the IPSec Tunnel
   A. True
→ B. False

30 When configuring PPPoE, run "the dialer bundle" command to specify the Dialer bundle used

by the dialer interface
→ A. True
   B. False

31 The subnet mask is used to distinguish the type of IP addresses.
   A. True
→ B. False

32 After the root bridge is faulty, other switches are elected as root bridge. After the root

bridge recovers, the network does not change.

   A. True
→ B. False

33. Link backup can be used in manual load balancing mode link aggregation

A. True
⟹ B. False

34. Huawei network devices allow multiple users to log in to the system through the console port at the same time.

A. True
⟹ B. False

35. The ARG3 series routers support the configuration of the authentication scheme and accounting scheme.

A. True
⟹ B. False

36. The port cost is the total cost of the path to the root bridge, and the root path cost is the cost of the switch port.

A. True
⟹ B. False

37. What is the function of the TTL field in the IP packet header?

⟹ A. Limit the lifetime and discard the packets that cannot reach the destination
B. Record the path information that the packet passes through

C. Prevent mac address flapping

D. Prevent broadcast storm

38. How many packets need to be exchanged in CHAP authentication mode?

A. 3 packets

B. 4 packets

C. 5 packets

D. 2 packets

39. Which of the following routing table parameters indicates the priority of a route?

A. Interface

B. Preference

C. Protocol

D. Cost

40. What is OSPFv3 used to uniquely identify a router?

A. MAC address

B. Router ID

C. dr-priority

D. IP address

41. Which of the following transmission media is used when Gigabit Ethernet is deployed?

A. Coaxial cable

B. Twisted-pair cable ➡ ?

C. Serial port cable

➡ D. Optical fiber

42. What is the function of synchronization in the P/A mechanism?

A. Determine the port role

➡ B. Avoid the generation of temporary loops.

C. Determine the switch role

D. Run the spanning tree protocol in multi-instnce scenarios

43. Which field in the MPLS header identifies the stack bottom field?

A. Label

B. TTL

➡ C. S

D. Exp

44. What is the first step when a terminal device receives a data frame?

A. Check the FCS field

→ B. Check the destination MAC address

C. Discard

D. Check the source MAC address

45. Which field in an Ethernet data frame determines the upper-layer protocol of a network device?

→ A. Type

B. FCS

C. D.MAC

D. S.MAC

46. Which ports are supported by the FTP control plane channel by default?

A. 23

B. 20

C. 22

→ D. 21

47. What are the functions and features of NAPT?

→ A. NAPT is Port-based translation

→ B. NAPT allows multiple internal addresses to be mapped to different ports of the same public address.

C. Allow external users access internal servers

D. Only one-to-one mapping between private addresses and public addresses can be implemented.

48. What is the VRP Version Used by Huaewei Datacom Devices

A. VRP2

→ B. VRP8

→ C. VRP5

D. VRP4

49. Which types of ICMP messages are used for ping?

A. Redirect

→ B. Echo request

→ C. Echo reply

D. Error packet

50. Which IP addresses are reserved in the address pool?

→ A. IP addresses assigned to the server

→ B. Gateway IP address

→ C. IP address reserved for a specific host

→ D. Interface IP address of the DHCP server

51. Which of the following flags are involved in TCP three way handshake

→ A. ACK

B. Fin

C. Seq

→ D. SYN

52. After the VRPis upgraded and restarted, how can the administrator confrm that the upgrade is sucessful?

A. Run the "display current-configuration" command

B. Run the "compare configuration" command

→ C. Run the "display startup" command

→ D. Run the "display version" command

53. What are the possible operations if a router receives broadcast packets form hosts on the network?

A. Saved on the local

→ B. Response part packet if necessary

→ C. Discard

D. Forwarding to other broadcast domains

54. Which of the following packet field can be used for advanced ACL rules?

→ A. TCP flag

→ B. Source/Destination IP address

→ C. Source/Destination port number

→ D. Protocol type

55. Which of the following parameters can be defined for IPSec peers by Security Association?

A. Authentication Algorithm

→ B. Data encapsulation mode

→ C. Charging Mode

→ D. Encryption algorithm

56. Which of the following parameters are used by the router to select the optimal route?

→ A. Priority of route

→ B. Metric

C. Outbound interface

D. Next-hop address

57.

tips

- Blackhole MAC address entries can be used to filter out invalid MAC addresses. To prevent a hacker from using a MAC address to attack a user device or network, configure the MAC address of an untrusted user as the blackhole MAC address. The switch directly discards the received packets where the source or destination MAC address is the blackhole MAC address and the VLAN ID of the packets corresponds to the blackhole MAC address.

- NOTE: The switch forwards Layer 3 packets with the source MAC addresses matching blackhole MAC address entries.

- In system-view run:
  - [Switch] **mac-address blackhole** *mac-address* **vlan** *vlan-id*
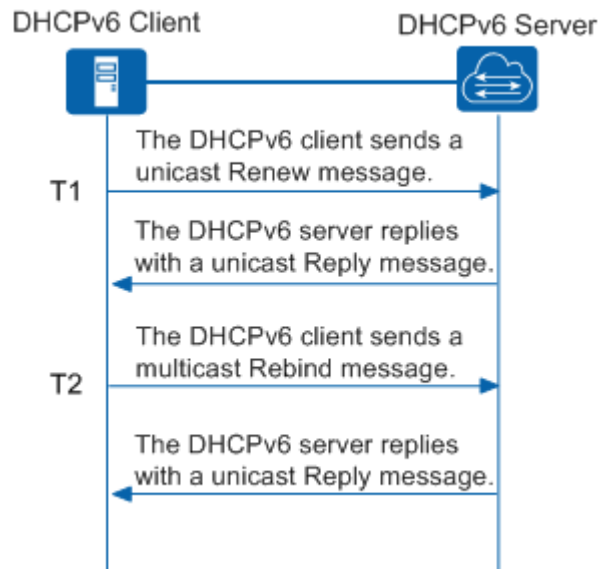
Tips Hello and Dead Intervals in OSPF

- https://support.huawei.com/enterprise/it/doc/EDOC1100112917/ca17a1dd/ospfv3-timer-dead
  - The dead interval of switches in the same network segment must be consistent.
- https://support.huawei.com/enterprise/it/doc/EDOC1100112496/f256ded6/ospfv3-timer-hello
  - Ensure that the parameters of this interface and the adjacent routers are consistent.

Tips OSPF cost

- If no cost is set for an OSPF interface using the **ospf cost** command, OSPF automatically calculates its cost based on the interface bandwidth. The calculation formula is as follows:
  - Cost of the interface = Bandwidth reference value/Interface bandwidth.
- The integer of the calculated result is the cost of the interface. <u>If the calculated result is smaller than 1, the cost is 1</u>.
- Cost is a positive integer value.
- Any decimal value would be rounded back in nearest positive integer.
- Any value below 1 would be considered as 1.
- **Cumulative cost = *Sum of all outgoing interfaces cost in route***

Tips DHCPv6

- The DHCPv6 information refresh option can specify an upper boundary for the length of time a client should wait before refreshing information retrieved from DHCPv6.

DHCPv6 Client   **DHCPv6 Server**

T1

The DHCPv6 client sends a unicast Renew message.

The DHCPv6 server replies with a unicast Reply message.

The DHCPv6 client sends a multicast Rebind message.

T2

The DHCPv6 server replies with a unicast Reply message.

1. When the lease reaches T1 (indicating 50% of the lifetime by default), the DHCPv6 client sends a unicast Renew message (carrying the DHCPv6 server's DUID) to the DHCPv6 server that allocates the IPv6 address to request for lease renewal.

2. After receiving the Renew message, the DHCPv6 server checks the IPv6 address carried in the message. If the check passes, the DHCPv6 server replies with a Reply message carrying the IPv6 address with a new lifetime, T1', and T2' to the DHCPv6 client.

3. If the DHCPv6 client receives the Reply message, the IPv6 address lease is successfully renewed (counted from 0).

4. If no reply is received from the DHCPv6 server when the lease reaches T2 (indicating 80% of the lifetime by default), the DHCPv6 client sends a multicast Rebind message to all DHCPv6 servers on the same link to request for IPv6 address lease renewal.

5. When a DHCPv6 server receives the Rebind message, the DHCPv6 server checks the DHCPv6 server DUID carried in the message.

if the DHCPv6 server DUID carried in the Rebind message is not the DHCPv6 server's DUID, the DHCPv6 server does not respond to the Rebind message. If the DHCPv6 server DUID carried in the Rebind message is the DHCPv6 server's DUID, the DHCPv6 server checks the IPv6 address carried in the message. If the check passes, the DHCPv6 server replies with a Reply message carrying the IPv6 address with a new lifetime, T1', and T2' to the DHCPv6 client.

Ports e Types

Protocol	Port
FTP	20 data – 21 control
HTTP	80
TELNET	23
SMTP	25
POP3	110
IMAP4	143

EtherType (hexadecimal)	Protocol
0x0800	Internet Protocol version 4 (IPv4)
0x0806	Address Resolution Protocol (ARP)
0x86DD	Internet Protocol Version 6 (IPv6)
0x8847	MPLS unicast
0x8848	MPLS multicast
0x03 within the type field of the SNAP header	Spanning Tree Protocol (STP)

Tips: VRP

Function	Command
Change directory	cd
View current directory	pwd
View content of directory	dir
View file content	more

Function	Command
Copy file	copy
Move file	move
Rename file	rename

Function	Command
Change directory	cd
View current directory	pwd
View content of directory	dir
View file content	more

Function	Command
Delete or permanently delete file	delete /unreserved
Recover file	undelete
Permanently clear the recycle bin	reset recycle-bin

Tips: Static routes

- When creating static routes, you can specify both the outbound interface and next hop. Alternatively, **you can specify only the outbound interface or next hop based on the outbound interface type**. Specify the outbound interface for P2P interfaces.

- Specify the next hop for non broadcast multiple access (NBMA) interfaces.

- Specify the next hop for broadcast interfaces (for example, Ethernet interfaces)