UNIVERSITY OF ESWATINI

Faculty of Science and Engineering

Department of Computer Science

RESIT EXAMINATION - NOVEMBER 2021

Title of Paper: COMPUTER NETWORKS II

Course Number: CSC432

Time Allowed: 3 hours

Instructions to candidates:

This question paper consists of Four (4) questions. Answer All questions.
Marks for each individual question are indicated in square brackets.
All questions carry equal marks (25 Marks Each).

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QUESTION 1 (Multiple choice)

1. Refer to the exhibit. What will router R1 do with a packet that has a destination IPv6 address of 2001:db8:cafe:5::1?
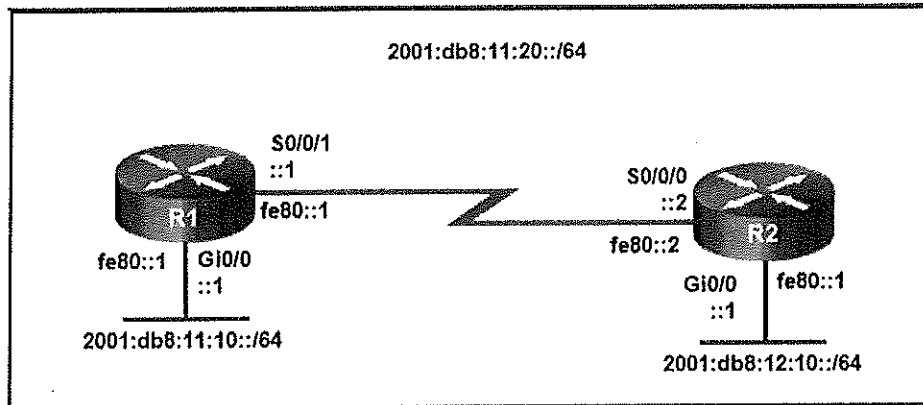
```
R1# show ipv6 route

<output omitted>

S ::/0 [1/0]
via Serial0/0/0, directly connected
C 2001:DB8:CAFE:1::/64 [0/0]
via GigabitEthernet0/1, directly connected
L 2001:DB8:CAFE:1::1/128 [0/0]
via GigabitEthernet0/1, receive
C 2001:DB8:CAFE:2::/64 [0/0]
via GigabitEthernet0/0, directly connected
L 2001:DB8:CAFE:2::1/128 [0/0]
via GigabitEthernet0/0, receive
C 2001:DB8:CAFE:3::/64 [0/0]
via Serial0/0/0, directly connected
L 2001:DB8:CAFE:3::1/128 [0/0]
via Serial0/0/0, receive
S 2001:DB8:CAFE:4::1/128 [1/0]
via Serial0/0/0, directly connected
L FF00::/8 [0/0]
via Null0, receive
```

A. forward the packet out GigabitEthernet0/0
B. drop the packet
C. forward the packet out GigabitEthernet0/1
D. forward the packet out Serial0/0/0

2. Which option shows a correctly configured IPv4 default static route?

A. ip route 0.0.0.0 255.255.255.0 S0/0/0
B. ip route 0.0.0.0 0.0.0.0 S0/0/0
C. ip route 0.0.0.0 255.255.255.255 S0/0/0
D. ip route 0.0.0.0 255.0.0.0 S0/0/0

3.Refer to the exhibit. Which static route command can be entered on R1 to forward traffic to the LAN connected to R2?

2001:db8:11:20::/64

S0/0/1 ::1

S0/0/0 ::2

fe80::1

fe80::2

fe80::1   Gi0/0 ::1

Gi0/0 ::1   fe80::1

2001:db8:11:10::/64

2001:db8:12:10::/64

A. ipv6 route 2001:db8:12:10::/64 S0/0/0
B. ipv6 route 2001:db8:12:10::/64 S0/0/1 fe80::2
C. ipv6 route 2001:db8:12:10::/64 S0/0/0 fe80::2
D. ipv6 route 2001:db8:12:10::/64 S0/0/1 2001:db8:12:10::1

4. Which statement describes a result after multiple Cisco LAN switches are interconnected?

A. The broadcast domain expands to all switches.
B. One collision domain exists per switch.
C. There is one broadcast domain and one collision domain per switch.
D. Frame collisions increase on the segments connecting the switches.
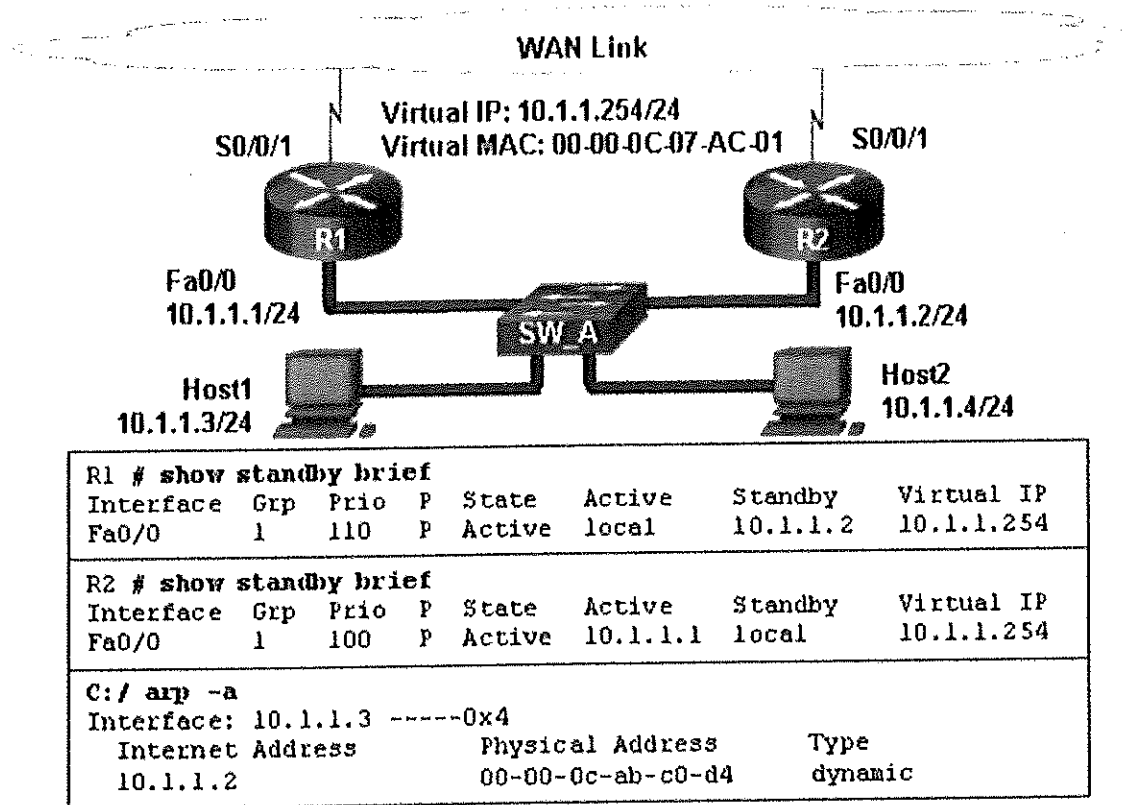E. Unicast frames are always forwarded regardless of the destination MAC address.

5. An administrator is trying to remove configurations from a switch. After using the command erase startup-config and reloading the switch, the administrator finds that VLANs 10 and 100 still exist on the switch. Why were these VLANs not removed?

A. Because these VLANs are stored in a file that is called vlan.dat that is located in flash memory, this file must be manually deleted.
B. These VLANs cannot be deleted unless the switch is in VTP client mode.
C. These VLANs are default VLANs that cannot be removed.
D. These VLANs can only be removed from the switch by using the no vlan 10 and no vlan 100 commands.

6. What is a secure configuration option for remote access to a network device?

A. Configure an ACL and apply it to the VTY lines.
B. Configure 802.1x.
C. Configure SSH.
D. Configure Telnet.

7. Refer to the exhibit. A network administrator configured routers R1 and R2 as part of HSRP group 1. After the routers have been reloaded, a user on Host1 complained of lack of connectivity to the Internet The network administrator issued the show standby brief command on both routers to verify the HSRP operations. In addition, the administrator observed the ARP table on Host1. Which entry should be seen in the ARP table on Host1 in order to gain connectivity to the Internet?

WAN Link

SO/0/1 | Virtual IP: 10.1.1.254/24
Virtual MAC: 00-00-0C-07-AC-01 | SO/0/1

Fa0/0
10.1.1.1/24

SW A

Fa0/0
10.1.1.2/24

Host1
10.1.1.3/24

Host2
10.1.1.4/24

```
R1 # show standby brief
Interface  Grp  Prio  P  State   Active  Standby   Virtual IP
Fa0/0      1    110   P  Active  local   10.1.1.2  10.1.1.254
```

```
R2 # show standby brief
Interface  Grp  Prio  P  State   Active    Standby  Virtual IP
Fa0/0      1    100   P  Active  10.1.1.1  local    10.1.1.254
```

```
C:/ arp -a
Interface: 10.1.1.3 ------0x4
  Internet Address       Physical Address    Type
  10.1.1.2               00-00-0c-ab-c0-d4   dynamic
```

A. the virtual IP address and the virtual MAC address for the HSRP group 1
B. the virtual IP address of the HSRP group 1 and the MAC address of R1
C. the virtual IP address of the HSRP group 1 and the MAC address of R2

8. What protocol or technology disables redundant paths to eliminate Layer 2 loops?

A. VTP
B. STP
C. EtherChannel
D. DTP

9. Refer to the exhibit. Based on the exhibited configuration and output, why is VLAN 99 missing?

```
Sw1(config)# interface vlan 99
Sw1(config-if)# ip address 192.168.99.3 255.255.255.0
Sw1(config-if)# no shutdown
Sw1# show vlan
VLAN  Name                 Status     Ports
___   _____      _____   _____
1     default              active     Fa0/1,  Fa0/2,  Fa0/3,  Fa0/4
                                      Fa0/5,  Fa0/6,  Fa0/7,  Fa0/8
                                      Fa0/9,  Fa0/10, Fa0/11,
                                      Fa0/12, Gi0/1,  Gi0/2

1002  fddi-default         act/unsup
1003  token-ring-default   act/unsup
1004  fddinet-default      act/unsup
1005  trnet-default        act/unsup
<OUTPUT OMITTED>
```

A. because VLAN 99 is not a valid management VLAN
B. because there is a cabling problem on VLAN 99
C. because VLAN 1 is up and there can only be one management VLAN on the switch
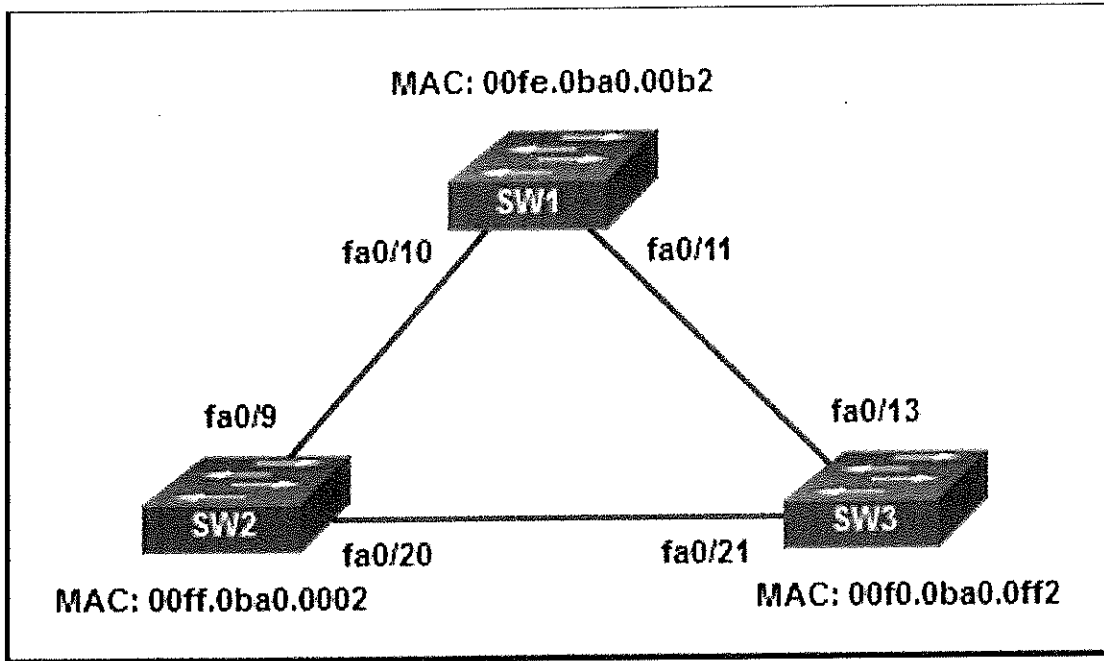D. because VLAN 99 has not yet been created

10. Which two VTP modes allow for the creation, modification, and deletion of VLANs on the local switch? (Choose two.)

A. client
B. master
C. distribution
D. slave
E. server
F. transparent

11. Which three steps should be taken before moving a Cisco switch to a new VTP management domain? (Choose three.)

A. Configure the switch with the name of the new management domain.
B. Reset the VTP counters to allow the switch to synchronize with the other switches in the domain.
C. Configure the VTP server in the domain to recognize the BID of the new switch.
D. Download the VTP database from the VTP server in the new domain.
E. Select the correct VTP mode and version.
F. Reboot the switch.

12. Refer to the exhibit. All the displayed switches are Cisco 2960 switches with the same default priority and operating at the same bandwidth. Which three ports will be STP designated ports? (Choose three.)

MAC: 00fe.0ba0.00b2

SW1
fa0/10   fa0/11

fa0/9   fa0/13

SW2   fa0/20   fa0/21   SW3

MAC: 00ff.0ba0.0002   MAC: 00f0.0ba0.0ff2

A. fa0/9
B. fa0/13
C. fa0/10
D. fa0/20
E. fa0/21
F. fa0/11

13. How will a router handle static routing differently if Cisco Express Forwarding is disabled?

A. It will not perform recursive lookups.
B. Ethernet multiaccess interfaces will require fully specified static routes to avoid routing inconsistencies.
C. Static routes that use an exit interface will be unnecessary.
D. Serial point-to-point interfaces will require fully specified static routes to avoid routing inconsistencies.

14. Compared with dynamic routes, what are two advantages of using static routes on a router? (Choose two.)

A. They improve network security.

B. They take less time to converge when the network topology changes.

C. They improve the efficiency of discovering neighboring networks.

D. They use fewer router resources.

15. What is the effect of entering the spanning-tree portfast configuration command on a switch?

A. It disables an unused port.

B. It disables all trunk ports.

C. It enables portfast on a specific switch interface.

D. It checks the source L2 address in the Ethernet header against the sender L2 address in the ARP body.

16. What is the IPv6 prefix that is used for link-local addresses?

A. FF01::/8

B. 2001::/3

C. FC00::/7

D. FE80::/10

17. Which two statements are characteristics of routed ports on a multilayer switch? (Choose two.)

A. In a switched network, they are mostly configured between switches at the core and distribution layers.

B. The interface vlan command has to be entered to create a VLAN on routed ports.

C. They support subinterfaces, like interfaces on the Cisco IOS routers.

D. They are used for point-to-multipoint links.

E. They are not associated with a particular VLAN.

18. Which command will start the process to bundle two physical interfaces to create an EtherChannel group via LACP?

A. interface port-channel 2

B. channel-group 1 mode desirable

C. interface range GigabitEthernet 0/4 – 5

D. channel-group 2 mode auto

19. What action takes place when a frame entering a switch has a multicast destination MAC address?

A. The switch will forward the frame out all ports except the incoming port.

B. The switch forwards the frame out of the specified port.

C. The switch adds a MAC address table entry mapping for the destination MAC address and the ingress port.

D. The switch replaces the old entry and uses the more current port.

QUESTION 2

A. The topology below is an example of a multi-switched network with the implementation of VLANs;
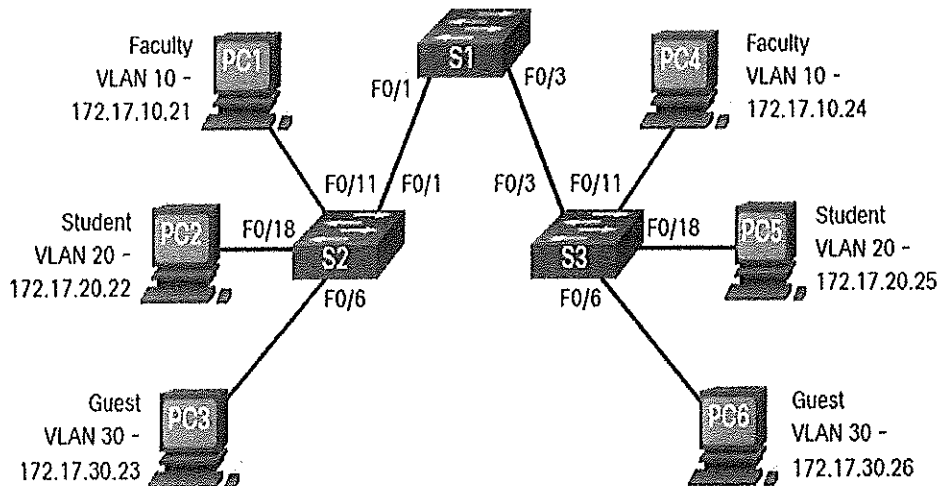
i. Explain how this network can be configured to work as expected, your explanation should also cover the concept of trunking. [15]

NB: you may include configurations in your explanation.

ii. This design is better than a design without VLANs but it has some limitations too. In what way is it better? What are its limitations and how can they be corrected? [6]

QUESTION 3

A. Explain the concept of Dynamic Trunking Protocol (DTP) indicating clearly how it works and why it's needed in some instances and not needed in others (Specify the different configuration options that DTP has). [10]

B. Discuss the two protocols of EtherChannel, PAgP and LACP. Discuss the operational modes for each, indication where each will successfully form an EtherChannel. [12]

C. What are BPDUs and what are they used for in STP? [3]

QUESTION 4

A. Describe two functions of a router. [4]

B. "Best path equals longest match", what does this phrase mean in as far as routing is concerned? [3]

C. An IPv4 packet has a destination IPv4 address 172.16.0.10. The router has three route entries in its IPv4 routing table that match this packet: 172.16.0.0/12, 172.16.0.0/18, and 172.16.0.0/26. Of the three routes, using the longest match rule, explain which route the router will choose to forward the packet. [5]

D. Compare and contrast between static and dynamic routing protocols? [10]

E. What is a default route? [3]

End of Question Paper