

# UNIVERSITY OF ESWATINI

## Faculty of Science and Engineering

Department of Computer Science

### MAIN EXAMINATION - OCTOBER 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).*

---

DO NOT OPEN THE PAPER UNTIL PERMISSION HAS BEEN GIVEN BY  
THE INVIGILATOR.

**QUESTION 1 (Multiple choice)**

1. Which tasks can be accomplished by using the command history feature? (Choose two.)

- A. View a list of commands entered in a previous session.
- B. Recall up to 15 command lines by default.
- C. Set the command history buffer size.
- D. Recall previously entered commands.
- E. Save command lines in a log file for future reference

2. What is the first action in the boot sequence when a switch is powered on?

- A. load the default Cisco IOS software
- B. load boot loader software
- C. low-level CPU initialization
- D. load a power-on self-test program

3. When configuring a switch for SSH access, what other command that is associated with the login local command is required to be entered on the switch?

- A. enable secret *password*
- B. password *password*
- C. username *username* secret *secret*
- D. login block-for *seconds* attempts *number* within \*seconds\*

4. Which command displays information about the auto-MDIX setting for a specific interface?

- A. show interfaces
- B. show controllers
- C. show processes
- D. show running-config

5. Which impact does adding a Layer 2 switch have on a network?

- A. an increase in the number of dropped frames
- B. an increase in the size of the broadcast domain
- C. an increase in the number of network collisions
- D. an increase in the size of the collision domain

6. Which characteristic describes cut-through switching?

- A. Error-free fragments are forwarded, so switching occurs with lower latency.
- B. Frames are forwarded without any error checking.
- C. Only outgoing frames are checked for errors.
- D. Buffering is used to support different Ethernet speeds.

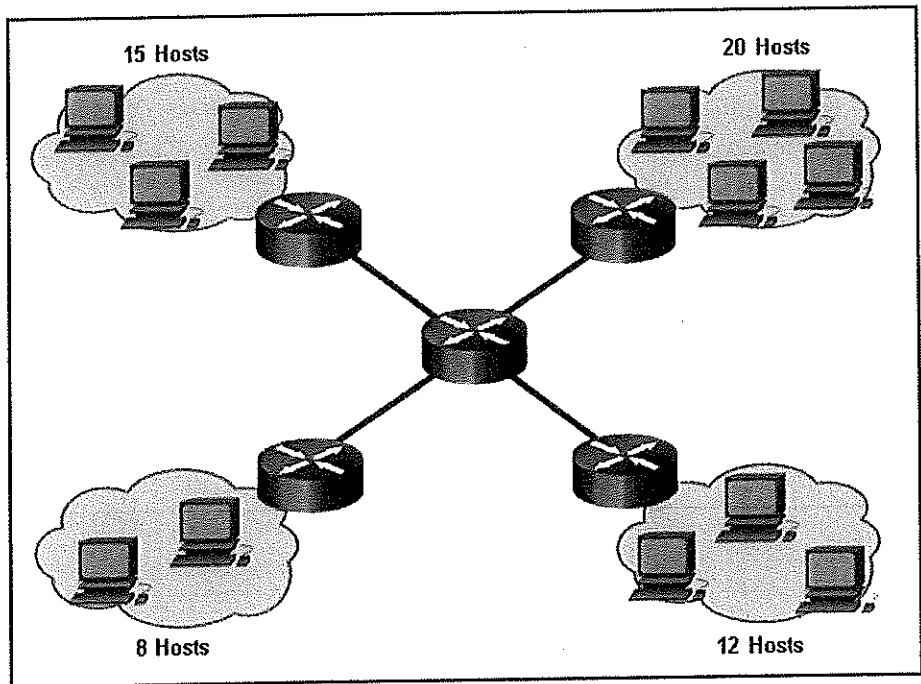
7. What information is added to the switch table from incoming frames?

- A. source MAC address and incoming port number
- B. destination MAC address and incoming port number
- C. source IP address and incoming port number
- D. destination IP address and incoming port number

8. Which switching method ensures that the incoming frame is error-free before forwarding?

- A. cut-through
- B. FCS
- C. fragment free
- D. store-and-forward

9. Refer to the exhibit. How many broadcast domains are displayed?



- A. 1
- B. 4
- C. 8
- D. 16
- E. 55

10. Under which two occasions should an administrator disable DTP while managing a local area network? (Choose two.)

- A. when connecting a Cisco switch to a non-Cisco switch
- B. when a neighbor switch uses a DTP mode of dynamic auto

- C. when a neighbor switch uses a DTP mode of dynamic desirable
- D. on links that should not be trunking
- E. on links that should dynamically attempt trunking

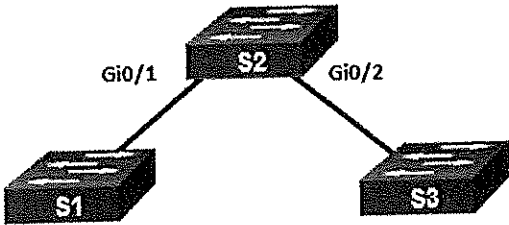
11. Which two characteristics describe the native VLAN? (Choose two.)

- A. Designed to carry traffic that is generated by users, this type of VLAN is also known as the default VLAN.
- B. The native VLAN traffic will be untagged across the trunk link.
- C. This VLAN is necessary for remote management of a switch.
- D. High priority traffic, such as voice traffic, uses the native VLAN.
- E. The native VLAN provides a common identifier to both ends of a trunk.

12. On a switch that is configured with multiple VLANs, which command will remove only VLAN 100 from the switch?

- A. Switch# delete flash:vlan.dat
- B. Switch(config-if)# no switchport access vlan 100
- C. Switch(config-if)# no switchport trunk allowed vlan 100
- D. Switch(config)# no vlan 100

13. Refer to the exhibit. A network administrator is reviewing port and VLAN assignments on switch S2 and notices that interfaces Gi0/1 and Gi0/2 are not included in the output. Why would the interfaces be missing from the output?



```

S2# show vlan brief
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
                                Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                Fa0/17, Fa0/18, Fa0/19, Fa0/20

20   Student                active    Fa0/21, Fa0/22, Fa0/23, Fa0/24
1002 fddi-default          act/unsup
1003 token-ring-default    act/unsup
1004 fddinet-default        act/unsup
1005 trnet-default          act/unsup

```

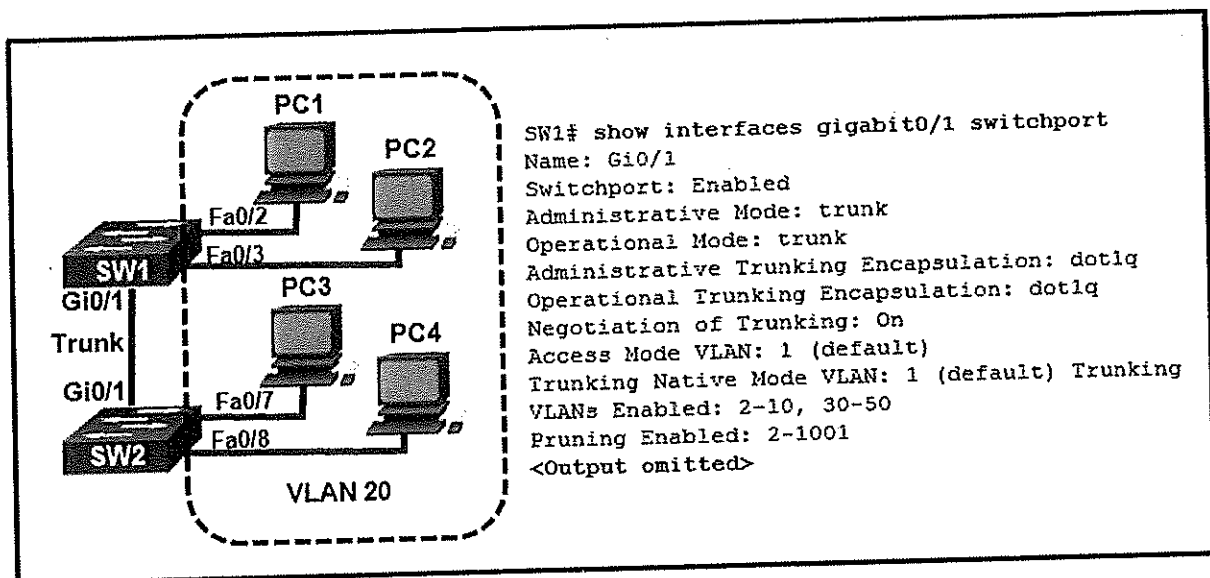
- A. There is a native VLAN mismatch between the switches.

- B. There is no media connected to the interfaces.
- C. They are administratively shut down.
- D. They are configured as trunk interfaces.

14. A network contains multiple VLANs spanning multiple switches. What happens when a device in VLAN 20 sends a broadcast Ethernet frame?

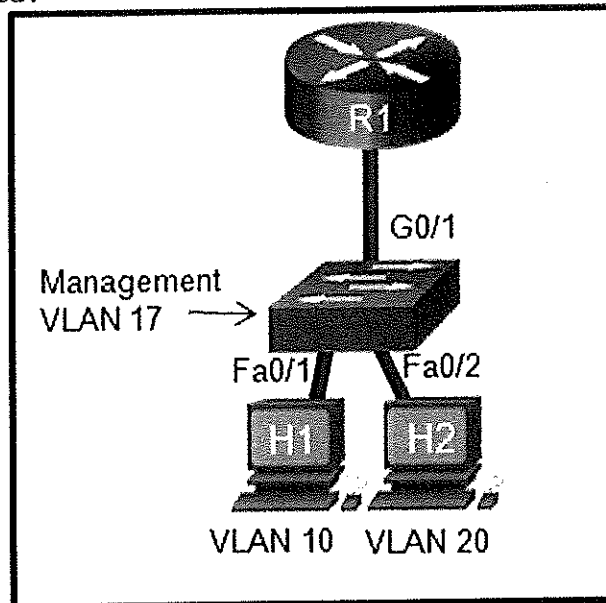
- A. All devices in all VLANs see the frame.
- B. Devices in VLAN 20 and the management VLAN see the frame.
- C. Only devices in VLAN 20 see the frame.
- D. Only devices that are connected to the local switch see the frame.

15. Refer to the exhibit. All workstations are configured correctly in VLAN 20. Workstations that are connected to switch SW1 are not able to send traffic to workstations on SW2. What could be done to remedy the problem?



- A. Allow VLAN 20 on the trunk link.
- B. Enable DTP on both ends of the trunk.
- C. Configure all workstations on SW1 to be part of the default VLAN.
- D. Configure all workstations on SW2 to be part of the native VLAN.

16. Refer to the exhibit. In what switch mode should port G0/1 be assigned if Cisco best practices are being used?



- A. access
- B. trunk
- C. native
- D. auto

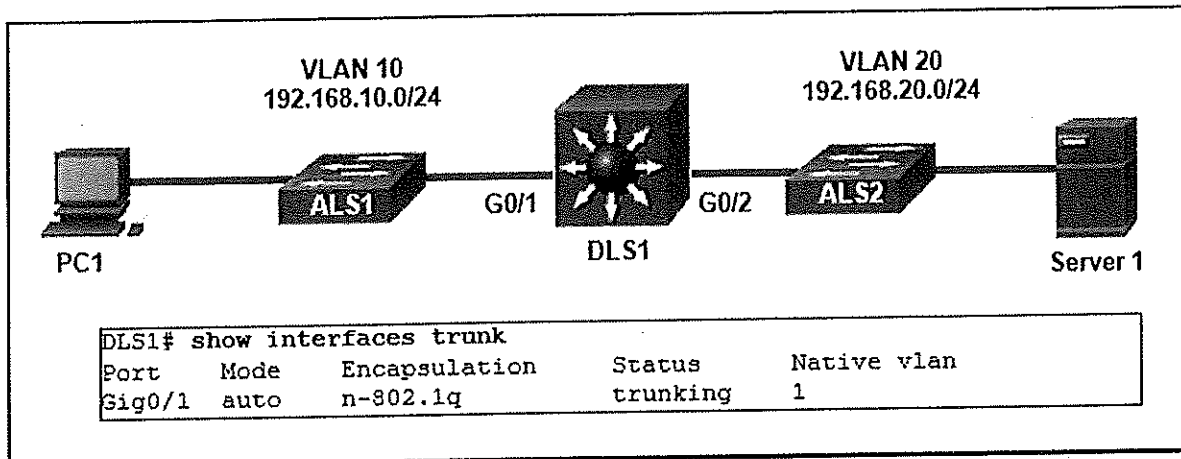
17. Port Fa0/11 on a switch is assigned to VLAN 30. If the command `no switchport access vlan 30` is entered on the Fa0/11 interface, what will happen?

- A. Port Fa0/11 will be shutdown.
- B. An error message would be displayed.
- C. Port Fa0/11 will be returned to VLAN 1.
- D. VLAN 30 will be deleted.

18. Which command displays the encapsulation type, the voice VLAN ID, and the access mode VLAN for the Fa0/1 interface?

- A. `show vlan brief`
- B. `show interfaces Fa0/1 switchport`
- C. `show mac address-table interface Fa0/1`
- D. `show interfaces trunk`

19. Refer to the exhibit. PC1 is unable to communicate with server 1. The network administrator issues the show interfaces trunk command to begin troubleshooting. What conclusion can be made based on the output of this command?



- A. Interface G0/2 is not configured as a trunk.
- B. VLAN 20 has not been created.
- C. The encapsulation on interface G0/1 is incorrect.
- D. The DTP mode is incorrectly set to dynamic auto on interface G0/1.

20. Refer to the exhibit. What is the cause of the error that is displayed in the configuration of inter-VLAN routing on router CiscoVille?

```

CiscoVille# configure terminal
CiscoVille(config)# interface gig0/0
CiscoVille(config-if)# no ip address
CiscoVille(config-if)# interface gig0/0.10
CiscoVille(config-subif)# encapsulation dot1q 10
CiscoVille(config-subif)# ip address 192.168.10.254 255.255.255.0
CiscoVille(config-subif)# interface gig0/0.20
CiscoVille(config-subif)# ip address 192.168.20.254 255.255.255.0

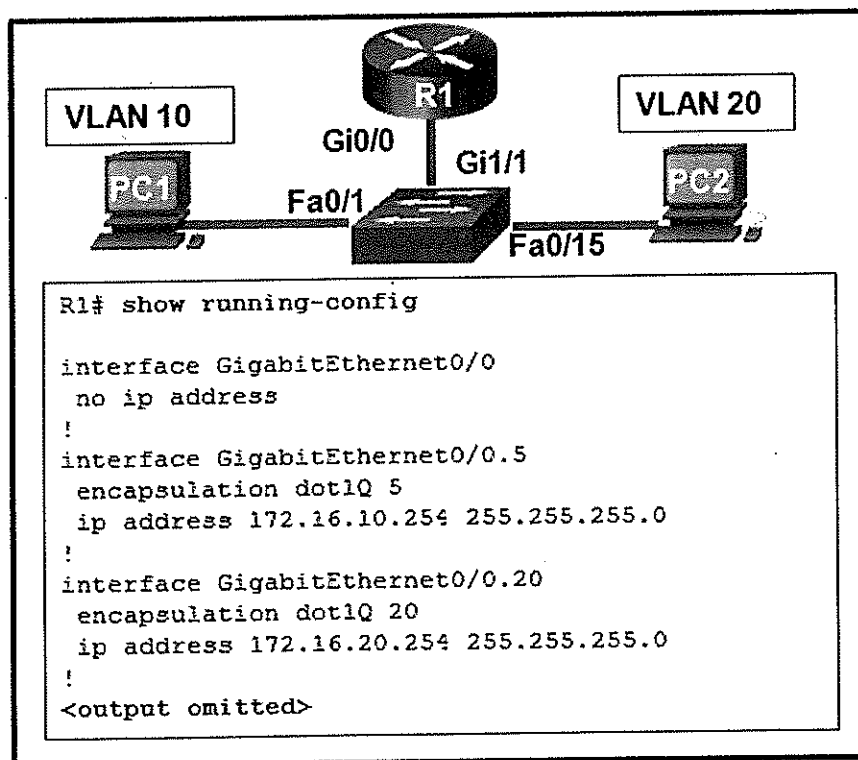
% Configuring IP routing on a LAN subinterface is only allowed if
that subinterface is already configured as part of an IEEE
802.10, IEEE 802.1Q, or ISL VLAN.
  
```

- A. The gig0/0 interface does not support inter-VLAN routing.
- B. The no shutdown command has not been configured.
- C. The IP address on CiscoVille is incorrect.
- D. The encapsulation dot1Q 20 command has not been configured.

21. A high school uses VLAN15 for the laboratory network and VLAN30 for the faculty network. What is required to enable communication between these two VLANs while using the router-on-a-stick approach?

- A. A multilayer switch is needed.
- B. A router with at least two LAN interfaces is needed.
- C. Two groups of switches are needed, each with ports that are configured for one VLAN.
- D. A switch with a port that is configured as a trunk is needed when connecting to the router.

22. Refer to the exhibit. A network administrator is verifying the configuration of inter-VLAN routing. Users complain that PC2 cannot communicate with PC1. Based on the output, what is the possible cause of the problem?



- A. Gi0/0 is not configured as a trunk port.
- B. The command interface GigabitEthernet0/0.5 was entered incorrectly.
- C. There is no IP address configured on the interface Gi0/0.
- D. The no shutdown command is not entered on subinterfaces.
- E. The encapsulation dot1Q 5 command contains the wrong VLAN.



## **QUESTION 2**

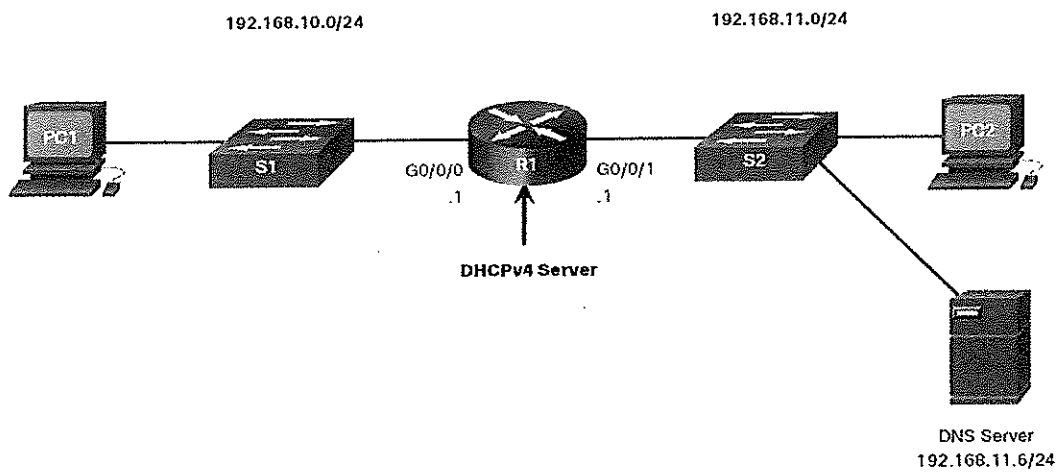
- A. After a Cisco switch is powered on, it goes through a five-step boot sequence. Explain this five- step boot sequence. [10]
  
- B. To prepare a switch for initial configuration and remote management, one needs to physically configure the switch using a console cable. With an aid of a diagram, explain this process, indicating clearly the tools needed and the things that needs to be configured in order for the switch to be managed remotely. [10]
  
- C. Differentiate between duplex and speed. Also, explain why the two are always related.[5]

## **QUESTION 3**

- A. What are VLANs? Explain the benefits that they bring in a switched network. [10]
  
- B. Describe any 4 types of VLANs. [8]
  
- C. What is inter-VLAN routing? Explain the three inter-VLAN routing options that are available. [7]

## **QUESTION 4**

- A. What is DHCP? Explain the operations of a DHCP client and DHCP server. [8]
  
- B. Discuss the steps taken to configure the DHCPv4 Server in the topology below. Your steps should come along with the necessary IOS configuration commands needed. [17]



The following must be considered when configuring the server;

- The server must provide DHCP services to the **192.168.10.0/24** subnet
- The first 10 IP addresses must be **excluded** from the pool
- The pool name must be **LAN\_1\_POOL**
- The domain name must be **cisco.com**
- The DNS server is as given

**\*\*\*End of Question Paper\*\*\***