

ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ, ΠΟΛΙΤΙΣΜΟΥ, ΑΘΛΗΤΙΣΜΟΥ ΚΑΙ ΝΕΟΛΑΙΑΣ  
ΔΙΕΥΘΥΝΣΗ ΜΕΣΗΣ ΓΕΝΙΚΗΣ ΕΚΠΑΙΔΕΥΣΗΣ  
ΛΕΥΚΩΣΙΑ

**ΕΞΕΤΑΣΕΙΣ Α ΤΕΤΡΑΜΗΝΟΥ**  
**ΔΕΙΓΜΑΤΙΚΟ ΔΟΚΙΜΙΟ**

**Α΄ ΣΕΙΡΑ ΕΞΕΤΑΣΕΩΝ**

**ΜΑΘΗΜΑ : ΔΙΚΤΥΑ – CISCO**

**ΧΡΟΝΟΣ : 1 ώρα και 30 λεπτά**

**ΗΜΕΡΟΜΗΝΙΑ : ΙΑΝΟΥΑΡΙΟΥ 2022**

**ΩΡΑ ΕΝΑΡΞΗΣ : 7.45 π.μ.**

**ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΕΚΑΤΡΕΙΣ (13) ΣΕΛΙΔΕΣ**

**Οδηγίες:**

- Να απαντήσετε σε όλες τις ερωτήσεις
- Όλες οι απαντήσεις να γραφούν στο τετράδιο απαντήσεων
- Επιτρέπεται η χρήση μη προγραμματιζόμενης υπολογιστικής μηχανής

**ΜΕΡΟΣ Α. (30 μονάδες)**

Να απαντήσετε και στις είκοσι (20) ερωτήσεις πολλαπλής επιλογής. Η κάθε ερώτηση βαθμολογείται με 1½ μονάδα.

**Ερώτηση 1.**

If one end of an Ethernet connection is configured for full duplex and the other end of the connection is configured for half duplex, where would late collisions be observed?

- (a) on both ends of the connection
- (b) on the full-duplex end of the connection
- (c) only on serial interfaces
- (d) on the half-duplex end of the connection

**Ερώτηση 2.**

Which protocol adds security to remote connections?

- (a) FTP
- (b) HTTP
- (c) POP
- (d) SSH

**Ερώτηση 3.**

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

**Ερώτηση 4.**

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.

**Ερώτηση 5.**

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

**Ερώτηση 6.**

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.

**Ερώτηση 7.**

If no bridge priority is configured in Per VLAN Spanning Tree (PVST), which criteria is considered when electing the root bridge?

- (a) lowest IP address
- (b) lowest MAC address
- (c) highest IP address
- (d) highest MAC address

**Ερώτηση 8.**

What is the outcome of a Layer 2 broadcast storm?

- (a) Routers will take over the forwarding of frames as switches become congested.
- (b) New traffic is discarded by the switch because it is unable to be processed.
- (c) CSMA/CD will cause each host to continue transmitting frames.
- (d) ARP broadcast requests are returned to the transmitting host.

**Ερώτηση 9.**

Which statement is true regarding the use of Port Aggregation Protocol (PAgP) to create EtherChannels?

- (a) It requires full duplex.
- (b) It is Cisco proprietary.
- (c) It requires more physical links than LACP does.
- (d) It increases the number of ports that are participating in spanning tree.

**Ερώτηση 10.**

A company uses DHCP servers to dynamically assign IPv4 addresses to employee workstations. The address lease duration is set as 5 days. An employee returns to the office after an absence of one week. When the employee boots the workstation, it sends a message to obtain an IP address. Which Layer 2 and Layer 3 destination addresses will the message contain?

- (a) FF-FF-FF-FF-FF-FF and 255.255.255.255
- (b) both MAC and IPv4 addresses of the DHCP server
- (c) MAC address of the DHCP server and 255.255.255.255
- (d) FF-FF-FF-FF-FF-FF and IPv4 address of the DHCP server

**Ερώτηση 11.**

What must an administrator have in order to reset a lost password on a router?

- (a) a TFTP server
- (b) a crossover cable
- (c) access to another router
- (d) physical access to the router

**Ερώτηση 12.**

What is the minimum Ethernet frame size that will not be discarded by the receiver as a runt frame?

- (a) 64 bytes
- (b) 512 bytes
- (c) 1024 bytes
- (d) 1500 bytes

**Ερώτηση 13.**

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

**Ερώτηση 14.**

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

**Ερώτηση 15.**

What is the purpose of the vlan.dat file on a switch?

- (a) It holds the saved configuration.
- (b) It holds the operating system.
- (c) It holds the running configuration.
- (d) It holds the VLAN database.

**Ερώτηση 16.**

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.

**Ερώτηση 17.**

When configuring a router as part of a router-on-a-stick inter-VLAN routing topology, where should the IP address be assigned?

- (a) to the interface
- (b) to the VLAN
- (c) to the SVI
- (d) to the subinterface

**Ερώτηση 18.**

A set of switches is being connected in a LAN topology. Which STP bridge priority value will make it least likely for the switch to be selected as the root?

- (a) 4096
- (b) 8192
- (c) 32768
- (d) 61440

**Ερώτηση 19.**

What is the function of STP in a scalable network?

- (a) It decreases the size of the failure domain to contain the impact of failures.
- (b) It protects the edge of the enterprise network from malicious activity.
- (c) It disables redundant paths to eliminate Layer 2 loops.
- (d) It combines multiple switch trunk links to act as one logical link for increased bandwidth.

**Ερώτηση 20.**

Which function is provided by EtherChannel?

- (a) spreading traffic across multiple physical WAN links
- (b) enabling traffic from multiple VLANs to travel over a single Layer 2 link
- (c) creating one logical link by using multiple physical links between two LAN switches
- (d) dividing the bandwidth of a single link into separate time slots

**Μέρος Β (30 μονάδες)**  
 Να απαντήσετε σε όλες τις ερωτήσεις. Η κάθε ερώτηση βαθμολογείται με έξι (6) μονάδες.

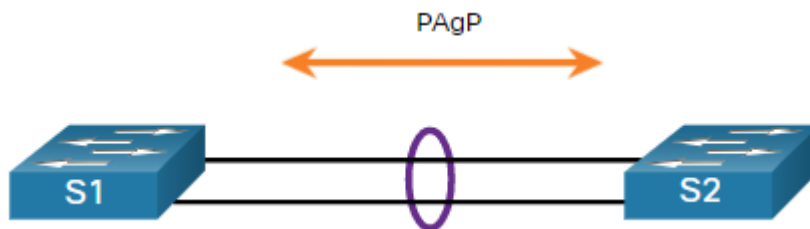
**Ερώτηση 1.**

Fill the following table with the results (**Access, Trunk** or **Limited-Connectivity**) of the DTP configuration options on opposite ends of a trunk link connected to Catalyst 2960 switch ports.

	(1) Dynamic Auto	(2) Dynamic Desirable	(3) Trunk	(4) Access
(a) Dynamic Auto	Access			
(b) Dynamic Desirable		Trunk		
(c) Trunk			Trunk	
(d) Access				Access

**Ερώτηση 2.**

Consider the two switches in the figure. Whether S1 and S2 establish an EtherChannel using PAgP depends on the mode settings on each side of the channel.

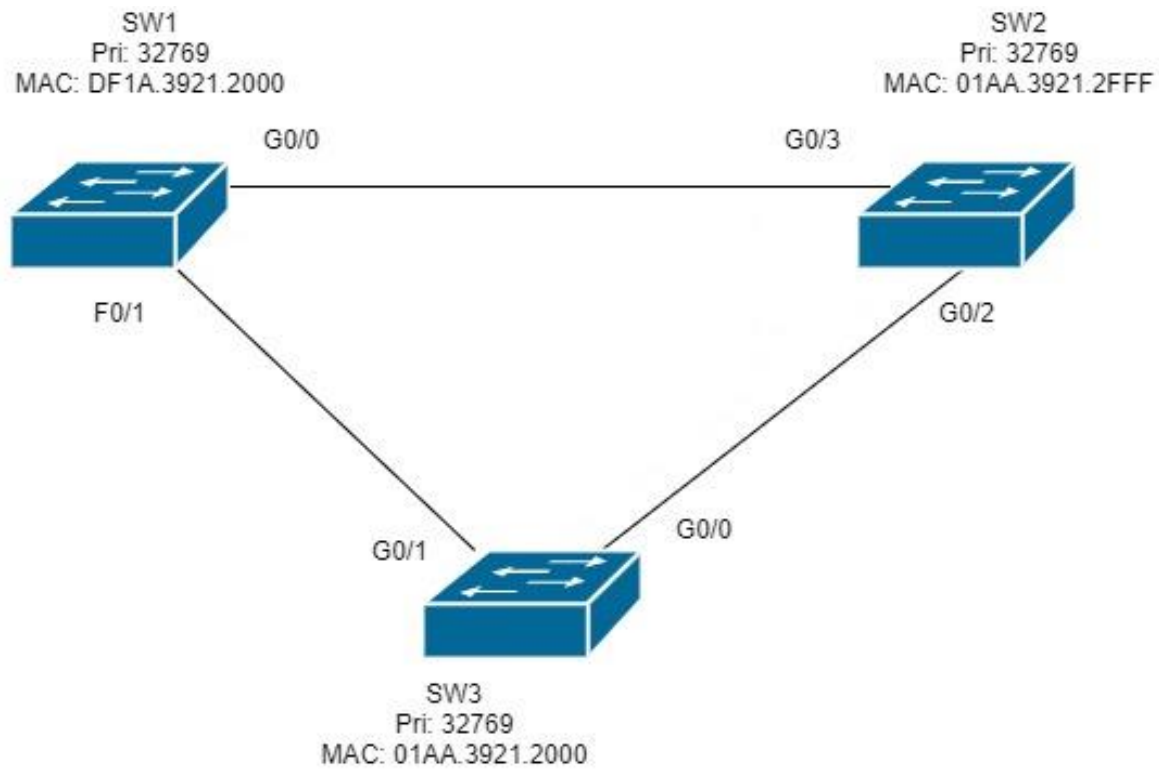


Fill the following table describing PAgP Modes (**YES/ NO**)

	S1	S2	Channel Establishment
(a)	On	On	
(b)	On	Desirable/Auto	
(c)	Desirable	Desirable	
(d)	Desirable	Auto	
(e)	Auto	Desirable	
(f)	Auto	Auto	

**Ερώτηση 3.**

Consider the following network.



**STP is running on all of the switches.**

A) Which switch will be elected as a root bridge?

B) Write the state of each interface (**Root port**, **Designated** or **Alternate-Blocked**)

Switch	Interface	State
SW1	(a) G0/0	<b>Root port</b>
	(b) F0/1	
SW2	(c) G0/2	
	(d) G0/3	
SW3	(e) G0/0	
	(f) G0/1	

**Ερώτηση 4.**

For each access list entry, determine the action that will be taken (permit or deny) when applied to the comparison address provided.

	Access List Entry (ACE)	Comparison Address	Permit or Deny
(a)	Access-list 10 permit 172.16.1.1 0.0.0.255	172.16.11.1	
(b)	Access-list 20 permit 172.19.1.1 0.0.255.255	172.9.1.1	
(c)	Access-list 30 permit 172.18.1.1 0.255.255.255	192.18.2.2	
(d)	Access-list 40 permit 172.17.1.1 0.0.0.31	172.17.1.31	
(e)	Access-list 50 permit 172.16.1.8 0.0.0.7	172.16.1.14	
(f)	Access-list 60 permit 172.16.1.32 0.0.0.15	172.16.1.15	

**Ερώτηση 5.**

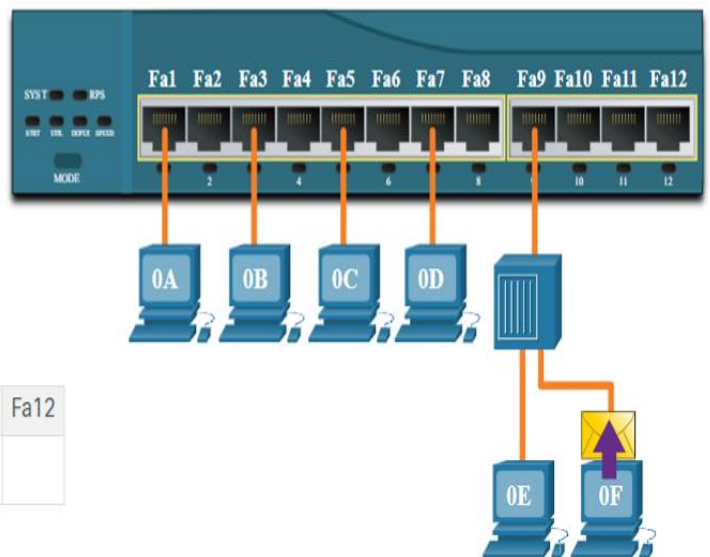
A frame sent by the PC with MAC address 0C and the switch MAC address table contents are as shown below:

Frame

Preamble	Destination MAC	Source MAC	Type / Length	Frame	End of Frame
	0A	0F			

MAC Table

Fa1	Fa2	Fa3	Fa4	Fa5	Fa6	Fa7	Fa8	Fa9	Fa10	Fa11	Fa12
	0B										



(a) Where will the switch forward the frame? (select the appropriate ports)

Fa1	Fa2	Fa3	Fa4	Fa5	Fa6	Fa7	Fa8	Fa9	Fa10	Fa11	Fa12



(b) When the switch forwards the frame, which statement(s) are true?

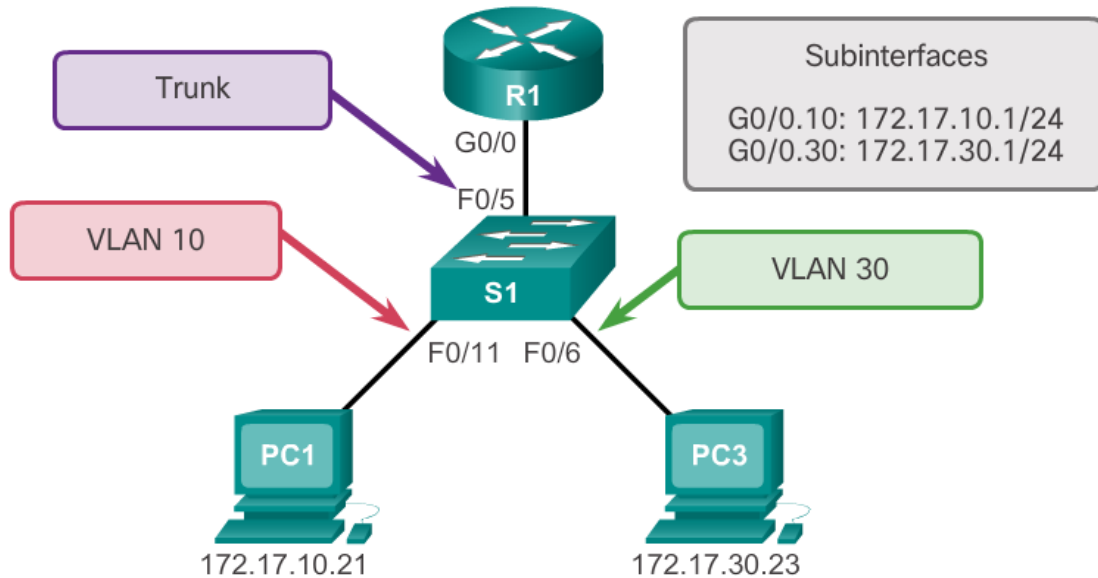
True/False	
	Switch adds the source MAC address which is currently not in the MAC address table.
	Frame is a broadcast frame and will be forwarded to all ports
	Frame is a unicast frame and will be sent to specific port only
	Frame is a unicast frame and will be flooded to all ports
	Frame is a unicast frame but it will be dropped at the switch

**ΜΕΡΟΣ Γ (40 Μονάδες)**

Να απαντήσετε σε όλες τις ερωτήσεις. Η κάθε ερώτηση βαθμολογείται με είκοσι (20) μονάδες.

**Ερώτηση 1.**

Consider the following network.



- (a) Write the necessary commands on S1 to configure VLAN 10 and VLAN 30. Configure the name for VLAN 10 to be PC-LAB10 and the name of VLAN 30 to be PC-LAB30. Assign the appropriate ports to VLAN 10 and VLAN 30 and change the switchport mode accordingly. (10 pts)

S1(config)# \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(b) Configure the appropriate port on S1 as a trunk port.

(2 pts)

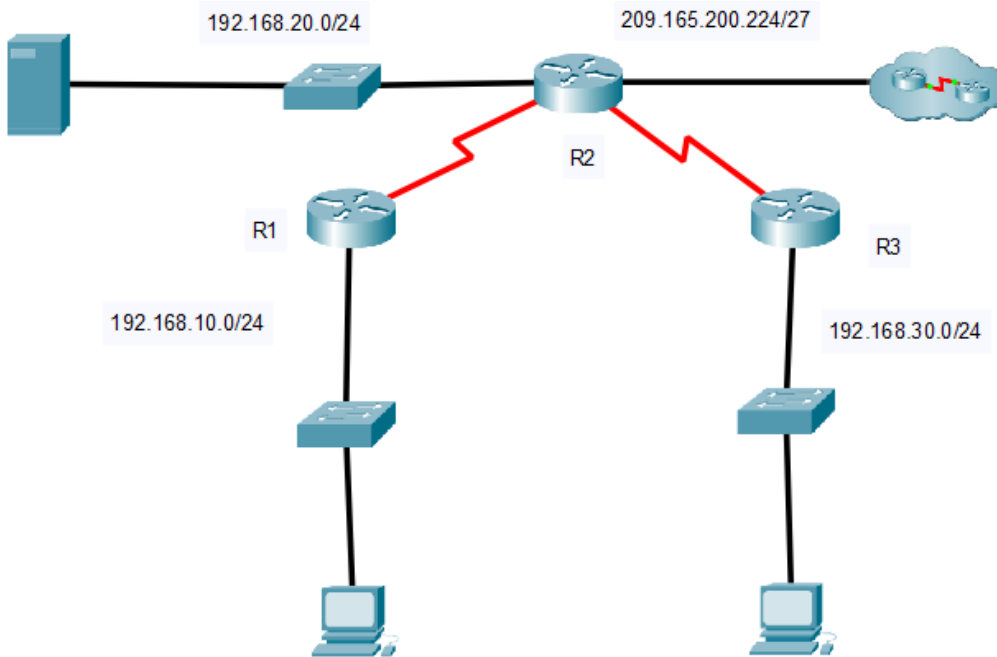
S1(config)# \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(c) Configure sub-interfaces on R1 using the 802.1Q encapsulation in order to achieve communication between VLAN10 and VLAN30. Activate the interfaces as needed. (8 pts)

R1(config)# \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Ερώτηση 2.**

Consider the following local area network.



**Addressing Table**

Device	Interface	IPv4 Address	Subnet Mask	Default Gateway
R1	G0/0	192.168.10.1	255.255.255.0	N/A
	S0/0/0	10.1.1.1	255.255.255.252	N/A
R2	G0/0	192.168.20.1	255.255.255.0	N/A
	G0/1	DHCP Assigned	DHCP Assigned	N/A
	S0/0/0	10.1.1.2	255.255.255.252	N/A
	S0/0/1	10.2.2.2	255.255.255.252	N/A
R3	G0/0	192.168.30.1	255.255.255.0	N/A
	S0/0/1	10.2.2.1	255.255.255.0	N/A
PC1	NIC	DHCP Assigned	DHCP Assigned	DHCP Assigned
PC2	NIC	DHCP Assigned	DHCP Assigned	DHCP Assigned
DNS Server	NIC	192.168.20.254	255.255.255.0	192.168.20.1

a. Configure **R2** to exclude the first 20 addresses from the **R1 LAN**. (2 pts )

R2(config)# \_\_\_\_\_

R2(config)# \_\_\_\_\_

b. Configure **R2** to exclude the first 30 addresses from **R3 LAN**. (2 pts )

R2(config)# \_\_\_\_\_

R2(config)# \_\_\_\_\_

- c. Create a DHCP pool named **R1-LAN** (case-sensitive). (2 pts)

R2(config)# \_\_\_\_\_

R2(config)# \_\_\_\_\_

- d. Configure the DHCP pool **R1-LAN** to include the network address, the default gateway, and the IP address of the DNS server. (6 pts)

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

- e. Create a DHCP pool named **R3-LAN** (case-sensitive). (2 pts)

R2(config)# \_\_\_\_\_

R2(config)# \_\_\_\_\_

- f. Configure the DHCP pool **R3-LAN** to include the network address, the default gateway, and the IP address of the DNS server. Refer to the Addressing Table. (6 pts)

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

R2(dhcp-config)# \_\_\_\_\_

**ΤΕΛΟΣ ΕΞΕΤΑΣΗΣ**