

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

ΠΑΓΚΥΠΡΙΕΣ ΕΞΕΤΑΣΕΙΣ 2021

Α΄ ΣΕΙΡΑ ΕΞΕΤΑΣΕΩΝ

ΜΑΘΗΜΑ ΑΠΟΛΥΣΗΣ

ΜΑΘΗΜΑ : ΔΙΚΤΥΑ – 60
ΧΡΟΝΟΣ : Δύο ώρες και τριάντα λεπτά (2:30')
ΗΜΕΡΟΜΗΝΙΑ : 18 Ιουνίου 2021

ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΕΚΑΞΙ (16) 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.

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 2.

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 3.

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 4.

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 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)# no vlan 100
- (c) Switch(config-if)# no switchport access vlan 100
- (d) Switch(config-if)# no switchport trunk allowed vlan 100

Ερώτηση 6.

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 7.

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 8.

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 9.

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

Ερώτηση 10.

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

Ερώτηση 11.

A network administrator has configured an EtherChannel between two switches that are connected via four trunk links. If the physical interface for one of the trunk links changes to a down state, what happens to the EtherChannel?

- (a) The EtherChannel will transition to a down state.
- (b) The EtherChannel will remain functional.
- (c) Spanning Tree Protocol will recalculate the remaining trunk links.
- (d) Spanning Tree Protocol will transition the failed physical interface into forwarding mode.

Ερώτηση 12.

Which protocol automates assignment of IP addresses on a network?

- (a) DHCP
- (b) DNS
- (c) SMB
- (d) SNMP

Ερώτηση 13.

What is one indication that a Windows computer did not receive an IPv4 address from a DHCP server?

- (a) The computer cannot ping 127.0.0.1.
- (b) Windows displays a DHCP timeout message.
- (c) The computer receives an IP address that starts with 169.254.
- (d) The computer cannot ping other devices on the same network with IP addresses in the 169.254.0.0/16 range.

Ερώτηση 14.

What represents a best practice concerning discovery protocols such as CDP and LLDP on network devices?

- (a) Use the open standard LLDP rather than CDP.
- (b) Disable both protocols on all interfaces where they are not required.
- (c) Use the default router settings for CDP and LLDP.
- (d) Enable CDP on edge devices, and enable LLDP on interior devices.

Ερώτηση 15.

Which protocol should be used to mitigate the vulnerability of using Telnet to remotely manage network devices?

- (a) SCP
- (b) SSH
- (c) TFTP
- (d) SNMP

Ερώτηση 16.

An IT security specialist enables port security on a switch port of a Cisco switch. What is the default violation mode in use until the switch port is configured to use a different violation mode?

- (a) restrict
- (b) disabled
- (c) protect
- (d) shutdown

Ερώτηση 17.

As part of the new security policy, all switches on the network are configured to automatically learn MAC addresses for each port. All running configurations are saved at the start and close of every business day. A severe thunderstorm causes an extended power outage several hours after the close of business. When the switches are brought back online, the dynamically learned MAC addresses are retained. Which port security configuration enabled this?

- (a) auto secure MAC addresses
- (b) dynamic secure MAC addresses
- (c) static secure MAC addresses
- (d) sticky secure MAC addresses

Ερώτηση 18.

What is an advantage of static routing over dynamic routing?

- (a) Static routing is more secure because it does not advertise over the network.
- (b) Static routing scales well with expanding networks.
- (c) Static routing requires very little knowledge of the network for correct implementation.
- (d) Static routing is relatively easy to configure for large networks.

Ερώτηση 19.

On which router would a default static route be configured?

- (a) any router where a backup route to dynamic routing is needed for reliability
- (b) any router running an IOS prior to 12.0
- (c) the router that serves as the gateway of last resort
- (d) stub router connection to the rest of the corporate or campus network

Ερώτηση 20.

A static route has been configured on a router. However, the destination network no longer exists. What should an administrator do to remove the static route from the routing table?

- (a) Remove the route using the no ip route command.
- (b) Nothing. The static route will go away on its own.
- (c) Change the routing metric for that route.
- (d) Change the administrative distance for that route.

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

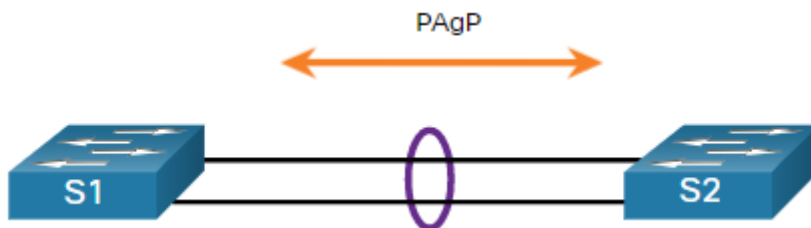
Ερώτηση 1.

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.

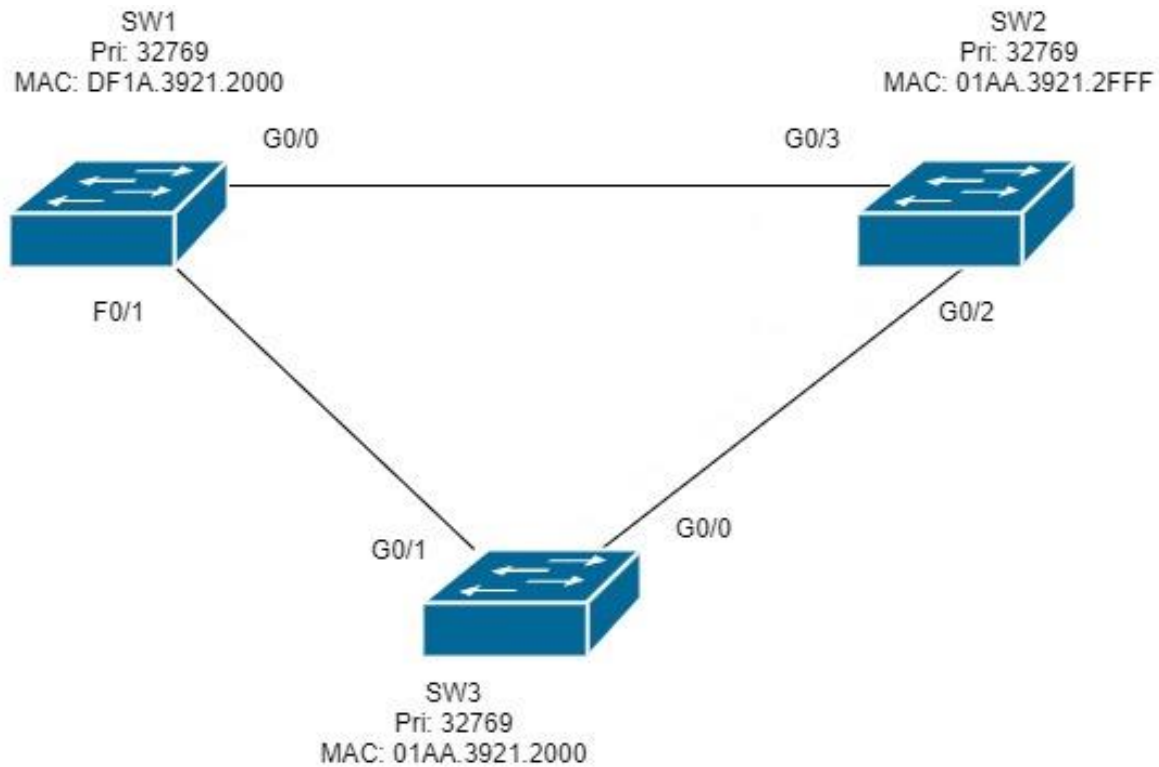


Fill the following table describing PAgP Modes (**YES/ NO**)

	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	Root port
	(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 network administrator has issued the command **show ip route** on a router. Based on the following output fill in the blanks:

```
Gateway of last resort is not set.
 10.0.0.0/16 is subnetted, 1 subnets
S   10.4.0.0 is directly connected, Serial 0/0/0
 172.16.0.0/24 is subnetted, 3 subnets
C   172.16.1.0 is directly connected, FastEthernet 0/0
C   172.16.2.0 is directly connected, Serial 0/0/0
D   172.16.3.0 [90/2172416] via 172.16.30.10, 00:00:18, Serial 0/0/0
C   192.168.1.0/24 is directly connected, Serial 0/0/1
O   192.168.100.0/24 [110/65] via 172.16.4.1, 00:00:03, Serial 0/0/0
O   192.168.110.0/24 [110/65] via 172.16.2.11, 00:00:03, Serial 0/0/0
R   192.168.120.0/24 [120/1] via 172.16.3.1, 00:00:18, Serial 0/0/0
```

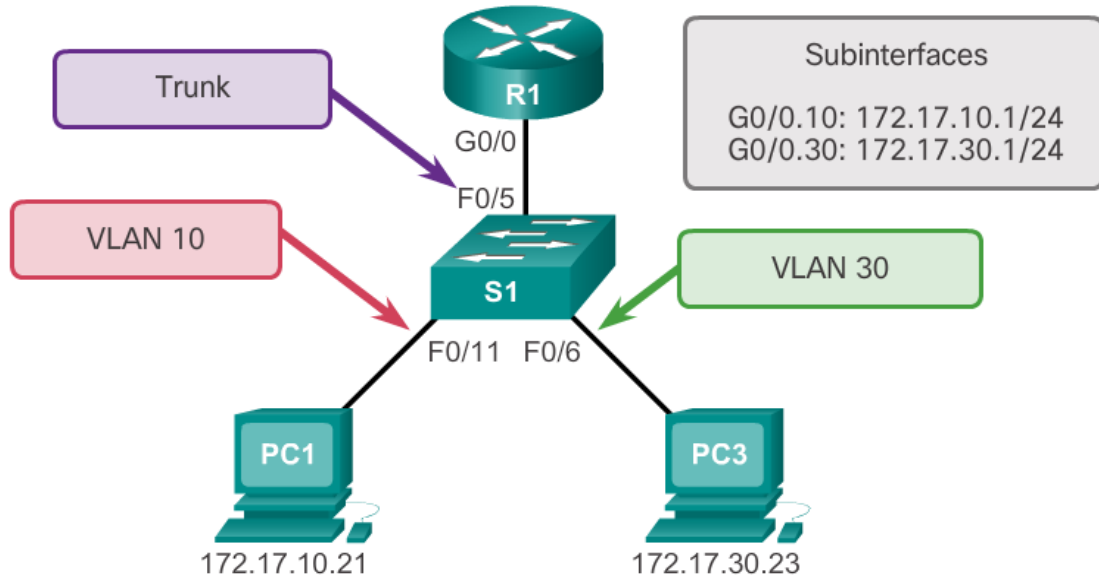
- The 10.4.0.0 is a _____ route.
- The value of administrative distance (AD) for 172.16.2.0 route source is _____.
- The next hop IP address for network 172.16.3.0 is _____.
- The 192.168.110.0/24 has been learned dynamically from another router using the protocol _____.
- The 192.168.120.0/24 has administrative distance (AD) _____.
- The next hop address for packets going to 192.168.100.0/24 is _____.

ΜΕΡΟΣ Γ (40 Μονάδες)

Να απαντήσετε σε όλες τις ερωτήσεις. Η κάθε ερώτηση βαθμολογείται με δέκα (10) 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. (5 pts)

S1(config)# _____

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

(1 pt)

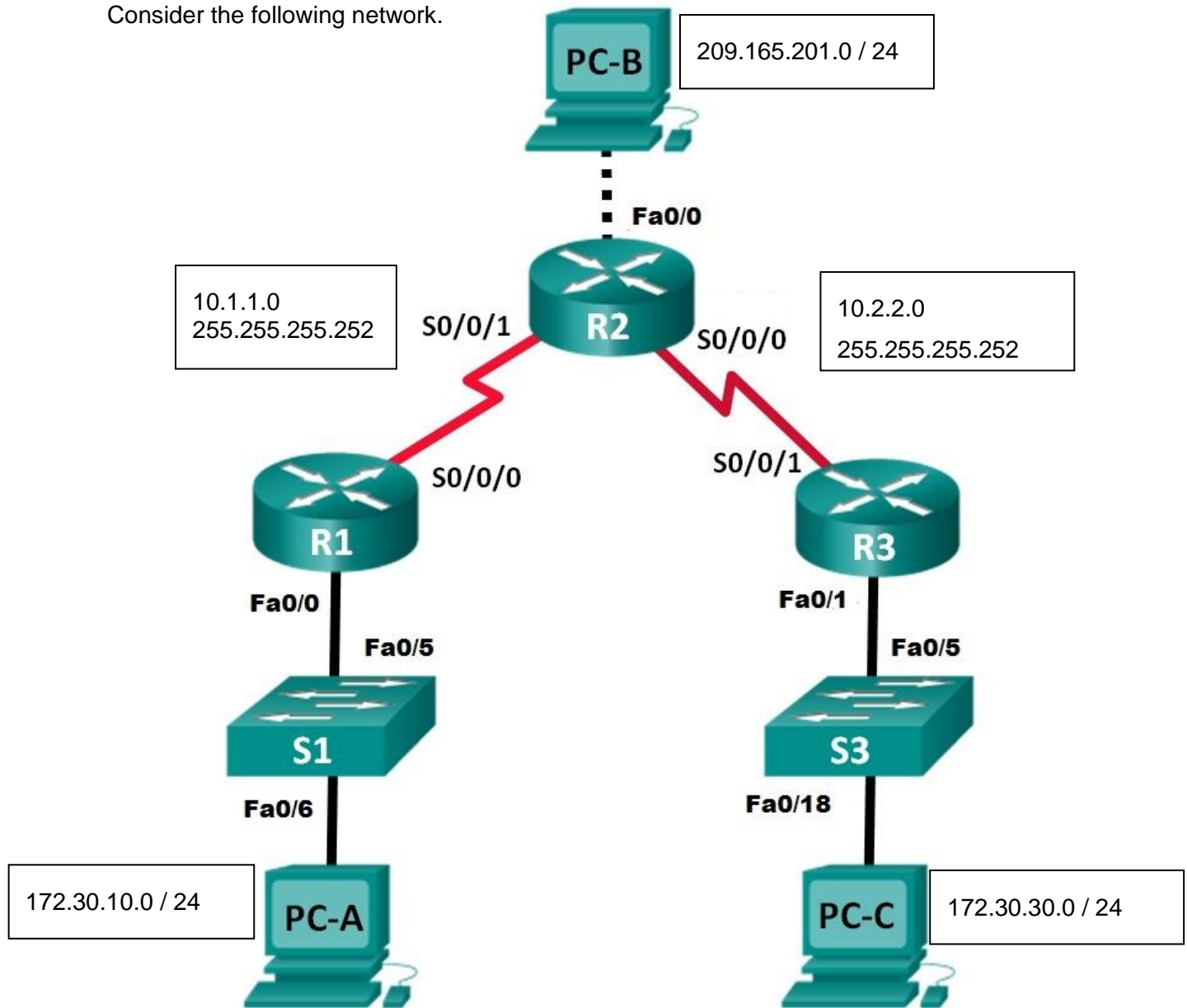
S1(config)# _____

(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. (4 pts)

R1(config)# _____

Ερώτηση 2.

Consider the following network.



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	Fa0/0	172.30.10.1	255.255.255.0	N/A
	S0/0/0	10.1.1.1	255.255.255.252	N/A
R2	Fa0/0	209.165.201.1	255.255.255.0	N/A
	S0/0/1	10.1.1.2	255.255.255.252	N/A
	S0/0/0	10.2.2.2	255.255.255.252	N/A
R3	Fa0/1	172.30.30.1	255.255.255.0	N/A
	S0/0/1	10.2.2.1	255.255.255.252	N/A
PC-A	NIC	172.30.10.3	255.255.255.0	172.30.10.1
PC-B	NIC	209.165.201.2	255.255.255.0	209.165.201.1
PC-C	NIC	172.30.30.3	255.255.255.0	172.30.30.1

- (a) Configure all three routers using **Fully Specified Static Routes**, so that they can forward packets between all networks shown in the diagram. Assume that the routers are initially in global configuration mode. **Do not use default static routes.** (8 pts)

R1(config)#

R2(config)#

R3(config)#

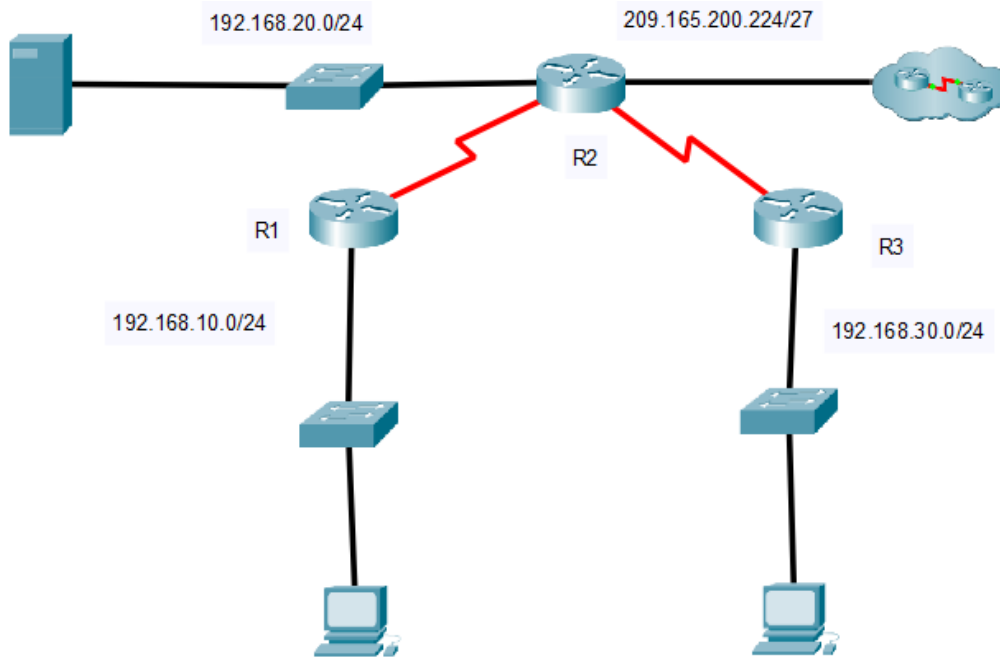
- (b) Configure R1 and R3 using a **Default Static Route**. Assume that the routers are initially in global configuration mode. (2 pts)

R1(config)#

R3(config)#

Ερώτηση 3.

Consider the following 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**. (1 pt)

R2(config)# _____

(b) Configure **R2** to exclude the first 30 addresses from **R3 LAN**. (1 pt)

R2(config)# _____

- (c) Create a DHCP pool named **R1-LAN** (case-sensitive). (1 pt)

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. (3 pt)

R2(dhcp-config)# _____

- (e) Create a DHCP pool named **R3-LAN** (case-sensitive). (1 pt)

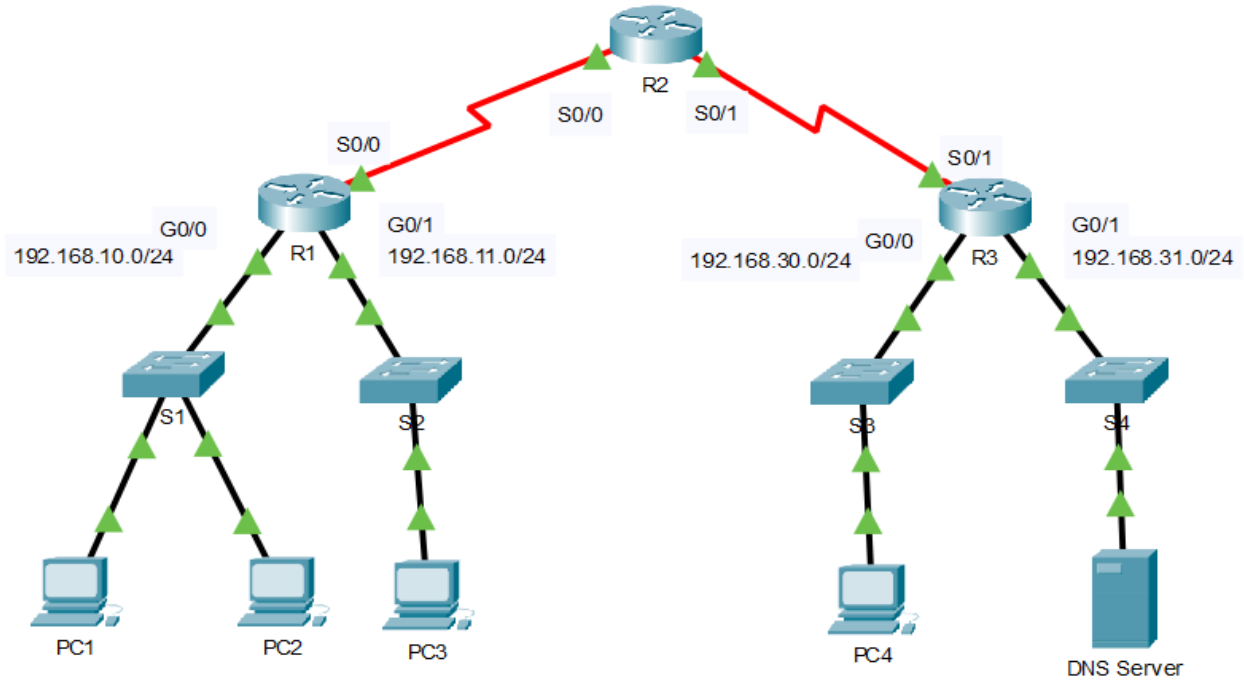
R2(config)# _____

- (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. (3 pts)

R2(dhcp-config)# _____

Ερώτηση 4.

Write the necessary commands to perform the following configurations, based on the network shown in the following diagram:



- (a) The hosts with IP address 192.168.10.10 and 192.168.10.11 from LAN 192.168.10.0 /24 should not be able to access 192.168.30.0 /24 LAN. All the remaining hosts on the 192.168.10.0 /24 network should be permitted access to 192.168.30.0 /24 LAN. All hosts from LAN 192.168.11.0 /24 LAN should be permitted access to 192.168.30.0 /24 LAN. Place the access list in R3 and make sure that you do not block access to the DNS Server in network (192.168.31.0/24). (6 pts)

R3(config)# _____

