ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ
ΔΙΕΥΘΥΝΣΗ ΜΕΣΗΣ ΓΕΝΙΚΗΣ ΕΚΠΑΙΔΕΥΣΗΣ
ΛΕΥΚΩΣΙΑ

ΠΑΓΚΥΠΡΙΕΣ
ΓΡΑΠΤΕΣ ΕΞΕΤΑΣΕΙΣ
2019
(ΓΙΑ ΑΠΟΛΥΣΗ)

Α΄ ΣΕΙΡΑ ΕΞΕΤΑΣΕΩΝ

ΜΑΘΗΜΑ	**: ΔΙΚΤΥΑ - CISCO**
ΧΡΟΝΟΣ	**: 2 ώρες και 30 λεπτά**
ΗΜΕΡΟΜΗΝΙΑ	**: 18 Ιουνίου 2019**
ΩΡΑ ΕΝΑΡΞΗΣ	**: 7.45 π.μ.**

ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΕΚΑΤΕΣΣΕΡΙΣ (14) 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.

The buffers for packet processing and the running configuration file are temporarily stored in which type of router memory?

(a) flash
(b) RAM
(c) NVRAM
(d) ROM

Ερώτηση 2.

When a router receives a packet, what information must be examined in order for the packet to be forwarded to a remote destination?

(a) source MAC address
(b) source IP address
(c) destination MAC address
(d) destination IP address

Ερώτηση 3.

A network administrator has entered the following command:

ip route 192.168.10.64 255.255.255.192 serial0/0/1
When the network administrator enters the command show ip route, the route is not in the routing table. What should the administrator do next?

(a) Re-enter the command using the correct mask
(b) Verify that the 192.168.10.64 network is active within the network infrastructure
(c) Verify that the serial 0/0/1 interface is active and available
(d) Re-enter the command using a network number rather than a usable IP address

Ερώτηση 4.

A packet arrives to the router with a destination IP address for network 172.23.1.0. Which route will be preferred?

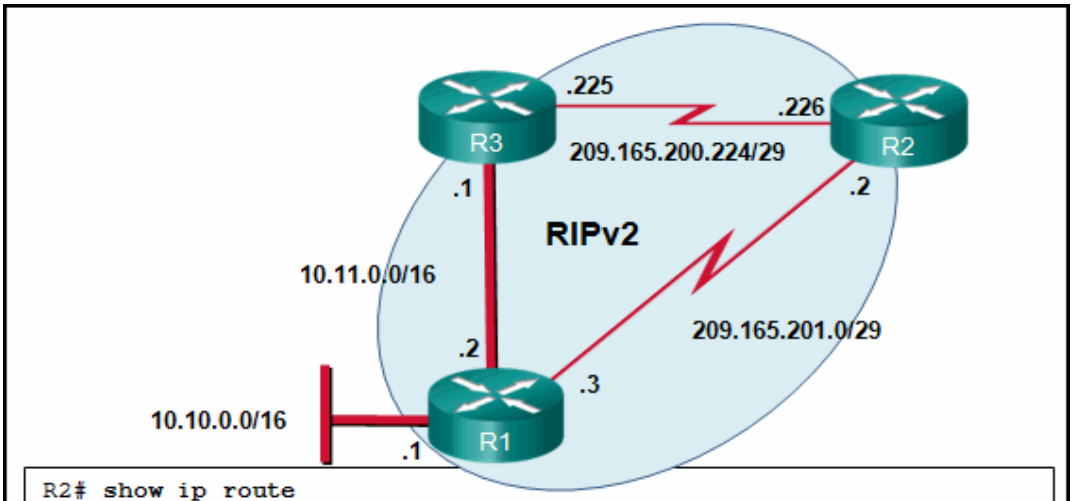
(a) R 172.23.1.0/24 [120/1] via 10.1.0.226, 00:00:02 serial0/0/0
(b) R 172.23.1.0/24 [120/2] via 10.2.0.226, 00:00:22 serial0/0/1
(c) O 172.23.1.0/24 [110/65] via 10.2.0.226, 00:01:15 serial0/0/1
(d) S 172.23.1.0/24 [1/0] via 172.16.2.2

Ερώτηση 5.

When would it be more beneficial to use static routing instead of a dynamic routing protocol?

(a) in an organization with a small network that is expected to grow in size
(b) on a stub network that has a single exit point
(c) in an organization where routers do not suffer from performance issues
(d) on a network where there is a lot of topology changes

Ερώτηση 6.




```
R2# show ip route

<output omitted>
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
R   10.0.0.0/8 [120/1] via 209.165.201.3, 00:00:01, Serial0/0/0
S   10.10.0.0/16 [1/0] via 209.165.201.3
      209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
<output omitted>
```

Refer to the exhibit. What is the administrative distance value that indicates the route for R2 to reach the 10.0.0.0/8 network?

(a) 1
(b) 0
(c) 24
(d) 120

Ερώτηση 7.

Which information does a switch use to keep the MAC address table information current?

(a) the destination MAC address and the incoming port
(b) the destination MAC address and the outgoing port
(c) the source MAC address and the incoming port
(d) the source MAC address and the outgoing port

Ερώτηση 8.

Which network device can be used to reduce collisions on an Ethernet network?

(a) firewall
(b) hub
(c) router
(d) switch

Ερώτηση 9.

In what situation would a Layer 2 switch have an IP address configured?

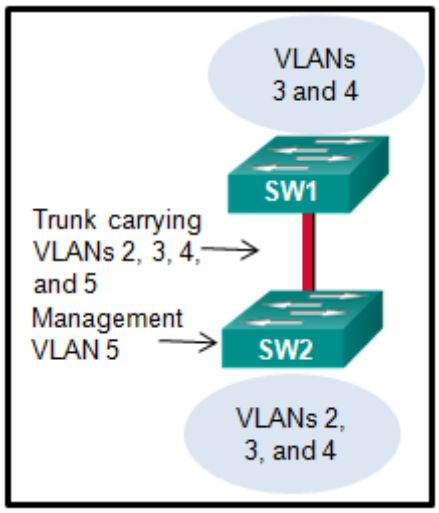
(a) when the Layer 2 switch needs to be remotely managed
(b) when the Layer 2 switch is the default gateway of user traffic
(c) when the Layer 2 switch is using a routed port
(d) when the Layer 2 switch needs to forward user traffic to another device

Ερώτηση 10.

What is one difference between using Telnet or SSH to connect to a network device for management purposes?

(a) Telnet uses UDP as the transport protocol whereas SSH uses TCP
(b) Telnet does not provide authentication whereas SSH provides authentication
(c) Telnet encrypts the username and password, whereas SSH sends them in plain text
(d) Telnet sends the username and password in plain text, whereas SSH encrypts them

Ερώτηση 11.



Refer to the exhibit. A small business uses VLANs 2, 3, 4, and 5 between two switches that have a trunk link between them. Which VLAN is the most appropriate to be used as the native VLAN on the trunk?

(a) 6
(b) 5
(c) 4
(d) 3

Ερώτηση 12.

Which number is used for the default VLAN?

(a) 0
(b) 1
(c) 99
(d) 100

Ερώτηση 13.

A network administrator is configuring an ACL with the command **access-list 10 permit 172.16.32.0 0.0.0.255**. Which IPv4 address matches the Access Control Entry (ACE)?

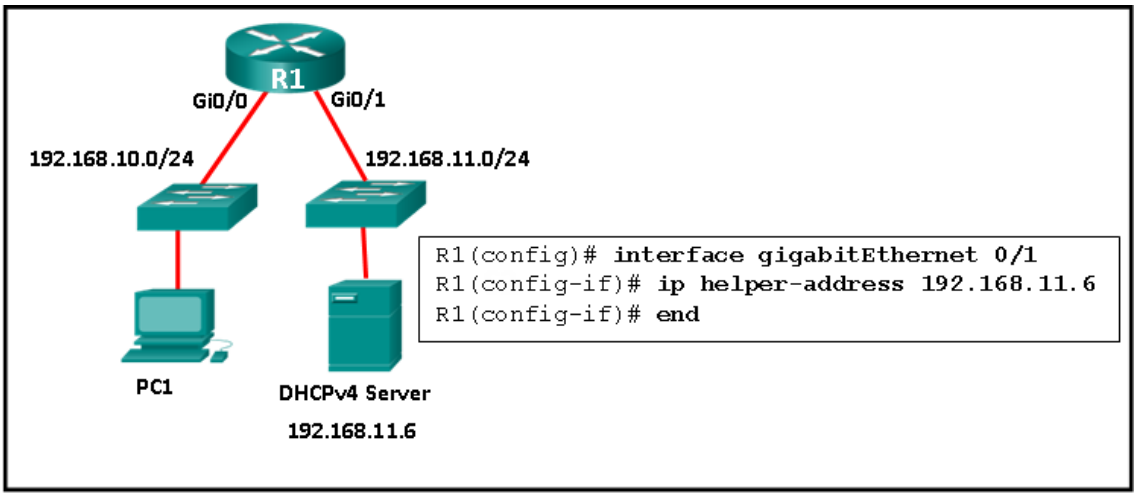
(a) 172.16.1.1
(b) 172.16.32.1
(c) 172.16.33.1
(d) 172.16.33.255

Ερώτηση 14.

Which command is implicitly (by default) placed at the end of a standard ACL, even if we do not write it?

(a) permit any
(b) deny any
(c) deny ip any any
(d) permit ip any any

Ερώτηση 15.



Refer to the exhibit. R1 has been configured as shown. PC1 has been configured to receive an IP Address automatically. However, PC1 is not able to receive an IPv4 address. What is the problem?

(a) A DHCP server must be installed on the same LAN as the host that is receiving the IP address
(b) R1 is not configured as a DHCPv4 server
(c) The **ip address dhcp** command was not issued on the interface Gi0/1
(d) The ip helper-address command was applied on the wrong interface

Ερώτηση 16.

Within which transport protocol are the DHCPv4 messages encapsulated?

(a) PPP
(b) UDP
(c) Broadcast
(d) Unicast

Ερώτηση 17.

What is a disadvantage of NAT?

(a) Performance is degraded
(b) The router does not need to alter the checksum of the IPv4 packets
(c) The costs of readdressing hosts can be significant for a publicly addressed network
(d) The internal hosts have to use a single public IPv4 address for external communication

Ερώτηση 18.

Answer the following question based on the addressing below:

Device	Interface	IPv4 Address	Subnet Mask	Default Gateway
Router1	G0/0	192.168.1.1	255.255.255.0	N/A
	S0/0/0	172.16.2.253	255.255.255.252	N/A
	G0/1	192.168.2.1	255.255.255.0	N/A
Router2	S0/0/0	172.16.2.254	255.255.255.252	N/A
	G0/0	10.200.202.1	255.255.255.0	N/A
	S0/0/1	172.16.3.254	255.255.255.252	N/A
	G0/1	172.16.4.254	255.255.255.252	N/A
Router3	G0/0	172.16.4.253	255.255.255.252	N/A
	S0/0/0	170.16.31.250	255.255.255.0	N/A
Router4	S0/0/0	172.16.3.253	255.255.255.252	N/A
	G0/0	192.168.200.1	255.255.224.0	N/A

In which router would you enable NAT in order to access the internet?

(a) Router1
(b) Router2
(c) Router3
(d) Router4

Ερώτηση 19.

What is the major release number in the IOS image name c1900-universalk9-mz.SPA.152-3.T.bin?

(a) 3
(b) 15
(c) 52
(d) 190

Ερώτηση 20.

Which parameter of a router do you manage by configuring NTP?

(a) NVRAM size
(b) Power consumption
(c) Time
(d) Remote connectivity

Μέρος Β (30 μονάδες)

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

Ερώτηση 1.

Fill in the blanks in the following statements:

(a) The _____switching method describes a switch that transfers a frame after a whole frame is received.

(b) The _____ is a Cisco proprietary Layer 2 protocol that is used to gather information about Cisco devices which share the same data link.

(c) The acronym _____refers to a protocol that provides an encrypted connection. The protocol replaces the clear text Telnet protocol for Cisco device management.

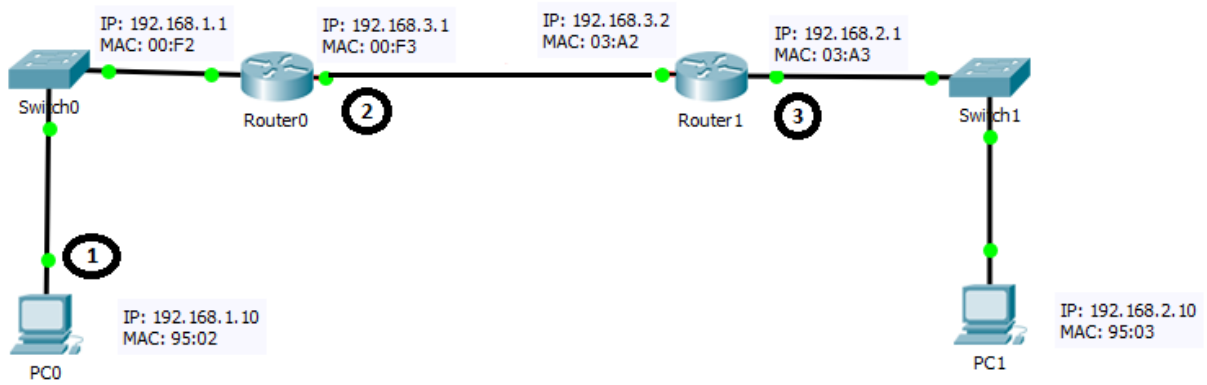
(d) A _____static route can be used to provide an alternate route.

(e) One benefit of NAT is that it conserves _____ IP Addresses.

(f) When applying an ACL to a router interface, _____is the traffic that is leaving the router and going toward to the destination host.

Ερώτηση 2.

Regarding the exhibit, PC0 sends a packet to PC1. Fill in the information: Destination MAC, Source MAC, Destination IP, Source IP for the three positions (1, 2, 3). (0.5 pt for each statement)



Position	Destination MAC	Source MAC	Destination IP	Source IP
1				
2				
3				

Ερώτηση 3.

In the following table write the “Command” that will display what is defined in the “Description” column.

	Description	**Command**
(a)	Display the hops a packet passes through to destination	
(b)	Display the routing table of a router	
(c)	Backup the running configuration to a tftp server	
(d)	Test connectivity between two hosts	
(e)	Display all lists that filter packets	
(f)	Display the configured VLANs of a switch	

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 1 permit 192.168.222.100 0.0.0.255	192.168.122.99	
(b)	Access-list 3 permit 192.168.22.128 0.0.255.255	192.168.21.21	
(c)	Access-list 4 permit 192.168.22.23 0.255.255.255	192.169.21.24	
(d)	Access-list 5 permit 192.168.22.0 0.0.0.127	192.168.22.129	
(e)	Access-list 2 permit 192.168.22.0 0.0.0.63	192.168.22.65	
(f)	Access-list 6 permit 192.168.22.0 0.0.0.31	192.168.22.33	

Ερώτηση 5.

Based on the partial output of the **show ip route** command shown below, answer the questions that follow:

R 172.16.0.0/16 [120/1] via 172.17.17.1, 00:00:22, Serial0/0

	Question	**Answer**
(a)	State the routing protocol used	
(b)	State the administrative distance of the route	
(c)	How much time has passed since the route was learned	
(d)	How many seconds are left before the next update	
(e)	State the destination network IP address	
(f)	State the next hop interface IP address	

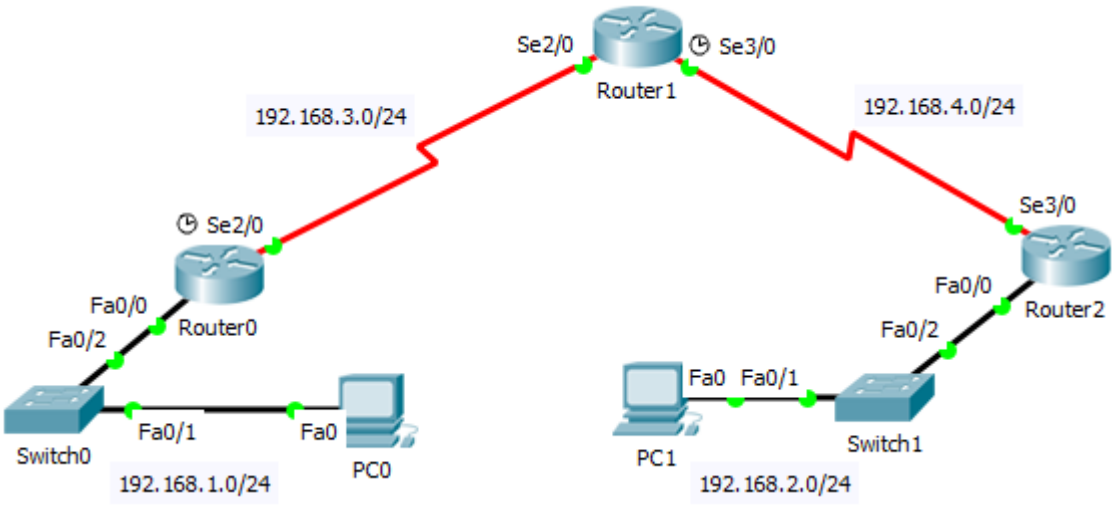
ΜΕΡΟΣ Γ (40 Μονάδες)

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

Ερώτηση 1.

The interfaces of the following network are all properly configured.

(1 pt for each command x 10 = 10pts)



(a) Write the necessary commands to configure RIP on Router0 so that:

- Advertise the networks.
- Version 2 of the protocol should be configured.
- LAN interfaces should be set to passive. LAN interfaces are connected to f0/0.
- Auto summarization must be off.

(7 pts)

Router0# _____

_____

_____

_____

_____

_____

_____

(b) Configure a default route on Router2. (1 pt)

Router2(config)# _____

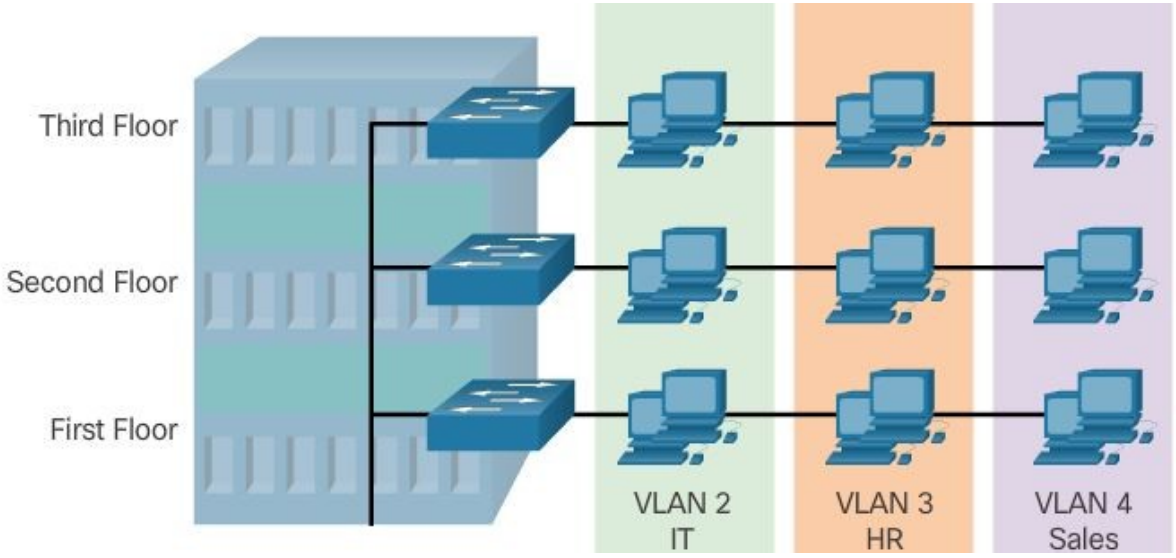
(c) Configure static routing on Router 1 (2 pts)

Router1(config)# _____

Router1(config)# _____

Ερώτηση 2.

Answer the following questions based on the network below:



Write the appropriate commands to Switch1 on First Floor in order to complete the following tasks.

(a) Create Vlan 2 with name IT. (1 pt)

Switch1(config)#

(b) Create Vlan 3 with name HR. (1 pt)

Switch1(config)#

(c) Create Vlan 4 with name Sales. (1 pt)

Switch1(config)#

(d) Assign ports from fa0/1 to fa0/10 to Vlan 2. (1.5 pt)

Switch1(config)#

(e) Assign ports from fa0/11 to fa0/20 to Vlan 3. (1.5 pt)

Switch1(config)#

Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ

(f) Assign ports from fa0/21 to fa0/30 to Vlan 4. (1.5 pts)

Switch1(config)#_____

_____

_____

(g) Configure port fa0/48 as trunk port. (1 pt)

Switch1(config)#_____

_____

(h) Restrict the trunk port Fa0/48 to allow VLANs 2, 3, 4 and 11 (assume that you are already in the interface mode of fast ethernet fa0/48). (0.5 pt)

Switch1(config-if)#_____

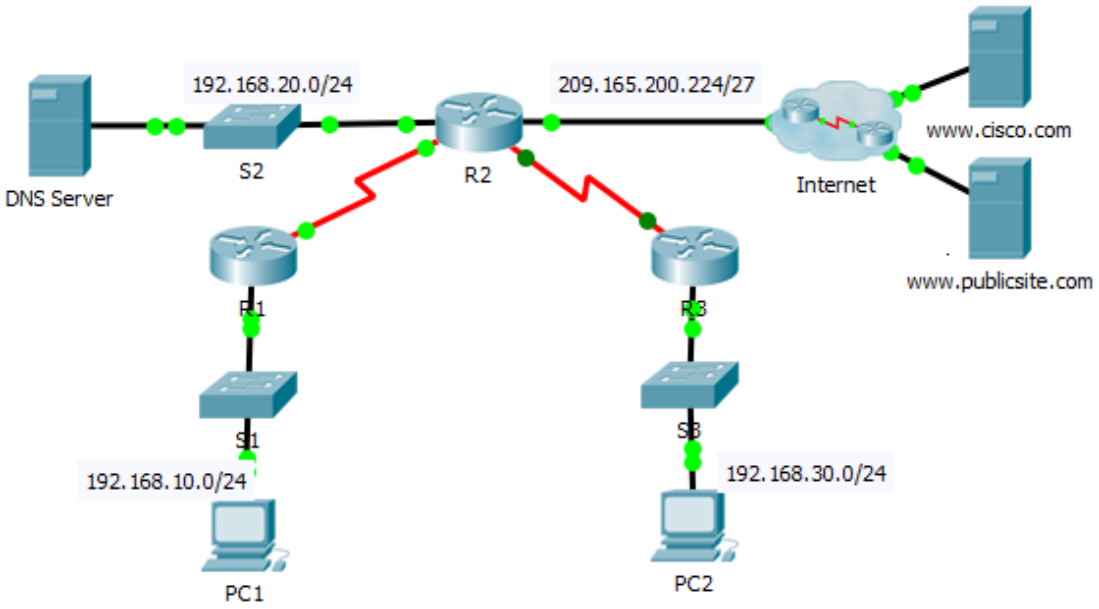
(i) Disable unused ports (Ports fa0/1 to fa0/30 and port fa0/48 are in use). (1 pt)

Switch1(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 the excluded IPv4 addresses. (2.5 pt)

Configure **R2** to exclude the first 10 addresses and the last five addresses from the R1 (LAN 192.168.10.0/24) and R3 (LAN 192.168.30.0/24). All other addresses should be available in the DHCP address pool.

R2#_____

_____

_____

_____

_____

Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ

(b) Create a DHCP pool on R2 for the R1 LAN. (2 pts)

i. Create a DHCP pool named **`R1-LAN`** (case-sensitive).

ii. Configure the DHCP pool to include the network address R1 (LAN 192.168.10.0), the default gateway, and the IP address of the DNS server.

R2(config)#_____

_____

_____

_____

(c) Create a DHCP pool on R2 for the R3 LAN. (2 pts)

i. Create a DHCP pool named **`R3-LAN`** (case-sensitive).

ii. Configure the DHCP pool to include the network address R3 (LAN 192.168.30.0), the default gateway, and the IP address of the DNS server.

R2(config)#_____

_____

_____

_____

(d) Configure int g0/0 of R1 as DHCP relay agent with IP address 10.1.1.2. (1 pt)

R1(config)#_____

_____

(e) Configure int g0/0 of R3 as DHCP relay agent with IP address 10.2.2.2 (1 pt)

R3(config)#_____

_____

(f) Configure the Gigabit Ethernet 0/1 interface on R2 to receive IP addressing from DHCP and activate the interface. (1.5 pts)

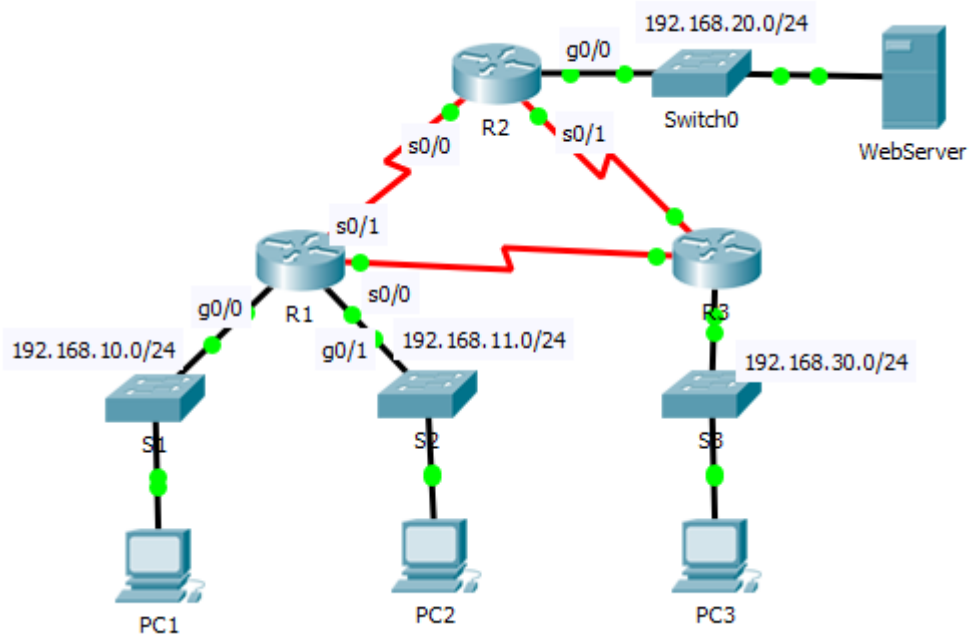
R2(config)# _____

_____

_____

Ερώτηση 4.

Write the necessary commands to perform the following configurations, based on the network shown in the following diagram: (1 pt for each command x 10 = 10pts)



(a) All hosts in the 192.168.10.0 and 192.168.11.0 LAN should be permitted to access network 192.168.20.0. The 192.168.30.0 network should not have access to 192.168.20.0, with a small exception: the manager's host with IP Address 192.168.30.30 should be able to access 192.168.20.0 . Place the access list in R2. (5 pts)

R2(config)#_____

(b) Only host 192.168.30.30 and all hosts from 192.168.20.0 except 192.168.20.20 should be permitted access to 192.168.10.0 LAN. All other networks should not be able to access the 192.168.10.0 LAN. Place the access list in R1. (5 pts)

R1(config)#_____

ΤΕΛΟΣ ΕΞΕΤΑΣΗΣ