

ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ  
ΔΙΕΥΘΥΝΣΗ ΜΕΣΗΣ ΕΚΠΑΙΔΕΥΣΗΣ  
ΛΕΥΚΩΣΙΑ

ΠΑΓΚΥΠΡΙΕΣ  
ΓΡΑΠΤΕΣ ΕΞΕΤΑΣΕΙΣ  
2016  
(ΓΙΑ ΑΠΟΛΥΣΗ)

**Α΄ ΣΕΙΡΑ ΕΞΕΤΑΣΕΩΝ**

<b>ΜΑΘΗΜΑ</b>	<b>: ΔΙΚΤΥΑ - CISCO</b>
<b>ΧΡΟΝΟΣ</b>	<b>: 2 ώρες</b>
<b>ΗΜΕΡΟΜΗΝΙΑ</b>	<b>: 15 Ιουνίου 2016</b>
<b>ΩΡΑ ΕΝΑΡΞΗΣ</b>	<b>: 7.45 π.μ.</b>

ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΕΚΑΠΕΝΤΕ (15) 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 is the destination address in the header of a broadcast frame?

- (a) 255.255.255.255
- (b) 0.0.0.0
- (c) FF-FF-FF-FF-FF-FF
- (d) 11-11-11-11-11-11

**Ερώτηση 2.**

What happens when the AUTO-MDIX is enabled on a switch interface?

- (a) The interface will auto-negotiate duplex with the connected devices
- (b) The interface will auto-negotiate speed with the connected devices
- (c) The interface will be used for remote access
- (d) The interface automatically detects the required cable connection type (straight-through or crossover)

**Ερώτηση 3.**

What is a disadvantage of VLANs?

- (a) Reduced security
- (b) Reduced performance
- (c) Need for more expensive switches
- (d) Larger broadcast domains

**Ερώτηση 4.**

Which command is used to remove only VLAN10 from a switch?

- (a) delete vlan.dat
- (b) no vlan 10
- (c) delete flash:vlan.dat
- (d) no switchport access vlan 10

**Ερώτηση 5.**

Which software is used for a network administrator to make the initial router configuration securely?

- (a) terminal emulation client software
- (b) SSH client software
- (c) Telnet client software
- (d) HTTPS client software

**Ερώτηση 6.**

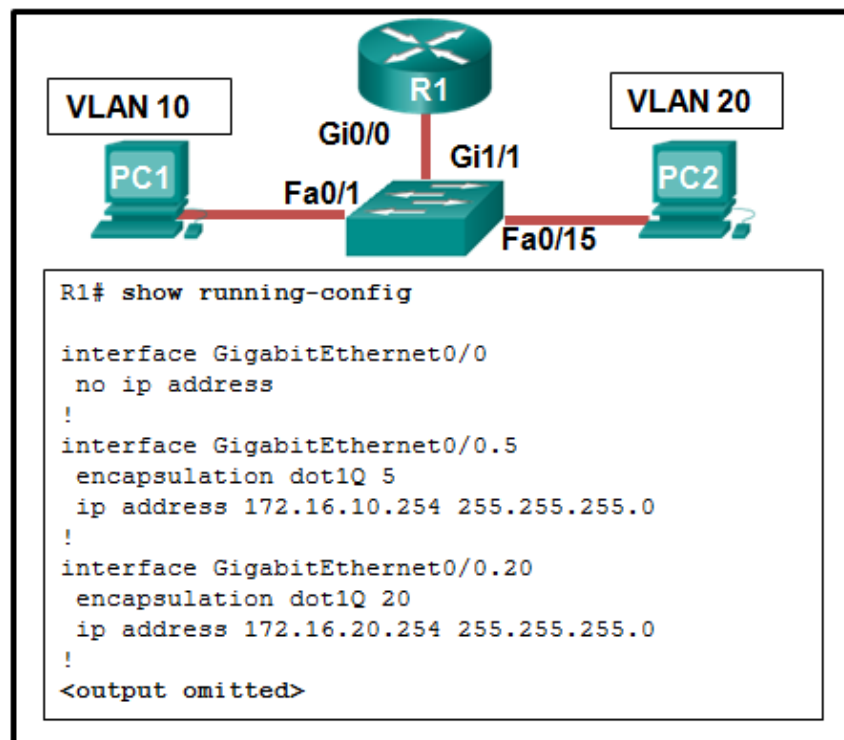
What is a characteristic of an IPv4 loopback interface on a Cisco IOS router?

- (a) The **no shutdown** command is required to place this interface in an Up state
- (b) Only one loopback interface can be enabled on a router
- (c) It is a logical interface internal to the router
- (d) It is assigned to a physical port and can be connected to other devices

**Ερώτηση 7.**

What is a characteristic of legacy inter-VLAN routing?

- (a) The router requires a separate link for each VLAN
- (b) Only one VLAN can be used in the topology
- (c) The user VLAN must be the same ID number as the management VLAN
- (d) Inter-VLAN routing must be performed on a switch instead of a router

**Ερώτηση 8.**

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) The **no shutdown** command is not entered on subinterfaces
- (d) The encapsulation dot1Q 5 command contains the wrong VLAN

**Ερώτηση 9.**

The network administrator configures the router with the command:

```
ip route 172.16.1.0 255.255.255.0 172.16.2.2
```

How will this route appear in the routing table?

- (a) S 172.16.1.0 [1/0] via 172.16.2.2
- (b) C 172.16.1.0 is directly connected, Serial0/0
- (c) S 172.16.1.0 is directly connected, Serial0/0
- (d) C 172.16.1.0 [1/0] via 172.16.2.2

**Ερώτηση 10.**

Which is true for static routing?

- (a) It is scalable
- (b) Requires less powerful routers
- (c) It is easier to configure for complex networks
- (d) It dynamically adapts to changes in network topology

**Ερώτηση 11.**

Which dynamic routing protocol was developed as an exterior gateway protocol to interconnect different Internet Service Providers?

- (a) EIGRP
- (b) OSPF
- (c) RIP
- (d) BGP

**Ερώτηση 12.**

The following appears in the routing table:

```
R 172.16.4.0/28 [120/2] via 209.165.200.226, 00:00:12, Serial0/0/0
```

What does the number 120 represent?

- (a) The periodic update interval
- (b) The administrative distance
- (c) The number of hops
- (d) The hold-down timer

**Ερώτηση 13.**

What is the **first criterion** used by OSPF routers to elect a DR?

- (a) highest priority
- (b) highest IP address router ID
- (c) highest loopback address
- (d) highest IP address

**Ερώτηση 14.**

What are HELLO packets in OSPF?

- (a) Packets that contain the state and cost of each directly connected link to a router
- (b) Packets that a router sends through OSPF-enabled interfaces to determine if neighbors are present on those links
- (c) Packets that contain routing information
- (d) Packets that forward traffic from one router to the other

**Ερώτηση 15.**

Which command is used to apply an IPv4 ACL to a router interface?

- (a) the access-class command
- (b) the ip access-list command
- (c) the ip access-group command
- (d) the ip traffic-filter command

**Ερώτηση 16.**

Which command is implicitly (by default) placed in an **extended** 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 17.**

An administrator issues the commands:

```
Router(config)# interface g0/1
Router(config-if)# ip address dhcp
```

What is the administrator trying to achieve?

- (a) configuring the router to act as a DHCPv4 server
- (b) configuring the router to obtain IP parameters from a DHCPv4 server
- (c) configuring the router to act as a DHCP relay agent
- (d) configuring the router to resolve IP address conflicts

**Ερώτηση 18.**

As a DHCPv4 client lease is about to expire, what is the message that the client sends to the DHCP server?

- (a) DHCPDISCOVER
- (b) DHCP OFFER
- (c) DHCPACK
- (d) DHCPREQUEST

**Ερώτηση 19.**

Which type of NAT maps a single inside local address to a single inside global address?

- (a) static
- (b) dynamic
- (c) port address translation
- (d) overloading

**Ερώτηση 20.**

Which one of the following types of NAT allows many-to-one address mapping between local and global addresses?

- (a) Static NAT
- (b) Dynamic NAT
- (c) ALG
- (d) PAT

**Μέρος Β (30 μονάδες)**

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

**Ερώτηση 1.**

(1 pt for each row)

Copy this table in your answer book and complete it by adding an X mark to the appropriate cells to indicate which characteristic corresponds to each protocol.

Routing Protocol Comparison Table

<b>Routing Protocol</b> <b>Characteristic</b>	<b>RIP v1</b>	<b>RIP v2</b>	<b>EIGRP</b>	<b>OSPF</b>
Distance Vector				
Link State				
VLSM support				
Cisco proprietary				
Hop Count metric				
Ideal for large networks				

**Ερώτηση 2.**

(1 pt for each answer)

In the following table write the show command that will display what is explained in the "Description" column.

<b>A/A</b>	<b>Description</b>	<b>Show command</b>
(a)	Provides a brief status of the interfaces on the router	
(b)	Displays detailed status and statistics for all interfaces on the router	
(c)	Displays version information for the hardware and firmware	
(d)	Shows the configuration stored in RAM	
(e)	Shows the configuration stored in NVRAM	
(f)	Displays the routing table	

**Ερώτηση 3.**

Complete the table below with the appropriate protocol, RIP or EIGRP: (1 pt for each answer)

Distance Vector Routing Protocol Description	RIP or EIGRP
(a) Sends HELLO packets	
(b) Version 2 supports VLSM and classless routing	
(c) Maximum limit of 255 hops	
(d) Maximum limit of 15 hops	
(e) Forms neighbour adjacencies	
(f) It is an open protocol	

**Ερώτηση 4.**

Fill in the blanks in the following statements: (1 pt for each statement)

- (a) The \_\_\_\_\_ command displays the VLAN assignment for all ports as well as the existing VLANs on the switch.
- (b) The \_\_\_\_\_ command enables an interface (brings it up).
- (c) The election of a DR and a BDR takes place on \_\_\_\_\_ networks.
- (d) An implicit \_\_\_\_\_ rejects any packet that does not match any Access Control Entry (ACE).
- (e) A way to quickly find your PC's IP address and MAC Address is to go to command prompt and type \_\_\_\_\_.
- (f) A \_\_\_\_\_ IP address must be unique across the Internet.



**Ερώτηση 5.**

A small school administrator has decided to design the school network using the network 193.1.1.0/24. The network must support 6 different user groups.

- Management: 10 users
- Lab2, Lab3, Lab4: 16 users each
- Library: 6 users
- Classes: 25 users

Based on the above, answer the following questions:

(1 pt each)

(a)	How many bits must be borrowed from the host portion of the IP address to allow the administrator to subnet the 6 networks	
(b)	Calculate the available IP addresses for each subnet, in order to verify that these can cover the needs of the biggest network group	
(c)	Write the new subnet mask in a dotted decimal notation	
(d)	Write the broadcast address of the first subnet (subnet 0)	
(e)	Write the network address of the second subnet (subnet 1)	
(f)	Write the host range of the second subnet (subnet 1)	

**ΜΕΡΟΣ Γ (24 Μονάδες)**

Να απαντήσετε σε όλες τις ερωτήσεις. Η κάθε ερώτηση βαθμολογείται με οκτώ (8) μονάδες.

**Ερώτηση 1.**

- (a) Write the necessary commands for configuring a router to have the passwords set as per the table below. All passwords should be encrypted in the configuration file and the enable password should have strong encryption. (0.5 pt for each line x 8 = 4pts)

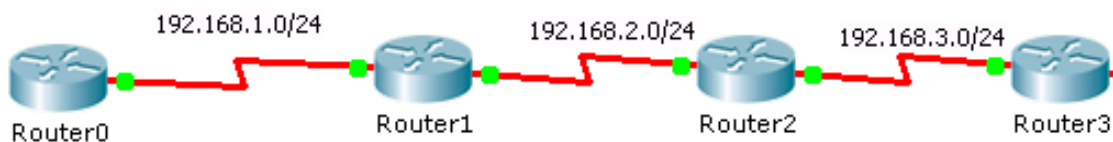
Enable password	ena123
Console Password	con123
Telnet Password	tel123

Router>enable

Router#config t

Router(config)#

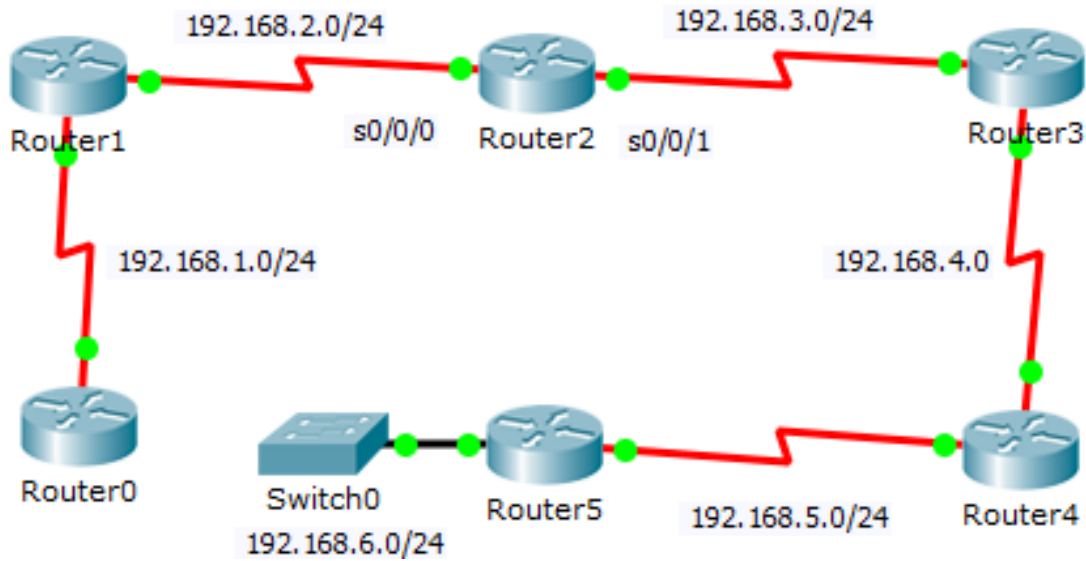
- (b) The following network must be configured using RIP (version 2). Assume that all interfaces are properly configured. Write the necessary commands to configure RIP (version 2) on Router1. (0.5 pt for each line x 4 = 2pts)



Router1(config)#

**Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ**

(c) The following network must be configured using Static Routing. Assume that all interfaces are properly configured. Write the necessary commands to configure static routing on Router2 (0.5 pt for each line x 4 = 2pts)



Router2(config)#

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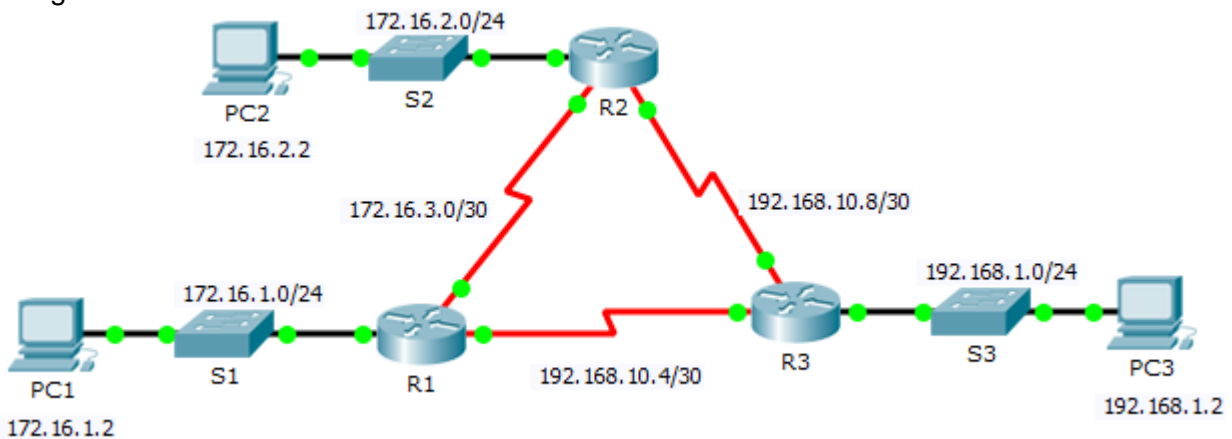
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**Ερώτηση 2.**

The following network must be configured using OSPF. Assume that all interfaces are properly configured.



Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/0	172.16.1.1	255.255.255.0	N/A
	S0/0/0	172.16.3.1	255.255.255.252	N/A
	S0/0/1	192.168.10.5	255.255.255.252	N/A

**Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ**

Use the following requirements to configure OSPF routing on router R1:

- Process ID 10
- Router ID for R1 = 1.1.1.1
- Network address for each interface
- LAN interface set to passive

(1 pt for each line x 8 = 8pts)

R1>

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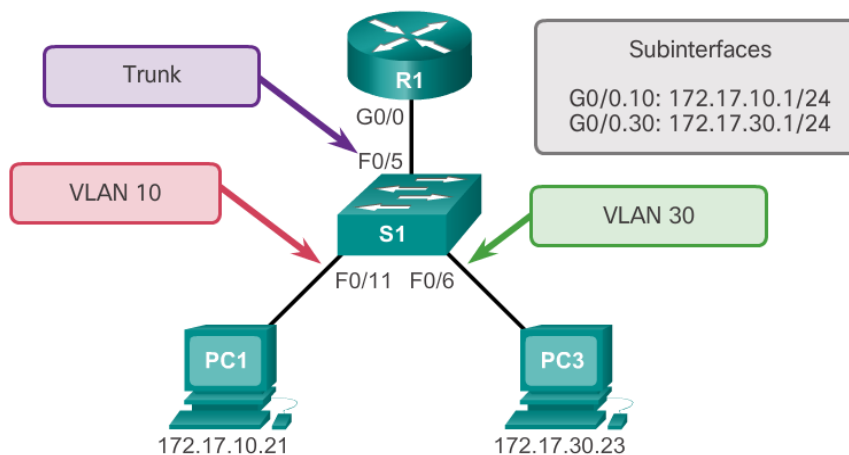


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### Ερώτηση 3.



Given the network shown in the figure above:

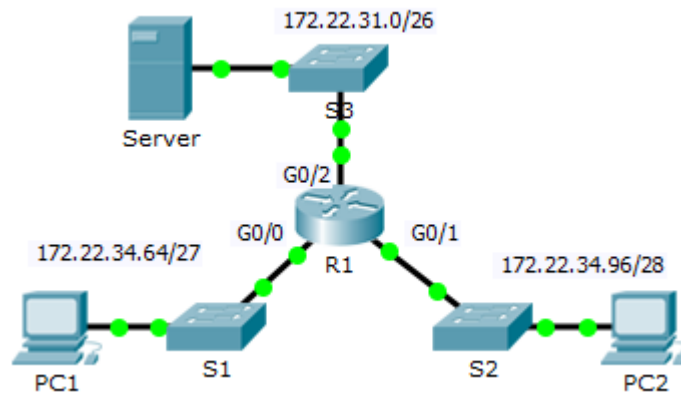
- (a) Provide the necessary commands to create VLAN 10 and VLAN 30 to S1 and to assign the VLANs to the following ports: (4 pts)
- VLAN 10: Fast Ethernet 0/11
  - VLAN 30: Fast Ethernet 0/6

**Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ**



**ΜΕΡΟΣ Δ (16 Μονάδες)**

Να απαντήσετε στην πιο κάτω ερώτηση.



Refer to the exhibit.

- (a) Complete the Subnet Mask and the Default Gateway (first IP of subnet) of PC1 and PC2.  
(1 pt each 1x8=8)

**Addressing Table**

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/0	172.22.34.65		N/A
	G0/1	172.22.34.97		N/A
	G0/2	172.22.34.1		N/A
Server	NIC	172.22.34.62		172.22.34.1
PC1	NIC	172.22.34.66		
PC2	NIC	172.22.34.98		

**Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ**

