ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ

ΔΙΕΥΘΥΝΣΗ ΜΕΣΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

ΛΕΥΚΩΣΙΑ

ΔΕΙΓΜΑ

ΠΑΓΚΥΠΡΙΕΣ
ΓΡΑΠΤΕΣ ΕΞΕΤΑΣΕΙΣ
2018
(ΓΙΑ ΑΠΟΛΥΣΗ)

Α΄ ΣΕΙΡΑ ΕΞΕΤΑΣΕΩΝ

ΜΑΘΗΜΑ   : ΔΙΚΤΥΑ - CISCO
ΧΡΟΝΟΣ   : 2,5 ώρες
ΗΜΕΡΟΜΗΝΙΑ :
ΩΡΑ ΕΝΑΡΞΗΣ : 08.00

ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΩΔΕΚΑ (12) 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. **(Chapter 4)**

Which of the following is true about the **Cut-Through** switching method?

- (a) It buffers frames until the full frame has been received by the switch
- (b) It is the slowest switching method
- (c) Frames begin to be forwarded as soon as the destination MAC address is received
- (d) It checks the frames for errors before releasing them to its switch ports

Ερώτηση 2. **(Chapter 4)**

Which type of address does a switch use to build the MAC address table?

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

Ερώτηση 3. **(Chapter 5)**

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

- (a) load the default Cisco IOS software
- (b) load a power-on self-test program
- (c) load boot loader software
- (d) low-level CPU initialization

Ερώτηση 4. **(Chapter 5)**

Which configuration must be in place for the auto-MDIX feature to function on a switch interface?

- (a) The interface must be in access mode
- (b) The interface must be assigned to VLAN 1
- (c) The speed and duplex of the interface must be configured for auto detect
- (d) The interface must be manually configured for full-duplex mode

Ερώτηση 5. **(Chapter 6)**

What is a **Native VLAN**?

- (a) The type of VLAN configured to access the management capabilities of a switch
- (b) The type of VLAN used to receive untagged traffic on a trunk port
- (c) The type of VLAN that includes all switch ports after the initial boot up
- (d) The type of VLAN that is configured to carry user-generated traffic

Ερώτηση 6. **(Chapter 6)**

What VLANs are allowed across a trunk when the range of allowed VLANs is set to the default value?

- (a) All VLANs will be allowed across the trunk.
- (b) Only VLAN 1 will be allowed across the trunk.
- (c) Only the native VLAN will be allowed across the trunk.
- (d) The switches will negotiate via VTP which VLANs to allow across the trunk.

Ερώτηση 7. **(Chapter 1)**

What is a Routing Table?

- (a) It is a table stored in RAM which contains information about physical addresses of all connected devices
- (b) It is a table stored in RAM which contains information about current router configuration
- (c) It is a table stored in RAM which contains information about directly connected and remote networks
- (d) It is a table stored in ROM which contains the IOS

Ερώτηση 8. **(Chapter 1)**

When a router learns that multiple paths are available to a destination network from the same routing protocol, which factor is considered by a router to choose the best path to forward a packet?

- (a) the reliability value of the neighbouring routers
- (b) the order of paths on the routing table
- (c) the reliability value of the neighbouring routers
- (d) the lowest metric

Ερώτηση 9. **(Chapter 6)**

With this type of a router configuration a single physical interface routes traffic between **multiple VLANs** on a network:

- (a) Legacy inter-vlan routing
- (b) Router-on–a-stick inter-vlan routing
- (c) The IP address of each interface
- (d) Multilayer inter-vlan routing

Ερώτηση 10. (Chapter 3)

> 192.168.1.0/24
> 192.168.2.0/24
> 192.168.3.0/24
> 192.168.4.0/24

Which of the following is the correct **summary route** for the networks above?

- (a) 192.168.0.0/16
- (b) 192.168.0.0/24
- (c) 192.168.0.0/21
- (d) 192.168.1.0/21

Ερώτηση 11. **(Chapter 2)**

Why would a summarized static route be configured on a router?

- (a) to reduce the size of the routing table
- (b) to reduce the number of public IP addresses required by an organization
- (c) to provide a better route than a particular routing protocol
- (d) to provide a default gateway for a router that connects to an ISP

Ερώτηση 12. (Chapter 3)

Which factor directly affects the time for dynamic routing to convergence?

    (a)   the data link layer protocol used
    (b)   type of applications used
    (c)   number of hosts
    (d)   size of the network

Ερώτηση 13. (Chapter 1)

Which of the following is a **distance vector** routing protocol?

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

Ερώτηση 14. (Chapter 2)

Which wildcard mask would be used to advertise the 192.168.5.96/27 network as part of an OSPF configuration?

    (a) 0.0.0.32
    (b) 0.0.0.31
    (c) 255.255.255.224
    (d) 255.255.255.223

Ερώτηση 15. (Chapter 10)

Why would a network administrator issue the **show cdp neigbors** command on a router?

    (a) to display device ID and other information about directly connected Cisco devices
    (b) to display router ID and other information about RIP v2 neighbors
    (c) to display line status and other information about directly connected Cisco devices
    (d) to display routing table and other information about directly connected Cisco devices

Ερώτηση 16. (Chapter 7)

```
Router# configure terminal
Enter configuration commands, one per line.  End with
CNTL/Z.
Router(config)# ip access-list standard ACCESS_NETWORK
Router(config-std-nacl)# permit 192.168.15.0 0.0.0.255
Router(config-std-nacl)# permit host 192.168.17.25
Router(config-std-nacl)# deny 192.168.12.0 0.0.0.255
Router(config-std-nacl)# deny host 192.168.250.30
Router(config-std-nacl)# end
Router#

Router# show access-lists access_network
Router#
```

Refer to the exhibit. A network administrator configures a named ACL on the router. Why is there no output displayed when the show command is issued?

    (a)   The ACL is not activated.
    (b)   The ACL name is case sensitive.
    (c)   The ACL has not been applied to an interface.
    (d)   No packets have matched the ACL statements yet.

Ερώτηση 17. (Chapter 7)

Which of the following wildcard mask is appropriate to use in order to **deny all hosts** from the network 172.16.0.0/16?

    (a) 0.0.0.0
    (b) 255.255.0.0
    (c) 0.0.255.255
    (d) 255.255.255.255

Ερώτηση 18. (Chapter 8)

Which message does a DHCP server use to reply when it receives a DHCPDISCOVER message from an n IPv4 host?

    (a)   DHCPACK
    (b)   DHCPDISCOVER
    (c)   DHCPOFFER
    (d)   DHCPREQUEST

Ερώτηση 19. (Chapter 8)

Which DHCPv4 message will a client send to accept an IPv4 address that is offered by a DHCP server?

    (a) broadcast DHCPACK
    (b) unicast DHCPACK
    (c) broadcast DHCPREQUEST
    (d) unicast DHCPREQUEST

Ερώτηση 20. (Chapter 9)

Which method is used by a PAT-enabled router to send incoming packets to the correct inside hosts?

    (a)   It uses the destination TCP or UDP port number on the incoming packet.
    (b)   It uses the source TCP or UDP port number on the incoming packet.
    (c)   It uses the source IP address on the incoming packet.
    (d)   It uses a combination of the source TCP or UDP port number and the destination IP address on the incoming packet.

Μέρος Β (30 μονάδες)

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

Ερώτηση 1. **(Chapter 4,5,7,9)**

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

(a) The store-and-forward switching method describes a switch that transfers a frame after a whole frame is received.

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

(c) A floating static route can be used to provide a backup route.

(d) The wildcard mask that is used to exactly advertise the network 192.168.160.0 / 20 is 0.0.15.255

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

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

Ερώτηση 2. **(Chapter 7)**

Determine the Subnet Mask and the Wildcard Mask for the following networks: (1 pt for each statement)

Network	Decimal Subnet Mask	Wildcard Mask
192.168.100.0 /24	255.255.255.0	0.0.0.255
192.168.200.128 /20	255.255.240.0	0.0.15.255
192.168.14.64 /26	255.255.255.192	0.0.0.63

Ερώτηση 3. **(Chapter 1, 6, 7, 10)**

Fill in the table below with the proper IOS CLI Command.   (1 pts each)

What to DO?	COMMAND
(a) Display the hops a packet passes through to destination	traceroute
(b) Display the routes in the routing table of a router	show ip route
(c) Backup the running configuration to a tftp server	copy run tftp
(d) Test connectivity between two hosts	Ping
(e) Display all lists that filter packets	show access-lists
(f) Display the configured VLANs of a switch	show vlans

Ερώτηση 4. **(Chapter 2)**

Fill in the blanks in the following statements by choosing one of the following three types of static routing: (1 pt each answer)

Summary, Default, Floating

(a) Backs up a route already discovered by a dynamic routing protocol floating .

(b) Matches all packets and sends them to the gateway of last resort default .

(c) Useful when connecting stub networks default .

(d) Configured with a higher administrative distance than the original dynamic routing protocol floating .

(e) Commonly used with edge routers to connect to the ISP network default .

(f) Commonly used to reduce the number of routing table entries, where multiple static routes can be shortened as one static route summary.

Ερώτηση 5. **(Chapter 1)**

For each of the following components specify where it is stored on the router by marking the correct box with a **x** or ✓. (1 pt each answer)
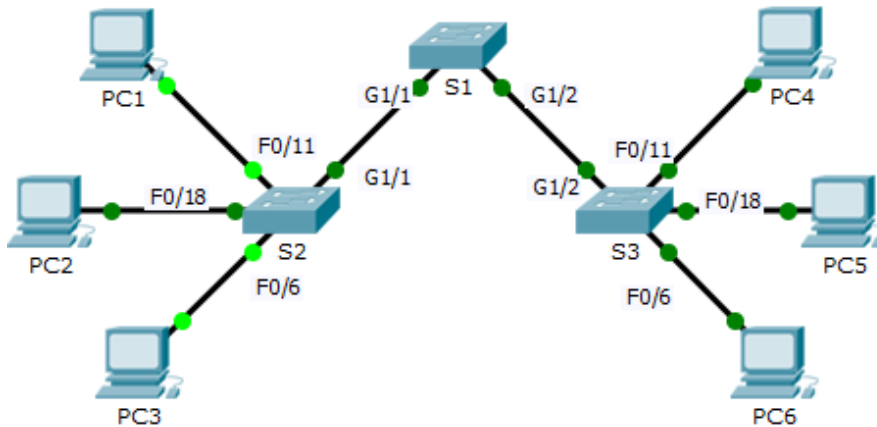
Component	ROM	Flash	RAM	NVRAM
Running Configuration file			✓	
Basic/Minimum IOS	✓			
Startup Configuration file				✓
Routing Table			✓	
Normal IOS image		✓		
POST diagnostic software	✓			

ΜΕΡΟΣ Γ (24 Μονάδες)

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

Ερώτηση 1. (Chapter 6)

Answer the following questions based on the network below:

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
S1	VLAN 88	172.31.88.2	255.255.255.0	172.31.88.1
S2	VLAN 88	172.31.88.3	255.255.255.0	172.31.88.1
S3	VLAN 88	172.31.88.4	255.255.255.0	172.31.88.1

VLANs and Port Assignment Table

Ports	Assignment	Network
F0/7 – 12	VLAN 10 - Sales	172.31.10.0/24
F0/13 -20	VLAN 20 - Production	172.31.20.0/24
F0/1 - 6	VLAN 30 - Marketing	172.31.30.0/24
Interface VLAN 88	VLAN 88 - Management	172.31.88.0/24
Trunks	VLAN 99 - Native	N/A

S1 and **S2** are fully configured. You cannot access these switches. You are responsible for configuring S3 with the following requirements:

Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ

(a) Create and assign **VLAN 10** according to the VLANs and Port Assignment Table.   (4 pts)
S3(config)#vlan 10
S3(config-vlan)#name Sales   (δεν είναι απαραίτητο για τη συγκεκριμένη άσκηση)
S3(config-vlan)#int range fa0/7-12
S3(config-if-range)#switchport mode access
S3(config-if-range)#switchport access vlan 10

(b) Configure g1/2 as trunk port and assign the native VLAN 99 to the trunk port.   (3 pts)
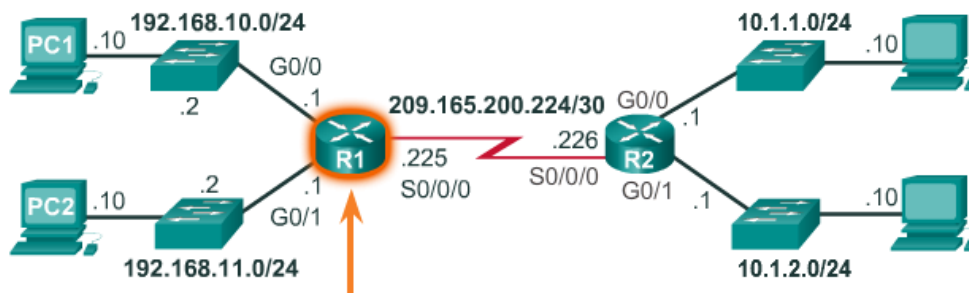S3(config)#int g1/2
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 99

(c) Restrict the trunk to only allow VLANs 10, 20, 30, 88, and 99.   (1 pt)
S3(condign-if)#switchport trunk allowed vlan 10,20,30,88,99

Ερώτηση 2.   (Chapters 1 & 3)
Answer the following questions based on the network below:

192.168.10.0/24   10.1.1.0/24
PC1 .10   .10
G0/0
.2   209.165.200.224/30 G0/0
.1   .226   .1
R1 .225   R2
S0/0/0   S0/0/0 G0/1
PC2 .10   .2   .1   .10
.1   G0/1
G0/0
192.168.11.0/24   10.1.2.0/24

(a) Give the necessary commands for configuring and activating the Serial interface S0/0/0 of the router R1. The clock rate of the interface must be set to 128000. Assume that the router is initially in privileged mode.   (4 pts)

R1# **configure terminal**   (0.5 pt)
R1(config)# **interface s0/0/0**   (1pt)
R1(config-if)# **ip address 209.165.200.225   255.255.255.252** (1pt)
R1(config-if)# **clock rate 128000** (1pt)
R1(config-if)# **no shutdown** (0.5pt)
R1(config)# **exit**   (δεν είναι απαραίτητο)
R1#

(b) Write the commands to enable RIPv2 on all interfaces of router R2. Assume that the router is initially in global configuration mode.   (4 pts)

R2(config)# **router rip**   (0.5pt)
R2(config-router)# **version 2**   (0.5pt)
R2(config-router)# **network 10.1.1.0**   (1pt)
R2(config-router)# **network 10.1.2.0**   (1pt)
R2(config-router)# **network 209.165.200.224** (1pt)

Ερώτηση 3. **(Chapter 1)**

Write the commands for configuring:

(a) The Console line of a router with password "School": (3 pts)

Router#	**config terminal**	(0.5 pt)
Router(config)#	**line console 0**	(0.5 pt)
Router(config-line)#	**password School**	(1 pt)
Router(config-line)#	**login**	(1 pt)

(b) All Telnet lines of a router with password "Cisco": (3 pts)

Router(config)#	**line vty 0 4**	(1 pt)
Router(config-line)#	**password Cisco**	(1 pt)
Router(config-line)#	**login**	(0.5 pt)
Router(config-line)#	**exit or ctrl+Z**	(0.5 pt)
Router(config)#	Router must be returned in this state	

(c) The Privilege mode with secret password "Myrouter": (1 pt)

Router#	**config terminal**	(0.5 pt)
Router(config)#	**enable secret Myrouter**	(0.5 pt)

(d) Message of the day "Router is down for maintenance": (1 pt)
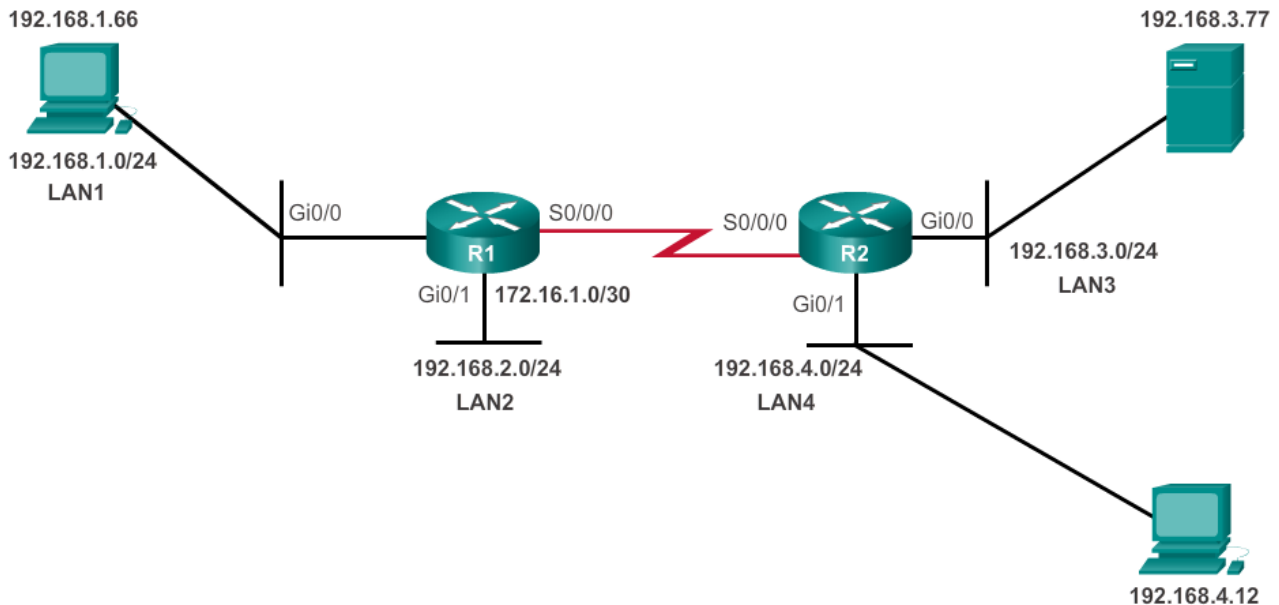
Router#	**config terminal**	(0.5 pt)
Router(config)#	**Banner motd "router is down for maintenance"**	(0.5 pt)

ΜΕΡΟΣ Δ (16 Μονάδες)

Να απαντήσετε στην πιο κάτω ερώτηση.

(Chapter 7)

Answer the following questions based on the network below:

(a) Give the necessary commands to configure and apply a numbered standard access list that will control entry into the 192.168.1.0 LAN. The 192.168.3.77 host should not be able to access this LAN but all the other hosts on the 192.168.3.0 and 192.168.4.0 networks should be permitted access. (5 pts)

R1(config)# access-list 44 deny 192.168.3.77 0.0.0.0

R1(config)# access-list 44 permit 192.168.3.0 0.0.0.255

R1(config)# access-list 44 permit 192.168.4.0 0.0.0.255

R1(config)# interface gi0/0

R1(config-if)# ip access-group 44 out

(b) Give the necessary commands to configure and apply an extended access list that will only **deny** users on LAN4 to have HTTP, FTP and Telnet access to the server on LAN3. (6 pts)

R2(config)# access-list 101 deny tcp 192.168.4.0 0.0.0.255 host 192.168.3.77 eq 80

R2(config)# access-list 101 deny tcp 192.168.4.0 0.0.0.255 host 192.168.3.77 eq 21

R2(config)# access-list 101 deny tcp 192.168.4.0 0.0.0.255 host 192.168.3.77 eq 23

R2(config)# access-list 101 permit ip any any

R2(config)# interface gi0/1

R2(config-if)# ip access-group 101 in

Η ΕΡΩΤΗΣΗ ΣΥΝΕΧΙΖΕΤΑΙ ΣΤΗΝ ΕΠΟΜΕΝΗ ΣΕΛΙΔΑ

(c) Give the necessary commands to configure and apply an extended access list that will only **allow** users on LAN2 to have HTTP, FTP and Telnet access to the server on LAN3.
(5 pts)

R1(config)# access-list 102 permit tcp 192.168.2.0 0.0.0.255 host 192.168.3.77 eq 80
R1(config)# access-list 102 permit tcp 192.168.2.0 0.0.0.255 host 192.168.3.77 eq 21
R1(config)# access-list 102 permit tcp 192.168.2.0 0.0.0.255 host 192.168.3.77 eq 23
R1(config)# interface s0/0/0
R1(config-if)# ip access-group 102 out

ΤΕΛΟΣ ΕΞΕΤΑΣΗΣ