

ΜΕΡΟΣ Α. (30 μονάδες)

Να απαντήσετε και στις είκοσι (20) ερωτήσεις πολλαπλής επιλογής. Η κάθε ερώτηση βαθμολογείται με 1 ½ μονάδα

Ερώτηση 1.

Refer to the exhibit. What two facts can be determined from the output of the ping command? (Choose two.)

```
Router1> ping 172.16.101.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.101.2,
Timeout is 2 seconds:
.!!!!
Success rate is 80 percent, round-trip min/avg/max=6/6/6 ms
Router1>
```

- A. There was a destination unreachable error
- B. **One packet timed out**
- C. The packet type was unknown
- D. The ping was interrupted
- E. **Four packets of data were successfully received**
- F. The packet TTL was exceeded

Ερώτηση 2.

What kind of information **cannot be** obtained when you enter **show interface** in the user mode? (Choose one.)

- A. The MAC address of each interface
- B. The IP address of each interface
- C. **The number of users who are logged in to each interface**
- D. The encapsulation protocol for each interface

Ερώτηση 3.

Which addresses are valid host IP addresses given the subnet mask 255.255.255.248? (Choose three.)

- A. 192.168.200.87
- B. 194.10.10.104
- C. **223.168.210.100**
- D. **220.100.100.154**
- E. 200.152.2.160
- F. **196.123.142.190**

Ερώτηση 4.

The console port can be used for which of the following? (Choose three.)

- A. **Debugging**
- B. **Password recovery**
- C. Routing data between networks
- D. **Troubleshooting**
- E. Connecting one router to another

Ερώτηση 5.

ABC Company just purchased three new routers to start their company network. Which items are needed to establish a terminal session between a PC and the router for the initial configuration? (Choose three.)

- A. Straight-through cable
- B. Terminal emulation software
- C. Rollover cable
- D. RJ-45 to DB-9 connector
- E. V.35 cable
- F. Ethernet card

Ερώτηση 6.

What are two possible reasons a router would not load a valid IOS from flash? (Choose two.)

- A. The configuration register is set to 0x2142
- B. The first boot system command executed in the startup configuration file is boot system ROM
- C. The configuration register is set to 0x2100
- D. The boot field is set to the hexadecimal number 2
- E. The startup configuration file is missing or corrupt

Ερώτηση 7.

Select the command that will store the running configuration file to a network TFTP server? (Choose one.)

- A. Router(config)# copy run tftp
- B. Router# copy tftp run
- C. Router# copy running-config tftp
- D. Router(config)# copy tftp running-config

Ερώτηση 8.

Which command will display RIP activity as it occurs on a router? (Choose one.)

- A. debug ip rip
- B. show ip route
- C. show ip interface
- D. show ip protocols
- E. debug ip rip config

Ερώτηση 9.

Which router components and operations are correctly described by the following statements? (Choose two.)

- A. RAM - stores the ARP cache
- B. NVRAM - store the operating system
- C. ROM - stores the backup IOS
- D. POST - verifies the validity of the running-config
- E. Flash - executes diagnostics at bootup
- F. DRAM - loads the bootstrap

Ερώτηση 10.

Which command is used to enable CDP on a specific interface on a router? (Choose one.)

- A. Router(config)#cdp enable
- B. Router(config)#cdp run
- C. Router(config)#cdp start
- D. Router(config-if)#cdp enable
- E. Router(config-if)#cdp run
- F. Router(config-if)#cdp start

Ερώτηση 11.



Which devices can be used to convert the data from a WAN router at the customer site into a form acceptable for use by the WAN service provider? (Choose three.)

- A. Ethernet switch
- B. DTE
- C. Modem
- D. Hub
- E. DCE device
- F. CSU/DSU

Ερώτηση 12.

If you wanted to deny all Telnet connections only to network 192.168.10.0, which command could you use? (Choose one.)

- A. access-list 100 deny tcp 192.168.10.0 255.255.255.0 eq telnet
- B. access-list 100 deny tcp 192.168.10.0 0.255.255.255 eq telnet
- C. access-list 100 deny tcp any 192.168.10.0 0.0.0.255 eq 23
- D. access-list 100 deny 192.168.10.0 0.0.0.255 any eq 23

Ερώτηση 13.

```
Router# config t
Router(config)# boot system tftp 192.168.2.1 c2500-js-l.112-26d
Router(config)# boot system flash c2500-d-l.120-9
Router(config)# config-register 0x2100
Router(config)# exit
Router# copy run start
```

The commands shown in the graphic were entered to alter the startup sequence of the router. On the next reload, which IOS will be loaded? (Choose one.)

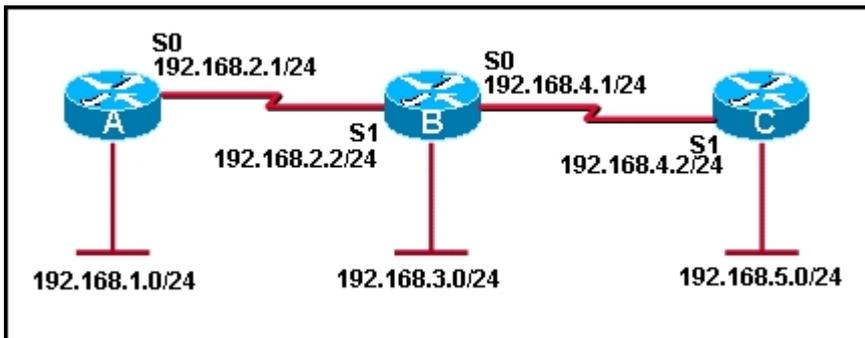
- A. The router will load c2500-js-l.112-26d
- B. The router will load c2500-d-l.120-9
- C. The router will load the IOS from ROM
- D. The router will boot into ROM monitor mode

Ερώτηση 14.

What will occur if the command **service password-encryption** is entered on a router? (Choose two).

- A. It will set an MD5 hashing algorithm on all unencrypted passwords
- B. **It will apply a weak encryption to all unencrypted passwords**
- C. It will set the enable secret password to be encrypted
- D. It will apply an MD5 hashing algorithm to encrypt the console and telnet passwords
- E. **It will configure the user EXEC mode, telnet, and enable passwords as encrypted**

Ερώτηση 15.



Which of the following are valid static IP routes? (Choose three.)

- A. RouterB(config)# ip route 192.168.5.0 255.255.255.0 S1
- B. **RouterC(config)# ip route 192.168.1.0 255.255.255.0 S1**
- C. **RouterA(config)# ip route 192.168.3.0 255.255.255.0 192.168.2.2**
- D. RouterB(config)# ip route 192.168.1.0 255.255.255.0 192.168.2.2
- E. **RouterC(config)# ip route 192.168.2.0 255.255.255.0 192.168.4.1**
- F. RouterA(config)# ip route 192.168.4.0 255.255.255.0 192.168.2.1

Ερώτηση 16.

When must a router serial interface be configured with the **clock rate** command? (Choose one.)

- A. When the interface is functioning as a DTE device
- B. When the interface timers have been cleared
- C. When the connected DTE device is shut down
- D. **When the interface is functioning as a DCE device**

Ερώτηση 17.

Which of the following conditions must be met in order for a network to have converged? (Choose one.)

- A. The routers in the network are operating with dynamic routing protocols
- B. The routers in the network are operating with compatible versions of IOS
- C. The routers in the network are operating with the same routing tables
- D. **The routers in the network are operating with consistent routing knowledge**

Ερώτηση 18.

Which statement about a datagram's life is true? (Choose one.)

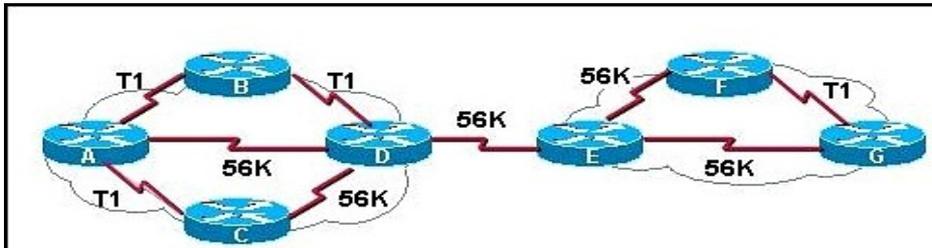
- A. Each router increments the TTL value of the datagram until the maximum hop count of the routing protocol is reached. The packet is then returned to the source
- B. The packet is dropped when the router count and the TTL value match. The source is notified that transmission has failed
- C. Each router decreases the TTL value by one until it reaches zero. The datagram is then discarded and a time exceeded for message is sent to the source
- D. The destination device discards the datagram if the TTL value is zero on arrival. An ICMP destination unreachable message is sent back to the source

Ερώτηση 19.

Which three statements are true about full-duplex operation on an Ethernet network? (Choose three.)

- A. There are no collisions in full-duplex mode
- B. A dedicated switch port is required for each node
- C. Hub ports are preconfigured for full-duplex mode
- D. The host network card must detect the availability of the media before transmitting
- E. The host network card and the switch port must both be in full-duplex mode
- F. The host must have a special NIC installed

Ερώτηση 20.



Refer to the exhibit. Assuming default metrics are used and the network is fully converged, which path will RIP use to send a packet from Router A to Router F? (Choose one.)

- A. A, D, E, F
- B. A, B, D, E, F
- C. A, C, D, E, G, F
- D. A, B, D, E, G, F

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:

(1 pt for each statement)

- A network administrator can use the passive interface command to disable routing updates on specified interfaces.
- An echo request is initiated by the command ping.
- The internal loopback of a node is tested with the command ping 127.0.0.1.
- The configuration register value can be changed so that the router loads the IOS from a different location.
- The instructions for POST diagnostics are maintained in ROM memory.
- Routers make forwarding decisions based on the destination IP address of a packet.

Ερώτηση 2.

Based on the partial output of the show ip route command shown below, answer the questions that follow: (1 pt for each answer)

R 172.16.3.0/24 [120/3] via 172.16.2.2, 00:00:27, Serial0/0

Question	Answer
a. State the routing protocol used	RIP
b. State the administrative distance of the route	120
c. State the route cost (metric)	3
d. How many seconds are left before the next update	3
e. State the destination network address	172.16.3.0/24
f. State the next hop interface address	172.16.2.2

Ερώτηση 3.

Answer the following questions based on the CDP output shown below: (1.5 pts for each answer)

```

MontegoBay>
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID      Local Intrfce  Holdtme  Capability  Platform      Port ID
Negril         Ser 0/1       146      R           2620          Ser 0/1
Lucia          Ser 0/0       175      R           2621          Ser 0/0
MBSwitch       Fas 0/0       155      SI          WS-C2950-2    Fas 0/11

```

- Give the command necessary for causing the above router output.

show cdp neighbors

- At which OSI layer does CDP operate?

Layer

2

c. What is needed for a device to be recognised by CDP?

- CDP must be enabled on the device & interface
- It must be a CISCO device OR support cdp

d. Draw a network diagram showing the above devices and their interconnections. Use a suitable drawing depending on the type of each device and label clearly each interface.

Ερώτηση 4.



Based on the above diagram of a layer 4 segment, answer the following questions justifying your answer with an appropriate argument/reason:

Question	Answer	Reason / Argument	
a. Type of traffic – data carried by segment.	Web	port 80 is for HTTP traffic	(1.5 pts)
b. Number of next packet to be transmitted	4679	acknowledgment number shows next packet to be delivered	(1.5 pts)
c. what type (protocol) segment is this	TCP	Sequencing & acknowledgment	(1.5 pts)
d. what is the use of the window field	Number of packets delivered before acknowledgment	Not required	(1.5 pts)

Ερώτηση 5.

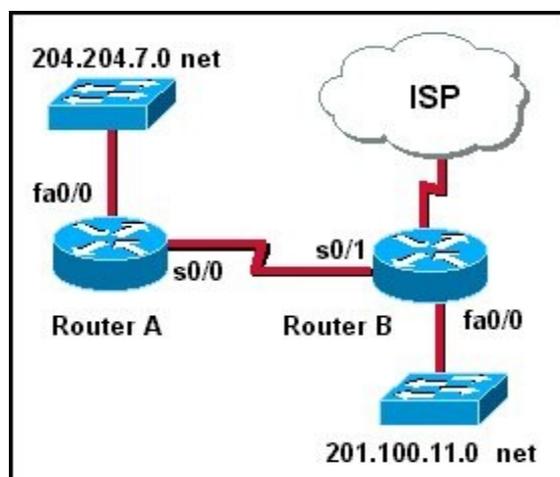
Correspond each of the problems listed in the following table to the appropriate layer of the OSI model, by writing the layer number/name in the layer answer column. (0.75 pts each)

Layer	A/A	Problems	Layer answer
7 - Application	a.	No routing protocol	3
6 - Presentation	b.	Broken cable	1
5 - Session	c.	Power off	1
4 - Transport	d.	NIC problem	1/2
3 - Network	e.	Wrong interface configuration	2/3
2 - Data link	f.	Incorrect data format	6
1 - Physical	g.	Firewall blocking ports	4
	h.	Corrupt installation of WebBrowser	7

ΜΕΡΟΣ Γ (24 Μονάδες)

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

Ερώτηση 1.



Based on the above network diagram an access list was created with the following statements:

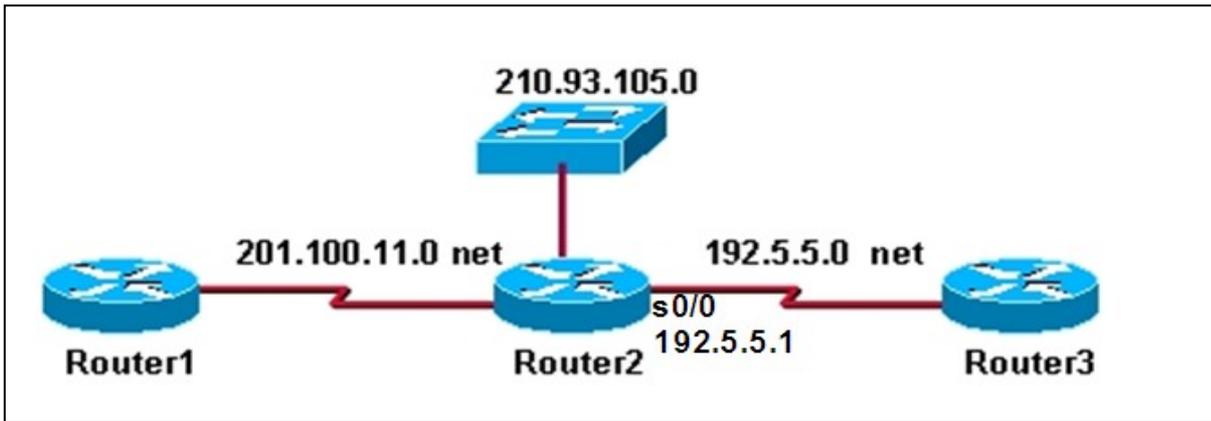
```
access-list 22 deny host 204.204.7.122
access-list 22 permit any
```

With reference to the above access control list answer the following questions:

- Specify the type of this access control list. **Standard** (1 pt)
- Rewrite the above access list using a wildcard mask to replace the word "host". (2 pts)
access-list 22 deny 204.204.7.122 0.0.0.0
- (i) write the commands necessary to place the above access list to the out direction on the fa0/0 interface of RouterB. (2 pt)
RouterB(config)# interface fa0/0
RouterB(config-if)# ip access-group 22 out
(ii) What will the effect of this access list be on the above network? (1 pt)
It will stop packets from host with IP address 204.204.7.22 from entering network 201.100.11.0
- Explain the effect of the above access list (22) if it is placed to the in direction on the fa0/0 interface of RouterA? (2 pts)
It will stop packets from host with IP address 204.204.7.22 from reaching other networks (and the Internet)

Ερώτηση 2.

Answer the following questions based on the network below:



- a. Give the necessary commands for configuring and activating the serial interface S0/0 of router2 (192.5.5.1). Assume that the router is initially in privileged mode. (4 pts)

```
Router2# configure terminal (1 pt)
Router(config)# interface serial 0/0 (1pt)
Router(config-if)# ip address 192.5.5.1 255.255.255.0 (1pt)
Router(config-if)# no shutdown (1pt)
Router(config)# exit (δεν είναι απαραίτητο)
Router#
```

- b. The routers shown in the graphic receive routing updates every 30 seconds by default. Write the commands that when configured on Router2 will enable routing and achieve this update interval. (4 pts)

```
Router2#
Router2(config)# router rip (1pt)
Router2(config-router)# network 192.5.5.0 (1pt)
Router2(config-router)# network 201.100.11.0 (1pt)
Router2(config-router)# network 210.93.105.0 (1pt)
```

Ερώτηση 3.

Write the commands for configuring:

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

Router#	<u>config terminal</u> (0.5 pt)
Router(config)#	<u>line console 0</u> (0.5 pt)
Router(config-line)#	<u>password School</u> (1 pt)
Router(config-line)#	<u>Login</u> (1 pt)

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

Router(config)#	<u>line vty 0 15 (ή 4)</u> (1 pt)
Router(config-line)#	<u>password Cisco</u> (1 pt)
Router(config-line)#	<u>Login</u> (0.5 pt)
Router(config-line)#	<u>exit or ctrl+Z</u> (0.5 pt)
Router(config)#	Router must be returned in this state

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

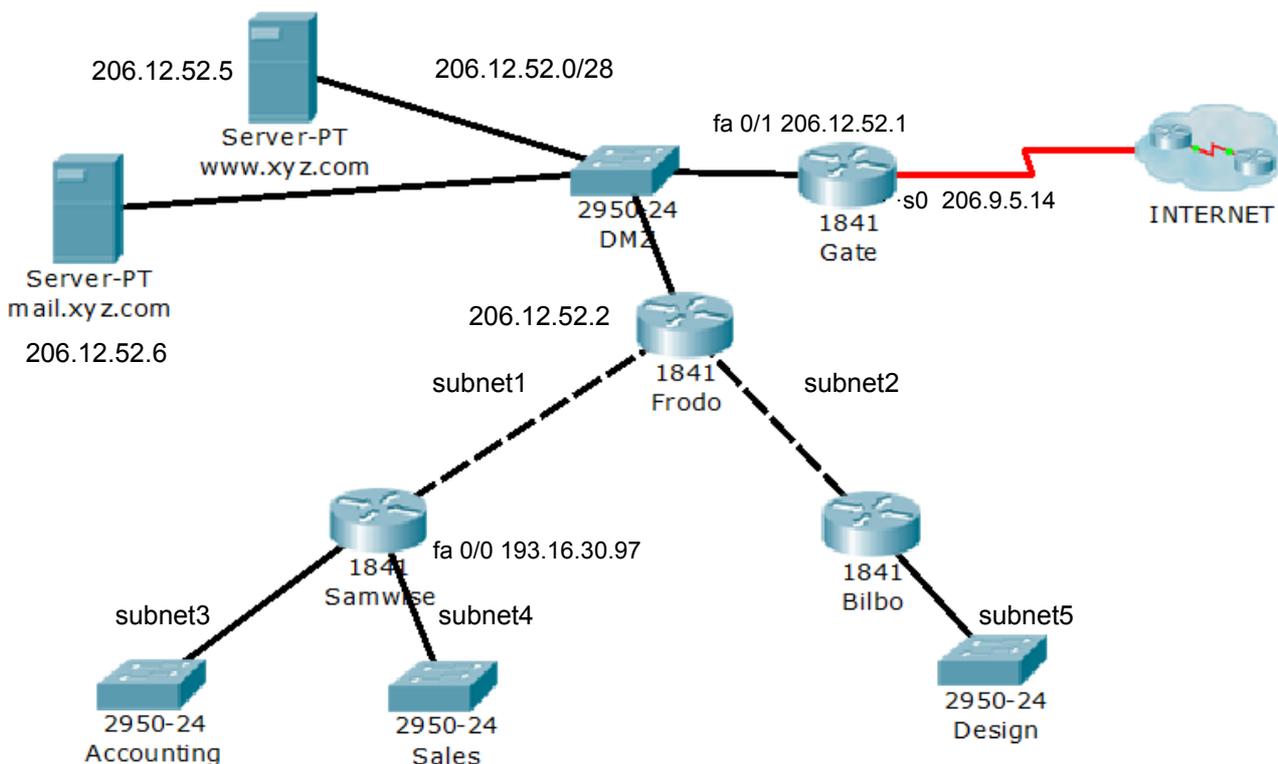
Router#	<u>config terminal</u> (0.5 pt)
Router(config)#	<u>enable secret Myrouter</u> (0.5 pt)

- d. Message of the day "Router is down for maintenance":
(1 pt)

Router#	<u>config terminal</u> (0.5 pt)
Router(config)#	<u>Banner motd router is down for maintenance</u> (0.5 pt)

ΜΕΡΟΣ Δ (16 Μονάδες)

Να απαντήσετε στην πιο κάτω ερώτηση.



Consider the above network diagram. Given that the **gateway address of subnet 4 is 193.16.30.97** and that **each subnet has 30 useable ip addresses** answer the following questions:

a. How many bits have been borrowed from the host part to create these subnets?

3
(2 pts)

b. What is the subnet mask for these subnets?

255.255.255.224
(1 pt)

c. How many subnets can we have on this network?

8 (6 useable)
(1 pt)

d. Assign the first available subnet to subnet1, the second to subnet2, and so on and fill in the following table: (7 pts)

Subnet	Subnet address	Default gateway	Broadcast address
subnet1	193.16.30.0	193.16.30.1	193.16.30.31
subnet2	193.16.30.32	193.16.30.33	193.16.30.63

subnet3 (Accounting)	193.16.30.64	193.16.30.65	193.16.30.95
subnet4 (Sales)	193.16.30.96	193.16.30.97	193.16.30.127
subnet5 (Design)	193.16.30.128	193.16.30.129	193.16.30.159

- e. Write the commands to create an ACL in order to permit outgoing web traffic to anywhere for all the sales department. It must also allow email exchange for all the sales dpt (SMTP) to the mail server. Additionally, the manager must be allowed ftp access to the web server from his computer with IP address 193.16.30.98. All other outgoing traffic must be denied. Assume you are in global configuration mode. (4 pts)

Gate(config)# access-list 105 permit tcp host 193.16.30.98 host

206.12.52.5 eq ftp

Gate(config)# access-list 105 permit tcp any host 206.12.52.6 eq smtp

Gate(config)# access-list 105 permit tcp any any eq www

Gate(config)# access-list 105 deny ip any any

- f. Write the commands to place the access list you have created on the correct interface (assume you are in global configuration mode). (1 pt)

Gate(config)# interface Fa 0/1

Gate(config-if)# ip access-group 105 in

ΤΕΛΟΣ ΕΞΕΤΑΣΗΣ