

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

**ΕΞΕΤΑΣΕΙΣ Α ΤΕΤΡΑΜΗΝΟΥ**

**ΔΕΙΓΜΑΤΙΚΟ ΔΟΚΙΜΙΟ**

**Α΄ ΣΕΙΡΑ ΕΞΕΤΑΣΕΩΝ**

**ΜΑΘΗΜΑ : ΔΙΚΤΥΑ – CISCO**

**ΧΡΟΝΟΣ : 1 ώρα και 30 λεπτά**

**ΗΜΕΡΟΜΗΝΙΑ : ΙΑΝΟΥΑΡΙΟΥ 2022**

**ΩΡΑ ΕΝΑΡΞΗΣ : 7.45 π.μ.**

**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.**

An employee at a branch office is creating a quote for a customer. In order to do this, the employee needs to access confidential pricing information from internal servers at the Head Office. What type of network would the employee access?

- (a) an intranet
- (b) the Internet
- (c) an extranet
- (d) a local area network

**Ερώτηση 2.**

Which statement describes the use of powerline networking technology?

- (a) New "smart" electrical cabling is used to extend an existing home LAN.
- (b) A home LAN is installed without the use of physical cabling.
- (c) A device connects to an existing home LAN using an adapter and an existing electrical outlet.
- (d) Wireless access points use powerline adapters to distribute data through the home Local Area Network.

**Ερώτηση 3.**

Which interface allows remote management of a Layer 2 switch?

- (a) the AUX interface
- (b) the console port interface
- (c) the switch virtual interface
- (d) the first Ethernet port interface

**Ερώτηση 4.**

What function does pressing the Tab key have when entering a command in IOS?

- (a) It aborts the current command and returns to configuration mode.
- (b) It exits configuration mode and returns to user EXEC mode.
- (c) It moves the cursor to the beginning of the next line.
- (d) It completes the remainder of a partially typed word in a command.

**Ερώτηση 5.**

What method can be used by two computers to ensure that packets are not dropped because too much data is being sent too quickly?

- (a) encapsulation
- (b) flow control
- (c) access method
- (d) response timeout

**Ερώτηση 6.**

Which statement accurately describes a TCP/IP encapsulation process when a PC is sending data to the network?

- (a) Data is sent from the internet layer to the network access layer.
- (b) Packets are sent from the network access layer to the transport layer.
- (c) Segments are sent from the transport layer to the internet layer.
- (d) Frames are sent from the network access layer to the internet layer.

**Ερώτηση 7.**

What is one characteristic of a fiber-optic cable?

- (a) It is not affected by EMI or RFI.
- (b) Each pair of cables is wrapped in metallic foil.
- (c) It combines the technique of cancellation, shielding, and twisting to protect data.
- (d) It typically contains 4 pairs of fiber-optic wires.

**Ερώτηση 8.**

What is a primary role of the Physical layer in transmitting data on the network?

- (a) create the signals that represent the bits in each frame on to the media
- (b) provide physical addressing to the devices
- (c) determine the path packets take through the network
- (d) control data access to the media

**Ερώτηση 9.**

What is the binary representation for the decimal number 173?

- (a) 10100111
- (b) 10100101
- (c) 10101101
- (d) 10110111

**Ερώτηση 10.**

What is the decimal equivalent of the binary number 10010101?

- (a) 149
- (b) 157
- (c) 168
- (d) 192

**Ερώτηση 11.**

What is contained in the trailer of a data-link frame?

- (a) logical address
- (b) physical address
- (c) data
- (d) error detection information

**Ερώτηση 12.**

A network team is comparing physical WAN topologies for connecting remote sites to a headquarters building. Which topology provides high availability and connects some, but not all, remote sites?

- (a) mesh
- (b) partial mesh
- (c) hub and spoke
- (d) point-to-point

**Ερώτηση 13.**

What is the auto-MDIX feature on a switch?

- (a) the automatic configuration of an interface for 10/100/1000 Mb/s operation
- (b) the automatic configuration of an interface for a straight-through or a crossover Ethernet cable connection
- (c) the automatic configuration of full-duplex operation over a single Ethernet copper or optical cable
- (d) the ability to turn a switch interface on or off accordingly if an active connection is detected

**Ερώτηση 14.**

Which frame forwarding method receives the entire frame and performs a CRC check to detect errors before forwarding the frame?

- (a) cut-through switching
- (b) store-and-forward switching
- (c) fragment-free switching
- (d) fast-forward switching

**Ερώτηση 15.**

A computer can access devices on the same network but cannot access devices on other networks. What is the probable cause of this problem?

- (a) The cable is not connected properly to the Network Interface Card (NIC).
- (b) The computer has an invalid Internet Protocol (IP) address.
- (c) The computer has an incorrect subnet mask.
- (d) The computer has an invalid default gateway address.

**Ερώτηση 16.**

Which parameter does the router use to choose the path to the destination when there are multiple routes available?

- (a) the lower metric value that is associated with the destination network.
- (b) the lower gateway IP address to get to the destination network
- (c) the higher metric value that is associated with the destination network
- (d) the higher gateway IP address to get to the destination network

**Ερώτηση 17.**

What statement describes the function of the Address Resolution Protocol?

- (a) ARP is used to discover the IP address of any host on a different network.
- (b) ARP is used to discover the IP address of any host on the local network.
- (c) ARP is used to discover the MAC address of any host on a different network.
- (d) ARP is used to discover the MAC address of any host on the local network.

**Ερώτηση 18.**

Which destination address is used in an ARP request frame?

- (a) 0.0.0.0
- (b) 255.255.255.255
- (c) FFFF.FFFF.FFFF
- (d) AAAA.AAAA.AAAA

**Ερώτηση 19.**

A networking technician is working on the wireless network at a medical clinic. The technician accidentally sets up the wireless network so that patients can see the medical records data of other patients. Which of the four network characteristics has been violated in this situation?

- (a) fault tolerance
- (b) scalability
- (c) Quality of Service (QoS)
- (d) security

**Ερώτηση 20.**

While trying to solve a network issue, a technician made multiple changes to the current router configuration file. The changes did not solve the problem and were not saved. What action can the technician take to discard the changes and work with the file in NVRAM?

- (a) Issue the reload command without saving the running configuration.
- (b) Delete the vlan.dat file and reboot the device.
- (c) Close and reopen the terminal emulation software.
- (d) Issue the copy startup-config running-config command.

**Μέρος Β (30 μονάδες)**

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

**Ερώτηση 1.**

A) Match the requirements of a reliable network (**fault tolerance**, **scalability** or **security**) with the supporting network architecture.

(a) Protect the network from unauthorized access.  
\_\_\_\_\_

(b) Provide redundant links and devices.  
\_\_\_\_\_

(c) Expand the network without degrading the service for existing users.  
\_\_\_\_\_

B) Match each characteristic to its corresponding Internet connectivity type (**DSL**, **Satellite** or **Cable**).

(d) Not suited for heavily wooded areas.  
\_\_\_\_\_

(e) Uses coaxial cable as medium.  
\_\_\_\_\_

(f) High bandwidth connection that runs over telephone line.  
\_\_\_\_\_

**Ερώτηση 2.**

The OSI reference model provides an extensive list of functions and services that can occur at each layer. This type of model provides consistency within all types of network protocols and services. Fill in the Layers in OSI Model

OSI MODEL
(7) <b>Application</b>
(6)
(5)
(4)
(3)
(2)
(1)

**Ερώτηση 3.**

Write down the wire colors to build a **T568B** cable pinout that can be used as an Ethernet Straight Through cable.

1	2	3	4	5	6	7	8
						<b>Brown white</b>	<b>Brown</b>

**Ερώτηση 4.**

(a) What is the hexadecimal equivalent of 202?

\_\_\_\_\_

(b) What is the hexadecimal equivalent of 254?

\_\_\_\_\_

(c) What is the decimal equivalent of A9?

\_\_\_\_\_

(d) What is the decimal equivalent of 7D?

\_\_\_\_\_

(e) Given the binary address of 11101100. 00010001. 00001100. 00001010, what address does this represent in dotted decimal format?

\_\_\_\_\_

(f) What is the dotted decimal representation of the IPv4 address 11001011. 00000000. 01110001. 11010011?

\_\_\_\_\_

**Ερώτηση 5.**

```

<output omitted>
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

  10.0.0.0/24 is subnetted, 1 subnets
C    10.1.0.0 is directly connected, Serial0/0/0
  172.17.0.0/24 is subnetted, 4 subnets
O    172.17.6.0 [110/2] via 192.168.3.4, 00:10:41, FastEthernet0/0
O    172.17.10.0 [110/2] via 192.168.5.2, 00:09:52, FastEthernet1/1
O    172.17.12.0 [110/2] via 192.168.4.2, 00:12:23, FastEthernet1/0
C    172.17.14.0 is directly connected, FastEthernet0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
C    192.168.4.0/24 is directly connected, FastEthernet1/0
C    192.168.5.0/24 is directly connected, FastEthernet1/1
S*   0.0.0.0/0 is directly connected, Serial0/0/0

```

Refer to the exhibit. Match the packets with their destination IP address to the exiting interfaces (**FastEthernet0/0**, **FastEthernet0/1**, **FastEthernet1/0**, **FastEthernet1/1** or **Serial0/0**) on the router

	Packets	Exit Interface
(a)	Packets with destination 172.17.10.5	
(b)	Packets with destination 172.17.12.10	
(c)	Packets with destination 172.17.14.8	
(d)	Packets with destination 172.17.8.20	
(e)	Packets with destination 172.17.6.15	
(f)	Packets with destination 192.168.6.3	



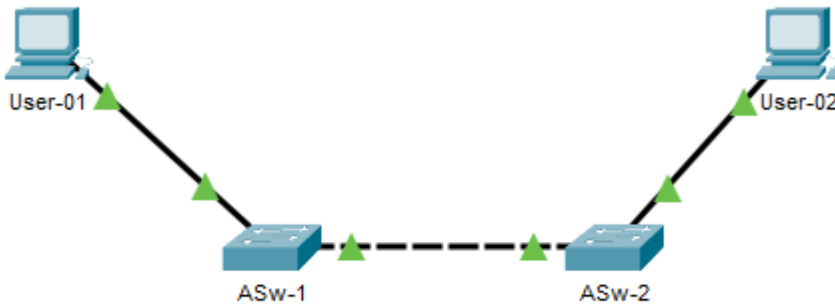
**ΜΕΡΟΣ Γ (40 Μονάδες)**

Να απαντήσετε σε όλες τις ερωτήσεις. Η κάθε ερώτηση βαθμολογείται με είκοσι (20) μονάδες.

**Ερώτηση 1.**

Consider the following network (topology and address table)

**Topology**



**Addressing Table**

Device	Interface	IP Address	Subnet Mask
ASw-1	VLAN 1	10.10.10.100	255.255.255.0
ASw-2	VLAN 1	10.10.10.150	255.255.255.0
User-01	NIC	10.10.10.4	255.255.255.0
User-02	NIC	10.10.10.5	255.255.255.0

A)Write the necessary commands for configuring VLAN 1 interface on Switch **ASw-2** according to the Addressing Table. Enable the VLAN 1 interface (5 points)

ASw-2>

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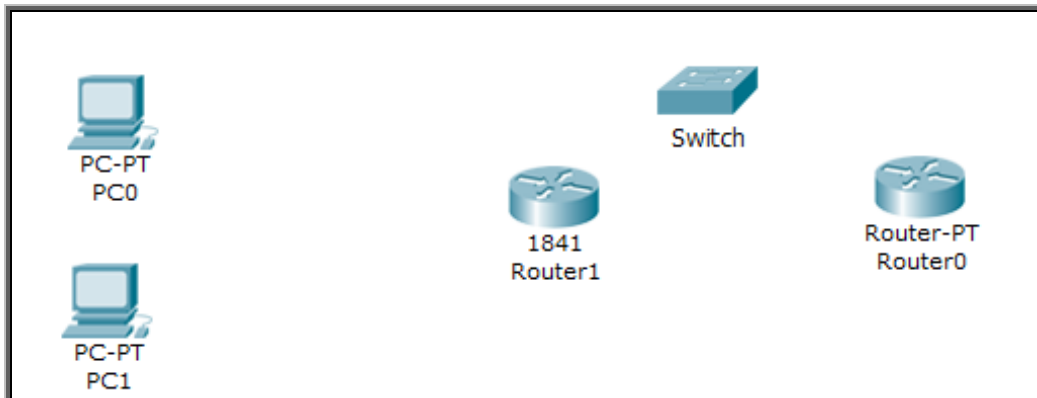
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**Ερώτηση 2.**

A) Refer to the exhibit.



Complete the following table (6 points)

	Connection	Appropriate Cable (crossover or straight or console)
(a)	Router1 with Router0	
(b)	PC0 (RS-232/usb port) with Router 1 and then use of a terminal emulation software	
(c)	Router0 with Switch	
(d)	PC0 with PC1	
(e)	PC0 with Router 1	
(f)	PC1 with Switch	

B) Six (6) PCs are connected to a switch. Their MAC addresses and the port of the switch that are connected are shown to the table below. Determine how the switch will forward the frame and answer if the switch will add the source MAC address to the MAC table, for each of the three (3) scenarios below. (14 points)

PC	Port Connected	MAC Address
PC1	F0/1	0A
PC2	F0/2	0B
PC3	F0/3	0C
PC4	F0/4	0D
PC5	F0/5	0E
PC6	F0/6	0F

**Scenario 1**

MAC Table					
F0/1	F0/2	F0/3	F0/4	F0/5	F0/6
0A	0B				

Frame	
Destination MAC	Source MAC
0D	0A

(a) Write the ports where the Switch will forward the frame: \_\_\_\_\_

(b) The switch will add the source MAC to the MAC table (YES / NO): \_\_\_\_\_

**Scenario 2**

MAC Table					
F0/1	F0/2	F0/3	F0/4	F0/5	F0/6
	0B		0D		

Frame	
Destination MAC	Source MAC
0D	0A

(c) Write the ports where the Switch will forward the frame: \_\_\_\_\_

(d) The switch will add the source MAC to the MAC table (YES / NO): \_\_\_\_\_

**Scenario 3**

MAC Table					
F0/1	F0/2	F0/3	F0/4	F0/5	F0/6

Frame	
Destination MAC	Source MAC
0E	0B

(e) Write the ports where the Switch will forward the frame: \_\_\_\_\_

(f) The switch will add the source MAC to the MAC table (YES / NO): \_\_\_\_\_

**ΤΕΛΟΣ ΕΞΕΤΑΣΗΣ**