

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

ΕΝΙΑΙΑ ΓΡΑΠΤΗ ΑΞΙΟΛΟΓΗΣΗ Α΄ ΤΕΤΡΑΜΗΝΟΥ 2021-22  
Β΄ ΤΑΞΗΣ ΛΥΚΕΙΟΥ  
ΗΜΕΡΟΜΗΝΙΑ: ΠΑΡΑΣΚΕΥΗ 28 ΙΑΝΟΥΑΡΙΟΥ 2022  
ΕΞΕΤΑΖΟΜΕΝΟ ΜΑΘΗΜΑ: ΔΙΚΤΥΑ - CISCO (Α΄ ΣΕΙΡΑ)

ΚΩΔΙΚΟΣ ΜΑΘΗΜΑΤΟΣ: Β060

ΟΔΗΓΟΣ ΔΙΟΡΘΩΣΗΣ / ΠΡΟΤΕΙΝΟΜΕΝΕΣ ΛΥΣΕΙΣ

ΣΥΝΟΛΙΚΗ ΔΙΑΡΚΕΙΑ ΓΡΑΠΤΗΣ ΕΞΕΤΑΣΗΣ ΔΙΚΤΥΩΝ CISCO: 90 λεπτά

ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΩΔΕΚΑ(12) ΣΕΛΙΔΕΣ

---

**ΟΔΗΓΙΕΣ (για τους εξεταζομένους)**

1. Στο εξώφυλλο του τετραδίου απαντήσεων να συμπληρώσετε όλα τα κενά με τα στοιχεία που ζητούνται.
2. **Να απαντήσετε ΟΛΑ τα ερωτήματα.**
3. **Να μην αντιγράψετε τα θέματα** στο τετράδιο απαντήσεων.
4. Να μη γράψετε πουθενά στις απαντήσεις σας το όνομά σας.
5. Να απαντήσετε στο τετράδιό σας σε όλα τα θέματα **μόνο με μπλε πένα ανεξίτηλης μελάνης**. Μολύβι επιτρέπεται, μόνο αν το ζητάει η εκφώνηση, και μόνο για σχήματα, πίνακες, διαγράμματα κ.λπ.
6. Απαγορεύεται η χρήση διορθωτικού υγρού ή διορθωτικής ταινίας.
7. Επιτρέπεται η χρήση μη προγραμματιζόμενης υπολογιστικής μηχανής που φέρει τη σφραγίδα του σχολείου.

**ΣΑΣ ΕΥΧΟΜΑΣΤΕ ΚΑΛΗ ΕΠΙΤΥΧΙΑ**

**ΜΕΡΟΣ Α. (30 μονάδες)**

Να απαντήσετε και στις είκοσι (20) ερωτήσεις πολλαπλής επιλογής. Υπάρχει μόνο μια σωστή απάντηση σε κάθε ερώτηση. Η κάθε ερώτηση βαθμολογείται με 1½ μονάδα.

**Ερώτηση 1. (ch1. 2022) A**

During a routine inspection, a technician discovered that software that was installed on a computer was secretly collecting data about websites that were visited by users of the computer. Which type of threat is affecting this computer?

- (a) Zero day attack
- (b) Identity theft
- (c) DoS attack
- (d) **Spyware**

**Ερώτηση 2. (ch1. 2022) A**

A large corporation has modified its network to allow users to access network resources from their personal laptops and smart phones. Which networking trend does this describe?

- (a) online collaboration
- (b) cloud computing
- (c) video conferencing
- (d) **BYOD**

**Ερώτηση 3. (Chapter 1) 2022 A**

What type of network traffic requires QoS?

- (a) email
- (b) on-line purchasing
- (c) **video conferencing**
- (d) browsing

**Ερώτηση 4. (Chapter 2) 2022 A**

Which interface allows remote management of a Layer 2 switch?

- (a) the AUX interface
- (b) the console port interface
- (c) **the SVI interface**
- (d) the first Ethernet port interface

**Ερώτηση 5. (ch2. 2022) A**

Which statement is true about the running configuration file in a Cisco IOS device?

- (a) It is stored in NVRAM.
- (b) It is stored in Flash.
- (c) **It affects the operation of the device immediately when modified.**
- (d) It is automatically saved when the router reboots.

**Ερώτηση 6. (Chapter 3) 2022 A**

When IPv4 addressing is manually configured on a web server, which property of the IPv4 configuration identifies the network and host portion for an IPv4 address?

- (a) DNS server address
- (b) subnet mask
- (c) default gateway
- (d) DHCP server address

**Ερώτηση 7. (Chapter 3) 2022 A**

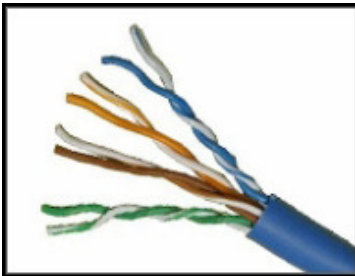
What process involves placing one Protocol Data Unit (PDU) inside of another PDU?

- (a) encapsulation
- (b) encoding
- (c) segmentation
- (d) flow control

**Ερώτηση 8. (ch4. 2022) A**

What is one advantage of using fiber optic cabling rather than copper cabling?

- (a) It can carry signals further than copper cabling.
- (b) It can be installed around sharp curves.
- (c) It is usually cheaper than copper cabling.
- (d) It is easier to terminate and install than copper cabling.

**Ερώτηση 9. (Chapter 4) 2022 A**

Refer to the exhibit. What type of cabling is shown?

- (a) STP
- (b) coax
- (c) UTP
- (d) fiber

**Ερώτηση 10. (Chapter 4) 2022 A**

A UTP cable is usually terminated with which type of connector?

- (a) Serial
- (b) Parallel
- (c) RJ-11
- (d) RJ-45

**Ερώτηση 11. (Chapter 5) 2022 A**

Which IPv4 address format was created for ease of use by people and is expressed as 201.192.1.14?

- (a) binary
- (b) dotted decimal
- (c) hexadecimal
- (d) ASCII

**Ερώτηση 12. (ch6. 2022) A**

What type of physical topology can be created by connecting all Ethernet cables to a central device?

- (a) mesh
- (b) ring
- (c) bus
- (d) star

**Ερώτηση 13. (ch6. 2022) A**

Which data link layer media access control method does Ethernet use with legacy Ethernet hubs?

- (a) CSMA/CA
- (b) CSMA/CD
- (c) Token ring
- (d) Bus

**Ερώτηση 14. (ch7. 2022) A**

What is auto-MDIX?

- (a) a type of Cisco switch
- (b) a feature to automatically determine speed and duplex
- (c) an Ethernet connector type
- (d) a feature that detects Ethernet cable type

**Ερώτηση 15. (ch7. 2022) A**

What statement describes a characteristic of MAC addresses?

- (a) They are only routable within the private network.
- (b) They must be globally unique.
- (c) They have a 32-bit binary value.
- (d) They are added as part of a Layer 3 PDU.

**Ερώτηση 16. (ch8. 2022) A**

What information is added during encapsulation at OSI Layer 3?

- (a) source and destination application protocol
- (b) source and destination MAC
- (c) source and destination port number
- (d) source and destination IP address

**Ερώτηση 17. (ch8. 2022) A**

Which statement accurately describes a characteristic of IPv4?

- (a) IPv4 has a 32-bit address space.
- (b) IPv4 natively supports IPsec.
- (c) All IPv4 addresses are assignable to hosts.
- (d) An IPv4 header has fewer fields than an IPv6 header.

**Ερώτηση 18. (ch8. 2022) A**

Which IPv4 address can a host use to ping the loopback interface?

- (a) 128.0.0.1
- (b) 127.0.0.1
- (c) 126.0.0.1
- (d) 125.0.0.1

**Ερώτηση 19. (ch9. 2022) A**

Which router component holds the routing table, ARP cache, and running configuration file?

- (a) NVRAM
- (b) RAM
- (c) Flash
- (d) ROM

**Ερώτηση 20. (ch9. 2022) A**

What type of information is contained in an ARP table?

- (a) routes to reach destination networks
- (b) switch ports associated with destination MAC addresses
- (c) domain name to IPv4 address mappings
- (d) IPv4 address to MAC address mappings

**Μέρος Β (30 μονάδες)**

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

**Ερώτηση 1. (Chapter 8) 2022 A**

Refer to the exhibit, which shows a partial routing table entry of a router. Each section of the entry is identified by a circled letter above it. Write next to each statement, the letter (A, B, C, D, E, F) that corresponds to the correct part of the routing table.

(A)	(B)	(C)	(D)	(E)	(F)
R	192.168.2.0/24	[120/4072]	via 192.168.3.1	00:16:00	FastEthernet0/1

- (a) The elapsed time since the network was discovered. **E** \_\_\_\_\_
- (b) The administrative distance (source) and metric to reach the remote network. **C** \_\_\_\_\_
- (c) How the network was learned by the router. **A** \_\_\_\_\_
- (d) The destination network. **B** \_\_\_\_\_
- (e) The next hop IP address to reach the remote network. **D** \_\_\_\_\_
- (f) The outgoing interface on the router to reach the destination network. **F** \_\_\_\_\_

**Ερώτηση 2. (Chapter 5) 2022 A**

(a) What is the hexadecimal equivalent of decimal 180?

**B4**

(b) What is the hexadecimal equivalent of decimal 232?

**E8**

(c) What is the decimal equivalent of hexadecimal 6D?

**109**

(d) What is the decimal equivalent of hexadecimal A5?

**165**

(e) Given the binary representation of 10101110.00000101.00000001.01000000, what IPv4 address does this represent in dotted decimal format?

**174.5.1.64**

(f) What is the dotted binary representation of the IPv4 address 192.168.1.40?

**11000000.10101000.00000001.00101000**

**Ερώτηση 3. (Chapter 3) 2022 A**

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.

The name of each OSI Model Layer appears in the following table:

7	Application
6	Presentation
5	Session
4	Transport
3	Network
2	Data Link
1	Physical







Write the appropriate layer name that corresponds to the functional description.

	Layer	Functional Description
	1 - Physical	Describes rules for physical connections and bit transmission to and from a network device.
(a)	2 - Data Link	Provides methods for exchanging data frames between devices over a common media.
(b)	6 - Presentation	Provides common representation of the data. Includes character encoding, data compression and encryption/decryption.
(c)	4 - Transport	Defines services to segment, transfer, and reassemble the data for individual communications between the end devices.
(d)	5 - Session	Provides services to organize its dialogue and to manage data exchange.
(e)	7 - Application	Contains protocols used for process-to-process communications.
(f)	3 - Network	Provides a data path or route over the network from source to destination device.

**Ερώτηση 4. (Chapter 1) 2022 A**

(a) Assign the below Network Components into following Categories:

**Network Components**

<b>1</b>	 WAN	<b>3</b>	 TelePresence Endpoint	<b>5</b>	 IP Phone
<b>2</b>	 Router	<b>4</b>	 Wireless	<b>6</b>	 LAN Switch

**Categories**

(a) End Devices	(b) Intermediary Devices	(c) Network Media
3,5	2, 6	1,4

(b) Select the appropriate column to identify the network architecture requirement to which each characteristic or feature belongs:

Network Requirement	Characteristic / Feature			
	(a) Fault Tolerance	(b) Scalability	(c) Quality of Service	(d) Security
1. Networks should always be available	✓			
2. Business and personal data must be protected				✓
3. Networks can grow or expand with minimal impact on performance		✓		
4. Priority queues are implemented when demand for network bandwidth exceeds supply			✓	
5. Developing a plan for priority queuing is a strategy for quality delivery information			✓	
6. Business and personal network equipment must be protected				✓

1a, 2d, 3b, 4c, 5c, 6d



**Ερώτηση 5. (chapter4. 2021) A**

Write down the wire colors for each pin of each connector to build a **Crossover cable**.

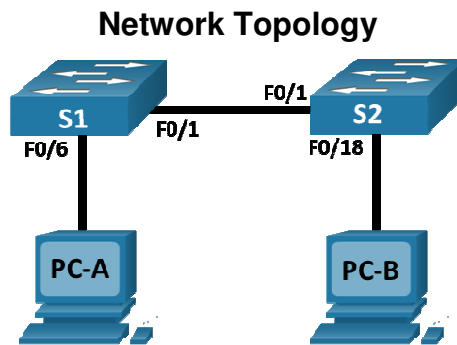
Pin \ Connector	1	2	3	4	5	6	7	8
1	Green white	Green	Orange White	Blue	Blue white	Orange	Brown white	Brown
2	Orange White	Orange	Green white	Blue	Blue white	Green	Brown white	Brown

**ΜΕΡΟΣ Γ (40 Μονάδες)**

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

**Ερώτηση 1. (Chapter 2) 2022 A**

Refer to the network topology and addressing table below.

**Addressing Table**

Device	Interface	IP Address	Subnet Mask
S1	VLAN 1	192.168.1.1	255.255.255.0
S2	VLAN 1	192.168.1.2	255.255.255.0
PC-A	NIC	192.168.1.10	255.255.255.0
PC-B	NIC	192.168.1.11	255.255.255.0

Configure and verify basic Switch settings:

- (a) Enter the global configuration mode (2 pts).  
 Switch> **enable**  
 Switch# **configure terminal**
- (b) Give the switch a name according to the Addressing Table (1 pt).  
 Switch(config)# **hostname S1**
- (c) Set up the message of the day banner “**ONLY for Authorized Personnel**” (1 pt).  
 S1(config)# **banner motd # ONLY for Authorized Personnel #**
- (d) Enter local passwords. Use **class22** as the encrypted privileged EXEC password and **cisco22** as the password for console access. Return to configuration mode (5 pts).  
 S1(config)# **enable secret class22**  
 S1(config)# **line con 0**  
 S1(config-line)# **password cisco22**  
 S1(config-line)# **login**  
 S1(config-line)# **exit**

- (e) Configure and enable the SVI according to the Addressing Table (3 pts).  
S1(config)# interface vlan 1  
S1(config-if)# ip address 192.168.1.1 255.255.255.0  
S1(config-if)# no shut
- (f) Encrypt all the plain text passwords (1 pt).  
S1(config)# service password-encryption
- (g) Return to the Privilege EXEC Mode (1 pt).  
S1(config)#exit
- (h) Save the configuration (1 pt).  
S1# copy running-config startup-config
- (i) Display the current configuration (1 pt).  
S1# show running-config
- (j) Display the startup configuration (1 pt).  
S1# show startup-config
- (k) Display the IOS version and other useful switch information (1 pt).  
S1# show version
- (l) Display information for each interface including IP address and operational status (1 pt).  
S1# show ip interface (or show ip interface brief)
- (m) Ping IP address 192.168.1.1 (1 pt).  
S1#ping 192.168.1.1

**Ερώτηση 2. (Ch7. 2021) A**

Four (4) PCs are connected to a switch. The table below shows the way PCs are connected to the switch by linking their MAC addresses with the connecting port number. 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 five (5) scenarios below.

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

Each scenario is graded with 4 pts: 2 pts for (a) and 2 pts for (b). In case of partial correct answer in (a) give 1 pt.

**Scenario 1**

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

Frame	
Destination MAC	Source MAC
0B	0A

- (a) Write the port(s) where the Switch will forward the frame: F0/2
- (b) The switch will add the source MAC to the MAC table (YES / NO): NO

**Scenario 2**

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

Frame	
Destination MAC	Source MAC
FF	0C

- (a) Write the port(s) where the Switch will forward the frame: F0/1, F0/2, F0/4
- (b) The switch will add the source MAC to the MAC table (YES / NO): YES

**Scenario 3**

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

Frame	
Destination MAC	Source MAC
0C	0D

- (a) Write the port(s) where the Switch will forward the frame: F0/1, F0/2, F0/3
- (b) The switch will add the source MAC to the MAC table (YES / NO): YES

**Scenario 4**

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

Frame	
Destination MAC	Source MAC
0A	0C

- (a) Write the port(s) where the Switch will forward the frame: F0/1
- (b) The switch will add the source MAC to the MAC table (YES / NO): YES

**Scenario 5**

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

Frame	
Destination MAC	Source MAC
0D	0C

- (a) Write the port(s) where the Switch will forward the frame: F0/4
- (b) The switch will add the source MAC to the MAC table (YES / NO): YES

**ΤΕΛΟΣ ΕΞΕΤΑΣΤΙΚΟΥ ΔΟΚΙΜΙΟΥ**