

**ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ, ΑΘΛΗΤΙΣΜΟΥ ΚΑΙ ΝΕΟΛΑΙΑΣ
ΔΙΕΥΘΥΝΣΗ ΜΕΣΗΣ ΕΚΠΑΙΔΕΥΣΗΣ**

ΕΝΙΑΙΕΣ ΤΕΛΙΚΕΣ ΠΡΟΑΓΩΓΙΚΕΣ ΓΡΑΠΤΕΣ ΕΞΕΤΑΣΕΙΣ 2025-2026

Β΄ ΤΑΞΗΣ ΛΥΚΕΙΟΥ

ΗΜΕΡΟΜΗΝΙΑ: 15 Μαΐου 2026

ΕΞΕΤΑΖΟΜΕΝΟ ΜΑΘΗΜΑ: ΔΙΚΤΥΑ

Α΄ ΣΕΙΡΑ

ΚΩΔΙΚΟΣ ΜΑΘΗΜΑΤΟΣ: Β060

ΣΥΝΟΛΙΚΗ ΔΙΑΡΚΕΙΑ ΓΡΑΠΤΗΣ ΕΞΕΤΑΣΗΣ: 90 λεπτά

ΠΡΟΤΕΙΝΟΜΕΝΕΣ ΛΥΣΕΙΣ

ΟΙ ΠΡΟΤΕΙΝΟΜΕΝΕΣ ΛΥΣΕΙΣ ΑΠΟΤΕΛΟΥΝΤΑΙ ΑΠΟ ΔΩΔΕΚΑ (12) ΣΕΛΙΔΕΣ

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. (Chapter 1) 2026 A

A wired laser printer is attached to a home computer. That printer has been shared so that other computers on the home network can also use the printer. What networking model is in use?

- (a) client-based
- (b) master-slave
- (c) point-to-point
- (d) peer-to-peer (P2P)

Ερώτηση 2. (Chapter 1) 2026 A

An employee is attending an important video conference when the primary ISP connection fails. A secondary connection activates within seconds, and the meeting continues without any noticeable interruption. Which network characteristic is demonstrated?

- (a) quality of service
- (b) scalability
- (c) powerline networking
- (d) integrity

Ερώτηση 3. (Chapter 2) 2026 A

A network administrator needs to keep the user ID, password, and session contents private when establishing remote CLI connectivity with a switch to manage it. Which access method should be chosen?

- (a) Telnet
- (b) AUX
- (c) SSH
- (d) Console

Ερώτηση 4. (Chapter 2) 2026 A

A new network administrator has been asked to enter a banner message on a Cisco device. What is the fastest way a network administrator could test whether the banner is properly configured?

- (a) Enter CTRL-Z at the privileged mode prompt.
- (b) Exit global configuration mode.
- (c) Reboot the device.
- (d) Exit privileged EXEC mode and press Enter.

Ερώτηση 5. (ch3. 2026) 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 6. (Chapter 3) 2026 A

What is the process of dividing a large data stream into smaller pieces prior to transmission?

- (a) Duplexing
- (b) **Segmentation**
- (c) Multiplexing
- (d) Sequencing

Ερώτηση 7. (Chapter 4) 2026 A

What is the common cause of signal degradation when using UTP cabling?

- (a) **Improper termination**
- (b) Low-quality shielding in cable
- (c) Installing cables in conduit
- (d) IP addressing configuration

Ερώτηση 8. (Chapter 4) 2026 A

Refer to the exhibit. What is wrong with the displayed termination?



- (a) The woven copper braid should not have been removed.
- (b) The wrong type of connector is being used.
- (c) **The untwisted length of each wire is too long.**
- (d) The wires are too thick for the connector that is used.

Ερώτηση 9. (Chapter 6) 2026 A

What is a function of the data link layer?

- (a) provides the formatting of data
- (b) provides end-to-end delivery of data between hosts
- (c) provides delivery of data between two applications
- (d) **provides for the exchange of frames over a common local media**

Ερώτηση 10. (Chapter 7) 2026 A

Which attribute of a Network Interface Card (NIC) is responsible for its operation at the Data Link layer of the OSI model?

- (a) IP address
- (b) **MAC address**
- (c) RJ-45 port
- (d) TCP/IP protocol stack

Ερώτηση 11. (Chapter 8) 2026 A

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 NIC.
- (b) The computer has an invalid IP address.
- (c) The computer has an incorrect subnet mask.
- (d) **The computer has an invalid default gateway address.**

Ερώτηση 12. (Chapter 10) 2026 A

The global configuration command `ip default-gateway 172.16.100.1` is applied to a switch. What is the effect of this command?

- (a) **The switch can be remotely managed from a host on another network.**
- (b) The switch can communicate with other hosts on the 172.16.100.0 network.
- (c) The switch is limited to sending and receiving frames to and from the gateway 172.16.100.1
- (d) The switch will have a management interface with the address 172.16.100.1

Ερώτηση 13. (Chapter 11 2026 A)

A network administrator is adding a new LAN to a branch office. The new LAN must support 25 connected devices. What is the smallest network mask that the network administrator can use for the new network?

- (a) 255.255.255.128
- (b) 255.255.255.192
- (c) **255.255.255.224**
- (d) 255.255.255.240

Ερώτηση 14. (Chapter 14) 2026 A

A client packet is received by a server. The packet has a destination port number of 110. What service is the client requesting?

- (a) DNS
- (b) DHCP
- (c) SMTP
- (d) **POP3**

Ερώτηση 15. (Chapter 7) 2026 A

Which statement describes a characteristic of MAC addresses?

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

Ερώτηση 16. (ch15. 2026) A

What is an advantage for small organizations of adopting IMAP instead of POP?

- (a) POP only allows the client to store messages in a centralized way, while IMAP allows distributed storage.
- (b) **Messages are kept in the mail servers until they are manually deleted from the email client.**
- (c) When the user connects to a POP server, copies of the messages are kept in the mail server for a short time, but IMAP keeps them for a long time.
- (d) IMAP sends and retrieves email, but POP only retrieves email.

Ερώτηση 17. (Chapter 15) 2026 A

What service is provided by DHCP?

- (a) An application that allows real-time chatting among remote users.
- (b) Allows remote access to network devices and servers.
- (c) **Dynamically assigns IP addresses to end and intermediary devices.**
- (d) Uses encryption to provide secure remote access to network devices and servers.

Ερώτηση 18. (Chapter 2) 2026 A

Why would a Layer 2 switch need an IP address?

- (a) to enable the switch to send broadcast frames to attached PCs
- (b) to enable the switch to function as a default gateway
- (c) **to enable the switch to be managed remotely**
- (d) to enable the switch to receive frames from attached PCs

Ερώτηση 19. (Chapter 16) 2026 A

What characteristic describes a virus?

- (a) a network device that filters access and traffic coming into a network
- (b) the use of stolen credentials to access private data
- (c) an attack that slows or crashes a device or network service
- (d) **malicious software or code running on an end device**

Ερώτηση 20. (Chapter 17) 2026 A

A user is complaining that an external web page is taking longer than normal to load. The web page does eventually load on the user machine. Which tool should the technician use with administrator privileges in order to locate where the issue is in the network?

- (a) ping
- (b) nslookup
- (c) **tracert**
- (d) ipconfig /displaydns

Μέρος Β (30 μονάδες)

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

Ερώτηση 1. (ch.3) 2026 A

Complete the following table with the missing layers of the OSI and TCP/IP models in the correct order.

OSI Model	TCP/IP Model
Application	Application
(a)Presentation	
(b)Session	Transport
Transport	
Network	(e)Internet
(c)Data Link	(f) Network Access
(d)Physical	

Ερώτηση 2. (ch.11) 2026 A

Given the number of hosts required for a network (Hosts Needed), determine the network with the smallest possible number of hosts supporting it, by specifying the prefix notation and the corresponding subnet mask.

Hosts Needed	Prefix Notation (/x)	Subnet Mask
(a) 40	/26	255.255.255.192
(b) 200	/24	255.255.255.0
(c) 1000	/22	255.255.252.0

Ερώτηση 3. (ch.7) 2026 A

Five (5) 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.

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		

A) Scenario 1

(2 pts)

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 ports where the Switch will forward the frame: F0/2
 (b) The switch will add the source MAC to the MAC table (YES / NO): NO

B) Scenario 2

(2 pts)

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

Frame	
Destination MAC	Source MAC
FF	0C

- (c) Write the ports where the Switch will forward the frame: F0/1, F0/2, F0/4, F0/5
 (d) The switch will add the source MAC to the MAC table (YES / NO): YES

C) Scenario 3

(2 pts)

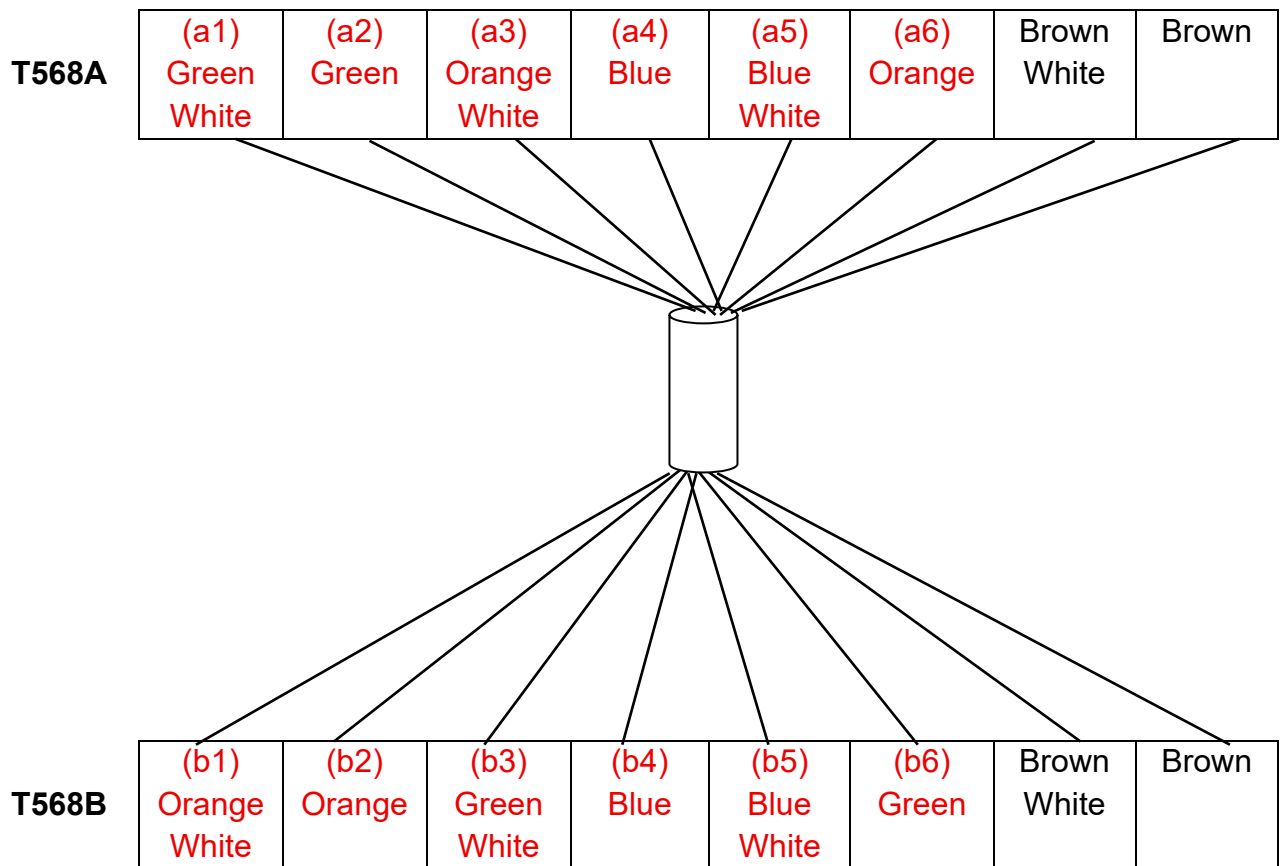
MAC Table					
F0/1	F0/2	F0/3	F0/4	F0/5	F0/6
0A					

Frame	
Destination MAC	Source MAC
0C	0D

- (e) Write the ports where the Switch will forward the frame: F0/1, F0/2, F0/3, F0/5
 (f) The switch will add the source MAC to the MAC table (YES / NO): YES

Ερώτηση 4. (ch.4) 2026 A

Write down the wire colors for each pin of each connector to build a Crossover UTP cable with T568A standard in the one connector and T568B in the other.



Ερώτηση 5. (ch.12) 2026 A

Review each IPv6 address provided and convert it accurately into its corresponding alternate format.

Preferred Format	Fe60:0000:0000:1000:0000:0002:0003:0004
(a) Omit Leading Zeroes format	Fe60:0:0:1000:0:2:3:4
(b) Most Compressed format	Fe60::1000:0:2:3:4

(c) Preferred Format	2026:0100:0200:0000:0000:0030:0040:0000
Omit Leading Zeroes format	2026:100:200:0:0:30:40:0
(d) Most Compressed format	2026:100:200::30:40:0

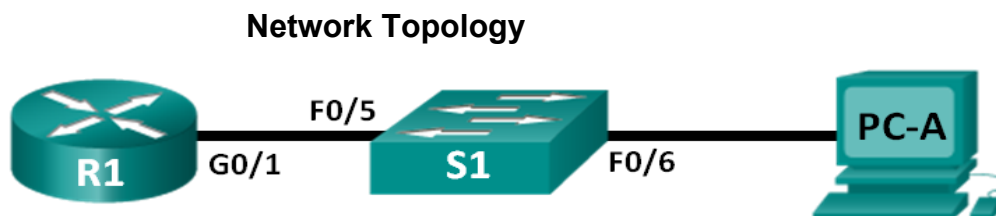
(e) Preferred Format	0000:0000:0000:0000:0000:0000:0000:0005
(f) Omit Leading Zeroes format	0:0:0:0:0:0:0:5
Most Compressed format	::5

ΜΕΡΟΣ Γ (40 Μονάδες)

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

Ερώτηση 1. (ch.10) 2026 A

Refer to the network topology and addressing table below.



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/1	192.168.1.1	255.255.255.0	N/A
S1	VLAN 1	192.168.1.11	255.255.255.0	192.168.1.1
PC-A	NIC	192.168.1.3	255.255.255.0	192.168.1.1

You are the Network Administrator of a company, and you are tasked with setting up a newly purchased Cisco router based on the following settings provided in the table below. Your job is to correctly configure the router to ensure it functions properly according to the company's network requirements.

Device Name	R1
VTY Password for remote connectivity	Secure1
Console Password	Secure2
Privilege Password (Encrypted)	Secure3

Follow the instructions below to configure the router and PC-A.

- (a) Enter Privileged EXEC mode. (1 pt)
Router> **enable**
- (b) Enter Configuration mode. (1 pt)
Router# **config terminal**

- (c) Set the name of router R1, according to the Addressing Table. (1 pt)
Router(config)# **hostname R1**
- (d) Design a system warning banner stating that access is restricted to authorized users and “Disconnect immediately if unauthorized.” (1 pt)
R1(config)# **banner motd # Disconnect immediately if unauthorized #**
- (e) Set the encrypted privilege password. (1 pt)
R1(config)# **enable secret Secure3**
- (f) Set console password and enable login. (3 pts)
R1(config)# **line console 0**
R1(config-line)# password Secure2
R1(config-line)# login
- (g) Set VTY password and enable login. (3 pts)
R1(config)# **line vty 0 4**
R1(config-line)# password Secure1
R1(config-line)# login
- (h) Return to configuration mode and encrypt the plain text passwords. (2 pts)
R1(config-line)#**exit**
R1(config)# service password-encryption
- (i) Configure interface G0/1 with the specified IP address, description (LAN-1) and activate it. (4 pts)
R1(config)# **interface g0/1**
R1(config-if)# ip address 192.168.1.1 255.255.255.0
R1(config-if)#description LAN-1
R1(config-if)# no shutdown
- (j) Return to privileged EXEC mode and save the running configuration to the startup configuration file. (2 pts)
R1(config-if)# **exit exit or end**
R1# copy running-config startup-config
- (k) Perform a connectivity test from PC-A to the R1 IP address using the Command Prompt. (1 pt)
C:**ping 192.168.1.1**

Ερώτηση 2. (ch.11) 2026 A

A company has been assigned the IPv4 network 192.168.20.0/24. As the network administrator, divide this network into equal-sized subnets using Fixed Length Subnet Masking (FLSM). Each subnet must support at least **14 usable hosts** while minimizing unused IP addresses.

(a) Calculate the following: (4 pts)

(i) Maximum hosts per subnet: $2^4-2=(16-2)=14$

(ii) Number of subnets: $2^4=16$

For Each Subnet:

(iii) Subnet Mask: $255.255.255.240$

(iv) Prefix Notation: $/28$

(b) Copy and complete the following table (first 3 subnets).

Note: Subnet #1 is the zero subnet.

(6 pts)

Subnet	Subnet Address	Usable Host Range	Broadcast Address
#1	192.168.20.0	192.168.20.1 - 192.168.20.14	192.168.20.15
#2	192.168.20.16	192.168.20.17 - 192.168.20.30	192.168.20.31
#3	192.168.20.32	192.168.20.33 - 192.168.20.46	192.168.20.47

(c) Provide the necessary commands to configure and activate a Router's G0/0 interface with the **first usable** host IP Address of the **subnet 2#**. (5 pts)

```
R>enable
R#configure terminal
R(config)#interface g0/0
R(config-if)#ip address 192.168.20.17 255.255.255.240
R(config-if)#no shutdown
```

(d) Provide the necessary commands to configure and activate Router's R G0/1 interface with the **last usable** host IP Address of the **subnet #3**. (5 pts)

```
R>enable
R#configure terminal
R(config)#interface G0/1
R(config-if)#ip address 192.168.20.46 255.255.255.240
R(config-if)#no shutdown
```

ΤΕΛΟΣ ΠΡΟΤΕΙΝΟΜΕΝΩΝ ΛΥΣΕΩΝ