

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

ΕΝΙΑΙΑ ΓΡΑΠΤΗ ΑΞΙΟΛΟΓΗΣΗ Β΄ ΤΕΤΡΑΜΗΝΟΥ 2021-22
Β΄ ΤΑΞΗΣ ΛΥΚΕΙΟΥ
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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 ΔΕΚΑ (10) 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. (ch10. 2022) A

Which characteristic describes the default gateway of a host computer?

- (a) the physical address of the router interface on the same network as the host computer
- (b) the logical address assigned to the switch interface connected to the router
- (c) the physical address of the switch interface connected to the host computer
- (d) the logical address of the router interface on the same network as the host computer

Ερώτηση 2. (ch10. 2022) B

What is stored in the NVRAM of a Cisco router?

- (a) the startup configuration
- (b) the Cisco IOS
- (c) the bootup instructions
- (d) the running configuration

Ερώτηση 3. (Chapter 10) 2022 A

What happens when the `transport input ssh` command is entered during the configuration of the switch vty lines?

- (a) The SSH client on the switch is enabled.
- (b) Communication between the switch and remote users is encrypted.
- (c) The switch requires a username/password combination for remote access.
- (d) The switch requires a proprietary client software to access it remotely.

Ερώτηση 4. (ch11. 2022) A

What is the purpose of the subnet mask in conjunction with an IP address?

- (a) to hide the IP address to outsiders
- (b) to determine the subnet to which the host belongs
- (c) to identify whether the address is public or private
- (d) to uniquely identify a host on a network

Ερώτηση 5. (ch11. 2022) A

Which address prefix range is reserved for IPv4 multicast?

- (a) 240.0.0.0 - 254.255.255.255
- (b) 169.254.0.0 - 169.254.255.255
- (c) 224.0.0.0 - 239.255.255.255
- (d) 127.0.0.0 - 127.255.255.255

Ερώτηση 6. (ch13. 2022) A

What is the purpose of ICMP messages?

- (a) to ensure the delivery of an IP packet
- (b) to provide feedback of IP packet transmissions
- (c) to inform routers about network topology changes
- (d) to monitor the process of a domain name to IP address resolution

Ερώτηση 7. (Chapter 13) 2022 A

When the ping command is issued on a router, which symbol indicates that there was an ICMP echo reply received on time in response of an ICMP echo request?

- (a) !
- (b) \$
- (c) U
- (d) .

Ερώτηση 8. (ch14. 2022) A

A client creates a packet to send to a server. The client is requesting HTTP service. What number will be used as the destination port number in the sending packet?

- (a) 57
- (b) 67
- (c) 68
- (d) 80

Ερώτηση 9. (ch14. 2022) A

Which application service or protocol uses UDP as the preferred transmission protocol?

- (a) VoIP
- (b) HTTP
- (c) POP3
- (d) FTP

Ερώτηση 10. (ch14. 2022) A

Which statement characterizes UDP?

- (a) UDP provides basic connectionless transport layer functions.
- (b) UDP provides connection-oriented, fast transport of data at Layer 3.
- (c) UDP relies on IP for error detection and recovery.
- (d) UDP provides sophisticated flow control mechanisms.

Ερώτηση 11. (ch14. 2022) A

What information is used by TCP to reassemble and reorder received segments?

- (a) port numbers
- (b) sequence numbers
- (c) acknowledgment numbers
- (d) fragment numbers

Ερώτηση 12. (ch15. 2021) A

Which OSI Layer is responsible for end-to-end encryption?

- (a) Application
- (b) **Presentation**
- (c) Session
- (d) Transport

Ερώτηση 13. (ch15. 2022) A

What is a key characteristic of the peer-to-peer networking model?

- (a) wireless networking
- (b) social networking without the Internet
- (c) network printing using a print server
- (d) **resource sharing without a dedicated server**

Ερώτηση 14. (ch15. 2022) A

Which protocol is used by a client to communicate securely with a web server?

- (a) SMTP
- (b) SMB
- (c) IMAP
- (d) **HTTPS**

Ερώτηση 15. (ch16. 2022) A

What is the advantage of using SSH over Telnet?

- (a) SSH is easier to use.
- (b) SSH operates faster than Telnet.
- (c) **SSH provides secure communications.**
- (d) SSH supports authentication.

Ερώτηση 16. (ch16. 2022) A

Which component is designed to protect against unauthorized communications to and from a computer?

- (a) port scanner
- (b) antimalware
- (c) antivirus
- (d) **firewall**

Ερώτηση 17. (ch16. 2022) A

What is the difference between a virus and a worm?

- (a) Viruses self-replicate but worms do not.
- (b) **Worms self-replicate but viruses do not.**
- (c) Worms require a host file but viruses do not.
- (d) Viruses hide in legitimate programs but worms do not.

Ερώτηση 18. (ch17. 2022) A

A network administrator is upgrading a small business network to give high priority to real-time applications traffic. What type of network service is the network administrator trying to accommodate?

- (a) FTP
- (b) Voice
- (c) SNMP
- (d) Instant Messaging

Ερώτηση 19. (ch17. 2022) A

Why would a network administrator use the tracert utility?

- (a) to determine the active TCP connections on a PC
- (b) to check information about a DNS name in the DNS server
- (c) to identify where a packet was lost or delayed on a network
- (d) to display the IP address, default gateway, and DNS server address for a PC

Ερώτηση 20. (ch17. 2022) A

Users are complaining that they are unable to browse certain websites on the Internet. An administrator can successfully ping a web server via its IP address, but cannot browse to the domain name of the website. Which troubleshooting tool would be most useful in determining where the problem is?

- (a) netstat
- (b) tracert
- (c) nslookup
- (d) ipconfig

Μέρος Β (30 μονάδες)

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

Ερώτηση 1. (ch12. 2022) A

Convert the below IPv6 addresses to their equivalent missing formats.

Preferred Format	ef82:0000:0000:0000:0000:0a12:1234:1b10
(a) Omit Leading Zeroes format	ef82:0:0:0:0:a12:1234:1b10
(b) Compressed format	ef82::a12:1234:1b10

(c) Preferred Format	2001:0001:0002:0000:0000:0050:0060:0007
Omit Leading Zeroes format	2001:1:2:0:0:50:60:7
(d) Compressed format	2001:1:2::50:60:7

(e) Preferred Format	0000:0000:0001:0002:0030:0000:0000:0000
(f) Omit Leading Zeroes format	0:0:1:2:30:0:0:0
Compressed format	0:0:1:2:30::

Ερώτηση 2. (ch11 2022) A

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

Hosts Needed	Prefix Notation (/x)	Subnet Mask
(a) 1000	/22	255.255.252.0
(b) 500	/23	255.255.254.0
(c) 2	/30	255.255.255.252
(d) 25	/27	255.255.255.224
(e) 100	/25	255.255.255.128
(f) 250	/24	255.255.255.0

Ερώτηση 3. (ch11. 2022) A

For every of the following IP Addresses determine if they are Public or Private.

IP Address	Public/ Private
(a) 10.11.12.13	Private
(b) 172.31.1.2	Private
(c) 123.123.123.123	Public
(d) 192.16.8.1	Public
(e) 1.0.1.0	Public
(f) 172.13.1.2	Public

Ερώτηση 4. (ch15. 2022) A

Match each application protocol function to its protocol name.

Application Protocol Names:

FTP, Telnet, HTTP, HTTPS, DNS, DHCP, POP, SMTP, SSH, SNMP, LAN, WAN, ISP, UDP. (Not all application protocol names are used)

	Application Protocol Function	Application Protocol Name
(a)	Provides unencrypted web browsing.	HTTP
(b)	Retrieves email messages from an e-mail server.	POP
(c)	Used for a client to upload files to a server and download files from a server.	FTP
(d)	Dynamically assigns IP settings to clients.	DHCP
(e)	Resolves Internet names to IP addresses.	DNS
(f)	Sents Email messages.	SMTP

Ερώτηση 5. (Chapter 16) 2022 A

Match each security threat scenario to the appropriate security threat type. A security threat type can be used from zero to many times.

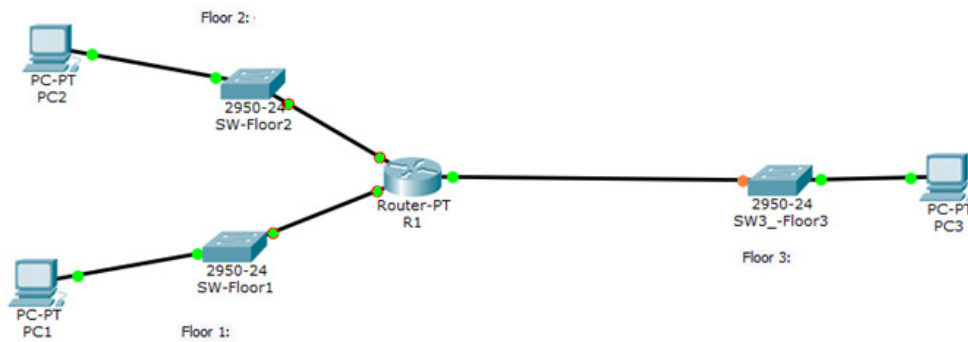
Security Threat Scenario
(a) Making online purchases by using stolen credentials.
(b) Overloading a network or server to keep legitimate users out of service.
(c) Sending a virus to reformat a hard drive.
(d) Impersonating someone to obtain credit.
(e) Stealing a company's user database.
(f) Altering data records.

Security Threat Type
1. Data Loss/Manipulation
2. Identity Theft
3. Disruption of Service
4. Information Theft

a-2, b-3, c-1, d-2, e-4, f-1

ΜΕΡΟΣ Γ (40 Μονάδες)

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

Ερώτηση 1. (ch10. 2022) Α**Network Topology**

You have been asked to setup the newly installed router with basic configuration. Follow the instructions below: (2 pts each)

- Change hostname to **R1**.
- The message “**ONLY for Authorized Users**” must appear as the message of the day.
- Secure the privileged EXEC access with the encrypted password **3nabl3**.
- Secure the console line to require the password **C0ns0l3**.
- Secure the telnet line to require the password **T3Lnet**.
- Return to Configuration Mode and encrypt all the plain text passwords.
- Configure interface G0/0 with IP Address 192.168.3.1 / 22.
- Enable interface g0/0.
- Return to Privileged EXEC Mode and save running configuration to NVRAM.
- Return to User EXEC Mode.

Router>ena

conf t

Hostname R1

Banner motd #ONLY for Authorized Users#

Enable secret 3nabl3

Line console 0

Password C0ns0l3

Login

Line vty 0 4

Password T3Lnet

Login

exit

Service password-encryption

int g0/0

ip add 192.168.3.1 255.255.252.0

no shut

exit

exit or end

Copy run start

exit or disable

Ερώτηση 2. (ch11. 2022) A

As the network administrator of your company, you have been asked to divide the network 192.168.1.0/24 into smaller subnets.

Each subnet shouldn't contain more than 4 hosts and the waste of IP addresses should be the minimum.

A) Calculate the following: (4 pts)

- i. Subnet Mask: _____ 255.255.255.248 (1111000 = 248, magic number 256-248=8)
- ii. Prefix Notation: / _____ /29
- iii. Number of subnets: _____ $2^5=32$
- iv. Valid hosts per subnet: _____ $2^3-2=6$

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	192.168.1.0	192.168.1.1 - 192.168.1.6	192.168.1.7
2	192.168.1.8	192.168.1.9 - 192.168.1.14	192.168.1.15
3	192.168.1.16	192.168.1.17 - 192.168.1.22	192.168.1.23

C) Write the necessary commands to configure a Router's FastEthernet0/0 interface with the first usable host IP Address of the 2nd subnet. (5 pts)

R1>ena

R1#config t

R1(config)#int fa0/0

R1(config)#ip address 192.168.1.9 255.255.255.248 (or first host address of Subnet 2)

R1(config)#no shut

D) Write the necessary commands to configure a Router's FastEthernet0/1 interface with the last usable host IP Address of the 3rd subnet. (5 pts)

R1>ena

R1#config t

R1(config)#int fa0/1

R1(config)#ip address 192.168.1.22 255.255.255.248 (or last host address of Subnet 3)

R1(config)#no shut

ΤΕΛΟΣ ΕΞΕΤΑΣΤΙΚΟΥ ΔΟΚΙΜΙΟΥ