ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ, ΑΘΛΗΤΙΣΜΟΥ ΚΑΙ ΝΕΟΛΑΙΑΣ

ΔΙΕΥΘΥΝΣΗ ΜΕΣΗΣ ΓΕΝΙΚΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

ΕΝΙΑΙΑ ΓΡΑΠΤΗ ΑΞΙΟΛΟΓΗΣΗ Β΄ ΤΕΤΡΑΜΗΝΟΥ 2022-23

Β΄ ΤΑΞΗΣ ΛΥΚΕΙΟΥ

ΗΜΕΡΟΜΗΝΙΑ: ΠΑΡΑΣΚΕΥΗ 26 ΜΑΪΟΥ 2023

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. 2023) A**

Which statement regarding the **service password-encryption** command is true?

(a) It encrypts only line mode passwords.
(b) It runs in privileged EXEC mode.
(c) It encrypts all passwords in the configuration file, which were not previously encrypted.
(d) To see the passwords encrypted by the **service password-encryption** command in plain text, issue the **no service password-encryption** command.

Ερώτηση 2. **(ch10. 2023) A**

What is the purpose of the startup configuration file on a Cisco router?

(a) to help the basic operation of the hardware components of a device.
(b) to include the configuration commands that the router IOS is currently using.
(c) to include the commands that are used to initially configure a router on startup.
(d) to provide a limited backup version of the IOS, in case the router cannot load the full featured IOS startup configuration.

Ερώτηση 3. **(ch10. 2023) A**

What is one of the functions of NVRAM?

(a) to store the ARP table.
(b) to store the routing table.
(c) to contain the running configuration file.
(d) to keep contents when power is removed.

Ερώτηση 4. **(ch11. 2023) 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 network 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. 2023) A**

Which address prefix range is reserved for loopback?

(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. **(ch11. 2023) A**

How many bits must be borrowed from the host portion of an address to accommodate a router with two connected (sub) networks?

(a) One
(b) Two
(c) Three
(d) Four

Ερώτηση 7. **(Ch11 2023) A**

How many host addresses are available on the 192.168.10.128/25 network?

(a) 256
(b) 254
(c) 128
(d) 126

Ερώτηση 8. **(ch12. 2023) A**

What is an advantage of using IPv6?

(a) more addresses for networks and hosts
(b) faster connectivity
(c) higher bandwidth
(d) more frequencies

Ερώτηση 9. **(ch12. 2023) A**

What is the correct most compressed format possible of the IPv6 address 2001:0DB8:0000:AB00:0000:0000:0000:1234?

(a) 2001:DB8:0:AB::1234
(b) 2001:DB8:0:AB:0:1234
(c) 2001:DB8::AB00::1234
(d) 2001:DB8:0:AB00::1234

Ερώτηση 10. **(ch13. 2023) A**

Which utility uses the Internet Control Messaging Protocol (ICMP)?

(a) DNS
(b) DHCP
(c) ipconfig
(d) ping

Ερώτηση 11. **(ch13. 2023) A**

A technician uses the **ping 127.0.0.1** command. What is the technician testing?

(a) the TCP/IP stack on a single network host
(b) connectivity between two Cisco devices
(c) connectivity between two PCs on the same network
(d) connectivity between a PC and the router (default gateway)

Ερώτηση 12. **(Chapter 13) 2022 A**

A technician is troubleshooting a network where it is suspected that a faulty node in the network path is causing packets to be dropped. The technician only has the IP address of the end point device and does not have any details of the intermediate devices. What command can the technician use to identify the faulty node?

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

Ερώτηση 13. **(ch15. 2023) A**

On a home network, which device is most likely to provide dynamic IPv4 addressing to clients on the home network?

(a) a DNS server
(b) a home router
(c) an ISP DHCP server
(d) a dedicated file server

Ερώτηση 14. **(ch15. 2023) A**

Which networking model is used when an author uploads a chapter of a document to a file server of a book publisher?

(a) client/server
(b) peer-to-peer
(c) master-slave
(d) point-to-point

Ερώτηση 15. **(ch15. 2023) A**

In which networking model would BitTorrent and Bitcoin be used?

(a) client/server
(b) peer-to-peer
(c) master-slave
(d) point-to-point

Ερώτηση 16. **(ch15. 2023) A**

The application layer of the TCP/IP model performs the functions of which three layers of the OSI model?

(a) Transport, presentation, application
(b) session, presentation, application
(c) data-link, network, transport
(d) physical, data-link, network

Ερώτηση 17. **(ch16. 2023) A**

Which type of network threat is intended to prevent authorized users from accessing resources?

(a) DoS attacks
(b) access attacks
(c) trust exploitation
(d) reconnaissance attacks

Ερώτηση 18. **(ch16. 2023) A**

Which attack involves a compromise of data that occurs between two end points?

(a) denial-of-service
(b) man-in-the-middle
(c) extraction of security parameters
(d) username enumeration

Ερώτηση 19. **(ch16. 2023) A**

What is the objective of a network reconnaissance attack?

(a) disabling network systems or services
(b) denying access to resources by legitimate users
(c) unauthorized manipulation of data
(d) discovery and mapping of systems

Ερώτηση 20. **(ch16. 2023) A**

What does the term vulnerability mean?

(a) a weakness that makes a target susceptible to attack
(b) a computer that contains sensitive information
(c) a computer that contains personal information
(d) software that is designed to protect against unauthorized access

Μέρος Β (30 μονάδες)

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

Ερώτηση 1. **(ch11, 12. 2023)**

Convert the below IPv6 addresses into their equivalent missing formats.

Preferred Format	0001:0002:0000:0000:0003:0004:0005:0000
(a) Omit Leading Zeroes format	1:2:0:0:3:4:5:0
(b) Most Compressed format	1:2::3:4:5:0

(c) Preferred Format	2023:0001:0002:0000:0000:0010:0020:0030
Omit Leading Zeroes format	2023:1:2:0:0:10:20:30
(d) Most Compressed format	2023:1:2::10:20:30

(e) Preferred Format	0000:0000:000:0001:0002:0000:0000:0000
(f) Omit Leading Zeroes format	0:0:0:1:2:0:0:0
Most Compressed format	::1:2:0:0:0

Ερώτηση 2. **(ch11 2023) A**

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

Hosts Needed	Prefix Notation (/x)	Subnet Mask
(a) 2000	/21	255.255.248.0
(b) 60	/26	255.255.255.192
(c) 6	/29	255.255.255.248

Ερώτηση 3. **(ch11. 2023) A**

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

IP Address	Public/ Private
(a) 100.10.10.10	Public
(b) 172.32.1.2	Public
(c) 192.1.68.1	Public
(d) 192.168.1.10	Private
(e) 172.15.1.1	Public
(f) 172.17.2.1	Private

Ερώτηση 4. **(ch15. 2023) A**

Match each application protocol function to its protocol name.

Application Protocol Names:
FTP, Telnet, HTTP, HTTPS, DNS, DHCP, POP, SSH, SNMP. (Not all application protocol names are used)

	Application Protocol Function	Application Protocol Name
(a)	Retrieves email messages from an E-mail server.	POP
(b)	Enables clients to send email to an e-mail server.	SMTP
(c)	Dynamically assigns IP addresses to client stations at start-up.	DHCP
(d)	Translates domain names, such as cisco.com into IP addresses.	DNS
(e)	Used to transfer files to and from a server over a network.	FTP
(f)	Provides encrypted web browsing.	HTTPS

(a)POP (b)SMTP (c)DHCP (d)DNS (e)FTP (f)HTTPS

Ερώτηση 5. **(ch16 2023) A**

Match each attack (a-f) to the correct attack category (1-3)

	(1) Reconnaissance Attacks	(2) Access Attacks	(3) Denial of Service Attacks
(a) DoS Attack			+
(b) Password Attacks		+	
(c) Port Redirection		+	
(d) Internet Queries	+		
(e) Port Scans	+		
(f) DDoS Attack			+

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

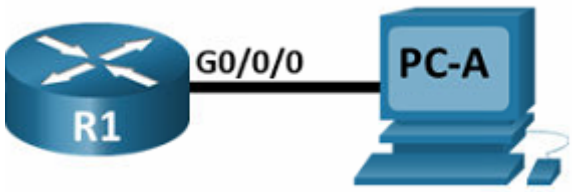
ΜΕΡΟΣ Γ (40 Μονάδες)

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

Ερώτηση 1. **(ch10. 2022) A**

Refer to the network topology and addressing table below.

Network Topology



Addressing Table

Device	Interface	IP Address / Prefix
R1	G0/0/0	192.168.100.1 /24

You are the network administrator of a company, and you have to setup a newly purchased cisco router based on the settings provided in the table below.

Device Name	R1
Privilege Password (Encrypted)	C1$coP=
Console password	C1$coC=
VTY Password for remote connectivity	C1$coT=
Message of the Day	Private System!
Gig 0/0/0 IP Address: **Description:**	192.168.100.1/24 LAN-1

Follow the instructions below to configure the router.

(a) Enter Privileged EXEC mode. (1 pt)

Router> ena

(b) Enter Configuration mode. (1 pt)

Router# config terminal

(c) Set the name of the router, according to the Addressing Table. (1 pt)

Router(config)# hostname R1

(d) Set the encrypted privilege password. (1 pt)

R1(config)# enable secret C1$c0P=

(e) Set console password and enable login. (3 pts)

R1(config)# line console 0
R1(config-line)# password C1$c0C=
R1(config-line)# login

(f) Set VTY password and enable login. (3 pts)

R1(config)# line vty 0 4
R1(config-line)# password C1$c0T=
R1(config-line)# login

(g) Return to configuration mode and encrypt the plain text passwords. (2 pts)

R1(config-line)#exit
R1(config)# service password-encryption

(h) Configure interface G0/0/0 with IPv4 address, description (LAN-1) and activate it. (4 pts)

R1(config)# interface g0/0/0
R1(config-if)# ip address 192.168.100.1 255.255.255.0
R1(config-if)#description LAN-1
R1(config-if)# no shutdown

(i) 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

Provide the following network configuration for the PC-A

(j) A valid IP Address and subnet mask for PC-A. (1 pt)

192.168.100.2 – 254 / 24 (255.255.255.0)

(k) The default gateway you should use for PC-A. (1 pt)

192.168.100.1

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 equal sized subnets with fixed length subnetting.

The maximum need for hosts per subnet is 25 and each subnet should waste the minimum IP addresses.

A) Calculate the following: (4 pts)

i. Maximum hosts per subnet: _____ 2^5-2=30

ii. Number of subnets: _____ 2^3=8

For Each Subnet:

iii. Subnet Mask: _____ 255.255.255.224 (1110000, Magic No=32)

iv. Prefix Notation:/ _____ /27

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 - 192.168.1.30	192.168.1.31
#2	192.168.1.32	192.168.1.33 - 192.168.1.62	192.168.1.63
#3	192.168.1.64	192.168.1.65 - 192.168.1.94	192.168.1.95

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

R1>ena

R1#config t
R1(config)#int fa0/0
R1(config)#ip address 192.168.1.33 255.255.255.224
R1(config)#no shut

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

R1>ena

R1#config t
R1(config)#int fa0/1
R1(config)#ip address 192.168.1.94 255.255.255.224
R1(config)#no shut

ΤΕΛΟΣ ΕΞΕΤΑΣΤΙΚΟΥ ΔΟΚΙΜΙΟΥ