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

**ΕΝΙΑΙΑ ΓΡΑΠΤΗ ΑΞΙΟΛΟΓΗΣΗ Β΄ ΤΕΤΡΑΜΗΝΟΥ 2021-22**
**Γ΄ ΤΑΞΗΣ ΛΥΚΕΙΟΥ**
**ΗΜΕΡΟΜΗΝΙΑ: ΠΕΜΠΤΗ 26 ΜΑΙΟΥ 2022**
**ΕΞΕΤΑΖΟΜΕΝΟ ΜΑΘΗΜΑ: ΔΙΚΤΥΑ – CISCO (Α΄ΣΕΙΡΑ)**

**ΚΩΔΙΚΟΣ ΜΑΘΗΜΑΤΟΣ: Γ060**
ΟΔΗΓΟΣ ΔΙΟΡΘΩΣΗΣ / ΠΡΟΤΕΙΝΟΜΕΝΕΣ ΛΥΣΕΙΣ

**ΣΥΝΟΛΙΚΗ ΔΙΑΡΚΕΙΑ ΓΡΑΠΤΗΣ ΕΞΕΤΑΣΗΣ ΔΙΚΤΥΩΝ - CISCO: 90 λεπτά**

**ΤΟ ΕΞΕΤΑΣΤΙΚΟ ΔΟΚΙΜΙΟ ΑΠΟΤΕΛΕΙΤΑΙ ΑΠΟ ΔΩΔΕΚΑ (12) ΣΕΛΙΔΕΣ**

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## 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**

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**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. (ch9. 2022) A

What is the purpose of HSRP?

 (a) It enables an access port to immediately transition to the forwarding state.
 (b) It provides a continuous network connection when a router fails.
 (c) It prevents malicious hosts from connecting to trunk ports.
 (d) It prevents a rogue switch from becoming the STP root.

### Ερώτηση 2. (ch9. 2022) A

When first hop redundancy protocols are used, which item will be shared by a set of routers that are presenting the illusion of being a single router?

 (a) Host name
 (b) IP address
 (c) Static Route
 (d) BID

### Ερώτηση 3. (ch9. 2022) A

What is the default gateway of a host inside a network that uses FHRP?

 (a) The IP address of the active router
 (b) The IP address of the standby router
 (c) An IP address between the IP of the active router and the IP of the standby
 (d) The IP address of the virtual router

### Ερώτηση 4. (ch10. 2022) A

What represents a best practice concerning discovery protocols such as CDP and LLDP on network devices?

 (a) Use the open standard LLDP rather than CDP.
 (b) Disable both protocols on all interfaces where they are not required.
 (c) Use the default router settings for CDP and LLDP.
 (d) Enable CDP on edge devices, and enable LLDP on interior devices.

### Ερώτηση 5. (ch10. 2022) A

When security is a concern, which OSI Layer is considered to be the weakest link in a network system?

 (a) Layer 2
 (b) Layer 3
 (c) Layer 4
 (d) Layer 7

### Ερώτηση 6. (ch10. 2022) A

Which protocol should be used to mitigate the vulnerability of using Telnet to remotely manage network devices?

    (a) SCP
    (b) SSH
    (c) TFTP
    (d) SNMP

### Ερώτηση 7. (ch10. 2022) A

Which component of AAA allows an administrator to track individuals who access network resources and any changes that are made to those resources?

    (a) accessibility
    (b) accounting
    (c) authentication
    (d) authorization

### Ερώτηση 8. CCNA2-Chapter 10) 2022  A

Which component of AAA is used to determine which resources a user can access and which operations the user is allowed to perform?

    (a) auditing
    (b) accounting
    (c) authorization
    (d) authentication

### Ερώτηση 9. (ch11. 2022) A

Which command would be best to use on an unused switch port if a company adheres to the best practices as recommended by Cisco?

    (a) switchport port-security
    (b) switchport port-security violation shutdown
    (c) switchport port-security mac-address sticky
    (d) shutdown

### Ερώτηση 10.  (CCNA2-Chapter 11) 2022 A

A network administrator is configuring port security on a Cisco switch. The company security policy specifies that when a violation occurs, packets with unknown source addresses should be dropped and notification should be sent. Which violation mode should be configured on the interfaces?

    (a) off
    (b) restrict
    (c) protect
    (d) shutdown

### Ερώτηση 11.  (CCNA3-Chapter 1 - Dynamic Routing) 2022 A

What is identical on all OSPF routers within a single area?

   (a) neighbor table
   (b) link-state database
   (c) routing table
   (d) SPF tree

### Ερώτηση 12.  (CCNA2-Chapter 15 Static Routing 2022) A

On which router would a default static route be configured?

   (a) any router where a backup route to dynamic routing is needed for reliability
   (b) edge router connection to the ISP
   (c) any router running an IOS prior to 12.0
   (d) the router that serves as the gateway of last resort

### Ερώτηση 13. (CCNA2-Chapter 14) 2022 A

What happens to a static route entry in a routing table when the outgoing interface associated with that route goes into the down state?

   (a) The static route is removed from the routing table.
   (b) The router polls neighbors for a replacement route.
   (c) The static route remains in the table because it was defined as static.
   (d) The router automatically redirects the static route to use another interface.

### Ερώτηση 14.  (CCNA2-Chapter 14) 2022 A

Which route would be the best match to forward a packet with a source IP address of 192.168.10.1 and a destination IP address of 10.1.1.1?

   (a) C 192.168.10.0/30 is directly connected, GigabitEthernet0/1
   (b) S 10.1.0.0/16 is directly connected, GigabitEthernet0/0
   (c) O 10.1.1.0/24 [110/65] via 192.168.200.2, 00:01:20, Serial0/1/0
   (d) S* 0.0.0.0/0 [1/0] via 172.16.1.1

### Ερώτηση 15. (CCNA2-Chapter 15) 2022 A

A router has used the OSPF protocol to learn a route to the 172.16.32.0/19 network. Which command will implement a backup floating static route to this network?
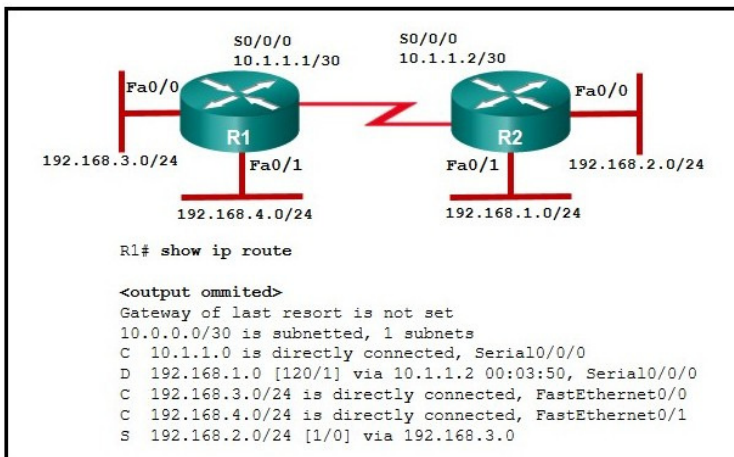
   (a) ip route 172.16.0.0 255.255.240.0 S0/0/0 200
   (b) ip route 172.16.32.0 255.255.224.0 S0/0/0 200
   (c) ip route 172.16.0.0 255.255.224.0 S0/0/0 100
   (d) ip route 172.16.32.0 255.255.224.0 S0/0/0 100

### Ερώτηση 16. (CCNA3- Chapter 2 - Dynamic Routing OSPF) 2022 A

An administrator is configuring single-area OSPF on a router. One of the networks that must be advertised is 128.107.0.0/26. What wildcard mask would the administrator use in the OSPF network statement?

   (a) 0.0.0.3
   (b) 0.0.0.7
   (c) 0.0.0.31
   (d) 0.0.0.63

### Ερώτηση 17. (CCNA2-Chapter 16) 2022 A

```
                S0/0/0            S0/0/0
                10.1.1.1/30       10.1.1.2/30
Fa0/0                                          Fa0/0

         R1                           R2
192.168.3.0/24      Fa0/1      Fa0/1      192.168.2.0/24

         192.168.4.0/24       192.168.1.0/24

R1# show ip route

<output ommited>
Gateway of last resort is not set
10.0.0.0/30 is subnetted, 1 subnets
C   10.1.1.0 is directly connected, Serial0/0/0
D   192.168.1.0 [120/1] via 10.1.1.2 00:03:50, Serial0/0/0
C   192.168.3.0/24 is directly connected, FastEthernet0/0
C   192.168.4.0/24 is directly connected, FastEthernet0/1
S   192.168.2.0/24 [1/0] via 192.168.3.0
```

Refer to the exhibit. A ping from R1 to 10.1.1.2 is successful, but a ping from R1 to any address in the 192.168.2.0 network fails. What is the cause of this problem?

- (a) There is no gateway of last resort at R1.
- (b) The serial interface between the two routers is down.
- (c) The static route for 192.168.2.0 has wrong next-hop address
- (d) The static route for 192.168.2.0 has wrong administrative distance.

### Ερώτηση 18. (CCNA3-Chapter 1) 2022 A

What is used to facilitate hierarchical routing in OSPF?

- (a) autosummarization
- (b) the use of multiple areas
- (c) frequent SPF calculations
- (d) the election of designated routers

### Ερώτηση 19. (CCNA3-Chapter 2 2022) A

What will an OSPF router prefer to use first as a router ID?

- (a) any IP address that is configured using the router-id command
- (b) a loopback interface that is configured with the highest IP address on the router
- (c) the highest active interface IP that is configured on the router
- (d) the highest active interface that participates in the routing process because of a specifically configured network statement

### Ερώτηση 20. (CCNA3-Chapter 2 2022) A

What command should be used to view the OSPF adjacency database of a router?

- (a) ping
- (b) show ip protocols
- (c) show ip ospf neighbor
- (d) show ip interface brief

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**Μέρος Β (30 μονάδες)**

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

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**Ερώτηση 1.** **(CCNA2 – Chapter 14 – Routing Concepts) 2022 A**

Match the characteristic to the corresponding type of routing (Static or Dynamic).

| Characteristic | Type of Routing (Static/Dynamic) |
|---|---|
| (a) Typically used on stub networks | Static |
| (b) Best choice for large networks. | Dynamic |
| (c) Provides maximum security. | Static |
| (d) Extensive use of CPU, memory and link bandwidth. | Dynamic |
| (e) Route to destination is explicitly defined by the administrator. | Static |
| (f) Suitable for networks with frequent changes or instabilities. | Dynamic |

**Ερώτηση 2. (CCNA2 - Chapter 11 2022) A**

Complete for each port security violation mode how the switch will behave. If the switch performs the specified action, when there is violation, write Yes and if not write No.

| Violation Mode | Discards Offending Traffic | Sends Syslog Message | Increase Violation Counter | Shuts Down Port |
|---|---|---|---|---|
| (a) Protect | Yes | No | No | No |
| (b) Restrict | Yes | Yes | Yes | No |
| (c) Shutdown | Yes | Yes | Yes | Yes |

**Ερώτηση 3. (OSPF 2022) A**

For each network specify the corresponding subnet mask and wildcard mask.

| Network | Decimal Subnet Mask | Wildcard Mask |
|---|---|---|
| (a) 192.168.30.0 /30 | 255.255.255.252 | 0.0.0.3 |
| (b) 192.168.48.0 /20 | 255.255.240.0 | 0.0.15.255 |
| (c) 192.128.0.0 /10 | 255.192.0.0 | 0.63.255.255 |

**Ερώτηση 4.** (**CCNA2 - Chapter 11) 2022 B**

Relate each command in the left column with their corresponding function in the right column.  Not all functions are used.

| Command/Term | | Function/Value |
|---|---|---|
| (a) `S1(config)#interface range fa0/17-20` `S1(config-if-range)#shutdown` | 4 | 1. Enables the switch to dynamically learn MAC addresses and add them in the running configuration file. |
| (b) `S1(config-if)#switchport port-security violation restrict` | 5 | 2. Puts the limit of allowed devices on the port to its default value. |
| (c) `S1(config-if)#switchport port-security mac-address sticky` | 1 | 3. Relates manually a MAC address with a switch port. |
| (d) `S1(config-if)#switchport port-security mac-address 0001.C7B3.1BDE` | 3 | 4. Used as a security measure to disable all unused ports. |
| (e) `S1(config-if)#switchport mode access` `S1(config-if)#switchport port-security` | 8 | 5. When there is violation the port switch continues to function but drops the incoming frames from the violating device. |
| (f) `S1(config-if)#switchport port-security maximum 1` | 2 | 6. When there is violation the port switch goes into err-disabled state. |
| | | 7. Sets the age of the mac address to maximum 1 day. |
| | | 8. Enables port security on an access port of a switch. |

**Ερώτηση 5.**  (**CCNA2 - Chapter 14) 2022  A**

A network administrator has issued the command **show ip route** on a router. One of the lines in the output is the following:

**O 192.168.30.0/24 [110/2] via 192.168.20.1,00:00:21, Serial0/0/1**

   Fill in the blanks in the following statements:

(a)  This route was set up using the ___ routing protocol ospf

(b)  The value 110 is called the  ___administrative distance

(c)  This route tells the router where to forward packets for network ___192.168.30.0/24

(d)  The next hop interface address is ___192.168.20.1

(e)  The value 2 is called the ___metric

(f)  The exit interface is  ___s0/0/1

**ΜΕΡΟΣ Γ (40 Μονάδες)**

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

### Ερώτηση 1. ( Chapter 14-15) 2022  B

You have been tasked to configure a network with static IPv4 routing configuration.  The network topology and Addressing table are given below.  Follow the instructions provided.

## Network Topology
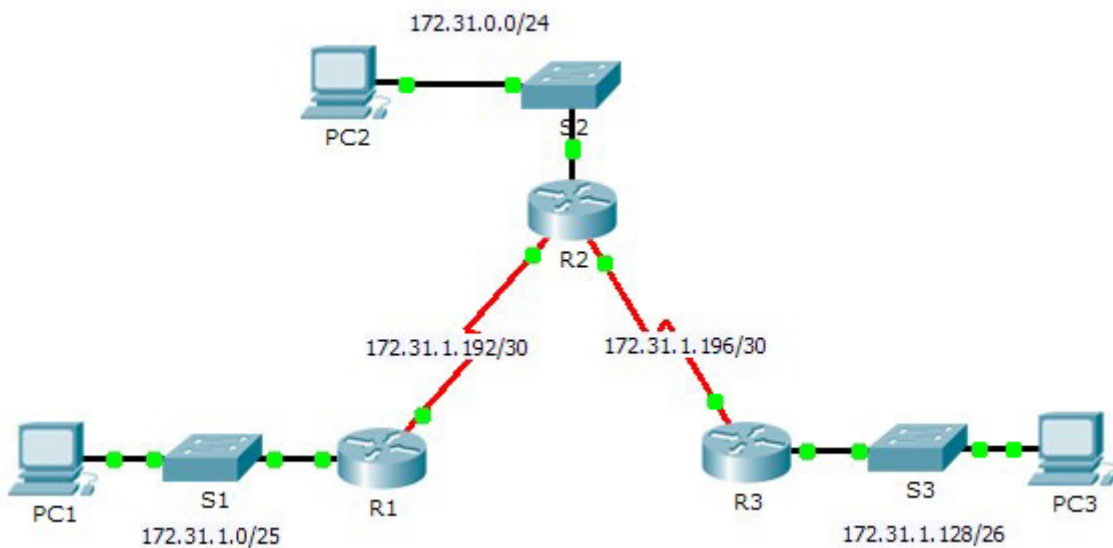


**Addressing Table**

| Device | Interface | IPv4 Address | Subnet Mask | Default Gateway |
|--------|-----------|--------------|-------------|-----------------|
| R1 | G0/0 | 172.31.1.1 | 255.255.255.128 | N/A |
| | S0/0/0 | 172.31.1.194 | 255.255.255.252 | N/A |
| R2 | G0/0 | 172.31.0.1 | 255.255.255.0 | N/A |
| | S0/0/0 | 172.31.1.193 | 255.255.255.252 | N/A |
| | S0/0/1 | 172.31.1.197 | 255.255.255.252 | N/A |
| R3 | G0/0 | 172.31.1.129 | 255.255.255.192 | N/A |
| | S0/0/1 | 172.31.1.198 | 255.255.255.252 | N/A |

(a) Configure recursive static route for every remote network of R1.          (6 pts)

    R1(config)# ip route 172.31.0.0 255.255.255.0 172.31.1.193
    R1(config)# ip route 172.31.1.196 255.255.255.252 172.31.1.193
    R1(config)# ip route 172.31.1.128 255.255.255.192 172.31.1.193

(b) Configure directly connected static routes for every remote network of R2.   (4 pts)

    R2(config)# ip route 172.31.1.0 255.255.255.128 Serial0/0/0
    R2(config)# ip route 172.31.1.128 255.255.255.192 Serial0/0/1

(c) Configure a fully specified static route on R3 for R1 LAN.          (2 pts)

    R3(config)# ip route 172.31.1.0 255.255.255.128 s0/0/1 172.31.1.197

(d) Configure a fully specified default route on R3 for the rest unknown remote networks.

(2 pts)

    R3(config)# ip route 0.0.0.0 0.0.0.0 Serial0/0/1 172.31.1.197

(e) Exit configuration mode and write the command that displays the routes listed in the routing table.          (4 pts)
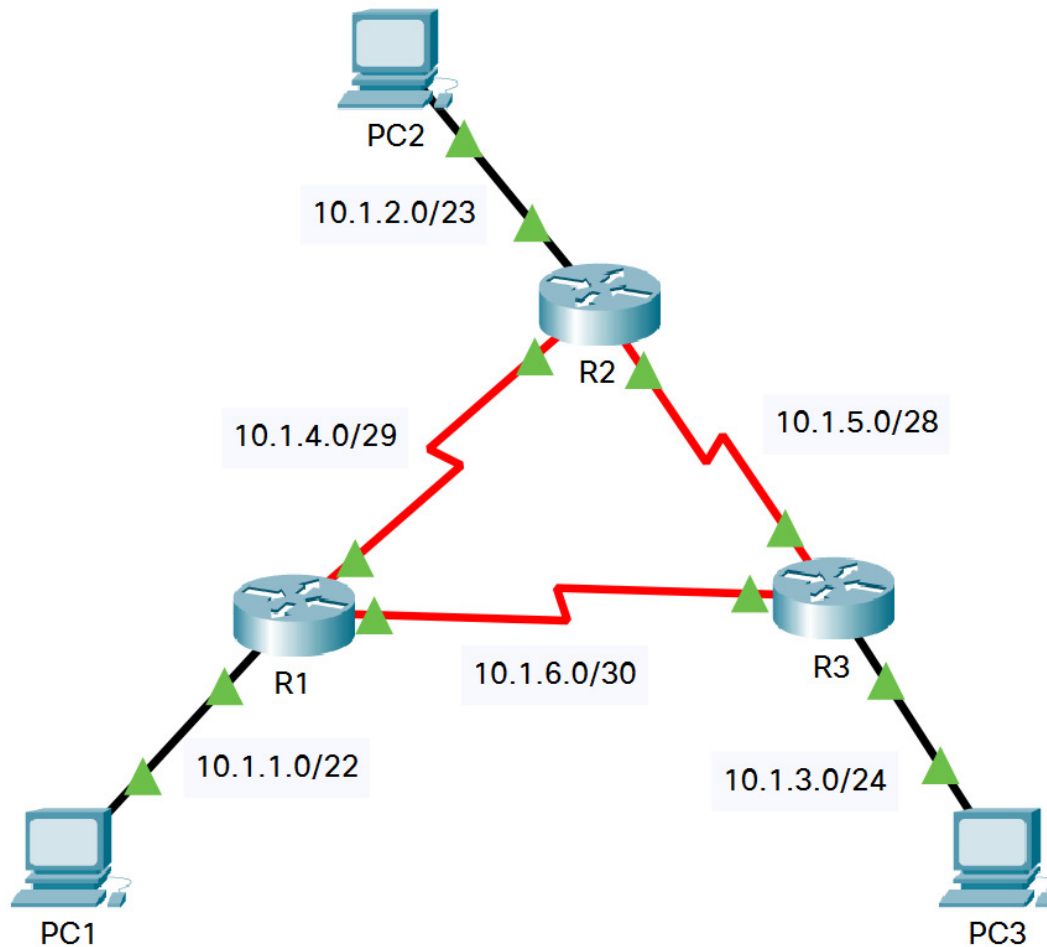
    R1(config)# exit
    R1# show ip route

(f) Verify connectivity from R1 to the LAN interface of R3.          (2 pts)

    R1# ping 172.31.1.129 or traceroute

## Ερώτηση 2. (OSPF 2022)  A

You have been asked to configure a network with dynamic routing using OSPFv2. The network topology and the addressing table are given below. Assume that all interfaces are properly configured.



**Addressing Table**

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|-----------|------------|-------------|-----------------|
| R1 | G0/1/0 | 10.1.1.1 | 255.255.252.0 | N/A |
| | S0/0/0 | 10.1.4.1 | 255.255.255.248 | N/A |
| | S0/0/1 | 10.1.6.1 | 255.255.255.252 | N/A |
| R2 | G0/1/0 | 10.1.2.1 | 255.255.254.0 | N/A |
| | S0/0/0 | 10.1.4.2 | 255.255.255.248 | N/A |
| | S0/0/1 | 10.1.5.1 | 255.255.255.240 | N/A |

A) Use the following requirements to configure OSPF routing on router R1:
- Process ID 11
- Router ID for R1 = 1.1.1.1
- Network address and appropriate network wildcard mask for each interface
- LAN interface set to passive                                                                 (8pts)


R1>ena
R1#configure terminal
R1(config)#router ospf 11

R1(config-router)# router-id 1.1.1.1

R1(config-router)# passive-interface GigabitEthernet0/1/0

R1(config-router)# network 10.1.1.0 0.0.3.255 area 0

R1(config-router)# network 10.1.4.0 0.0.0.7 area 0

R1(config-router)# network 10.1.6.0 0.0.0.3 area 0



B) Use the following requirements to configure OSPF routing on router R2:
- Process ID 11
- Router ID for R2 = 2.2.2.2
- Network address and appropriate network wildcard mask for each interface
- LAN interface set to passive

                                                                                           (8pts)

R2>ena
R2#configure terminal
R2(config)#router ospf 11

R2(config-router)# router-id 2.2.2.2

R2(config-router)# passive-interface GigabitEthernet0/1/0

R2(config-router)# network 10.1.2.0 0.0.1.255 area 0

R2(config-router)# network 10.1.4.0 0.0.0.7 area 0

R2(config-router)# network 10.1.5.0 0.0.0.15 area 0



C) Consider that R3 has been already configured with OSPF and communicates properly its routing information to R1 and R2.

On the existing network you have connected three extra routers R4, R5 and R6 through interfaces G0/1, G0/2 and G0/3 of R3.  The addressing information of these interfaces are shown below.

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|-----------|------------|-------------|-----------------|
| R3 | G0/1 | 172.16.1.1 | 255.255.255.128 | N/A |
| | G0/2 | 172.16.2.129 | 255.255.255.192 | N/A |
| | G0/3 | 172.16.3.193 | 255.255.255.224 | N/A |

Use the requirements below to **include the additional networks** in the existing OSPF routing of router R3:
- Process ID 11
- Network address and appropriate network wildcard mask for each interface

(4 pts)

R3(config)# router ospf 11

R3(config-router)# network 172.16.1.0 0.0.0.127 area 0

R3(config-router)# network 172.16.2.128 0.0.0.63 area 0

R3(config-router)# network 172.16.3.192 0.0.0.31 area 0

**ΤΕΛΟΣ ΕΞΕΤΑΣΤΙΚΟΥ ΔΟΚΙΜΙΟΥ**