| ΕΠΛ 674 Ασφάλεια Συστημάτων και Δικτύων	Spring 2011
Assignment 3	
Assigned: 28 February 2011	**Due: 14 March 2011**

Instructions

- All assignments should be submitted typed neatly using a document processing application of your choice. Please make sure to include your name and student number for proper recording of grades.
- Assignment solutions can be written English.
- The assignment is due at the beginning of the lecture at the due date. Late assignments will incur a five-point penalty. Assignments late by more than one day will not be accepted.

Firewalls

[1]   Consider the following network topology:
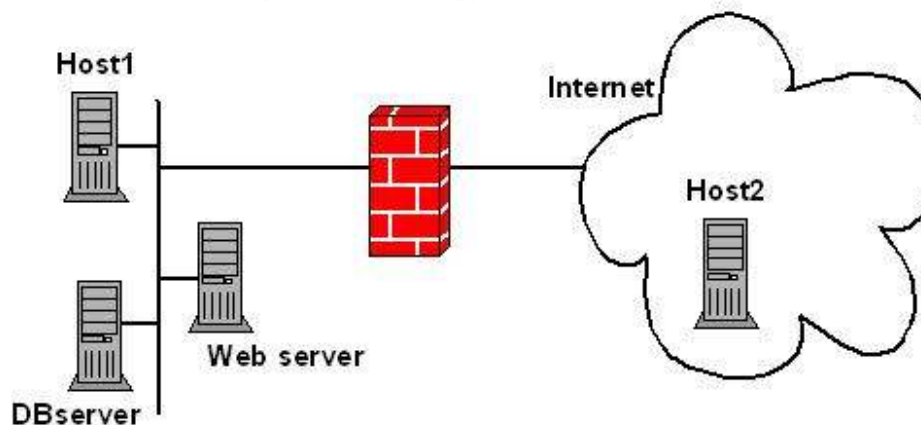
The Firewall rules are shown in the next table:

	Origin	Destination	Service	Action
1	Intranet	Any	All	Allow
2	Host2	Dbserver	SQL	Allow
3	Any	Web server	HTTP	Allow
4	Any	Any	all	Deny

Justify which rule (of the table shown above) is activated for each one of the following requests:

i.   An HTTP request over a TCP/IP packet sent from the Internet to the Web server:

_____

ii. An HTTP request over a TCP/IP packet sent from Host2 to Host1:

_____

iii. An HTTP request over a TCP/IP packet sent from DBserver to Web server:

_____

iv. An SQL request over a TCP/IP packet sent from Internet to DBserver:

_____

v. An SQL request over a TCP/IP packet sent from Host2 to DBserver:

_____

[2] The following figure illustrates a Firewall system used to protect the zone where the servers are (Demilitarized Zone – DMZ) as well as to isolate the internal organization network (intranet) from various threads coming from the Internet.
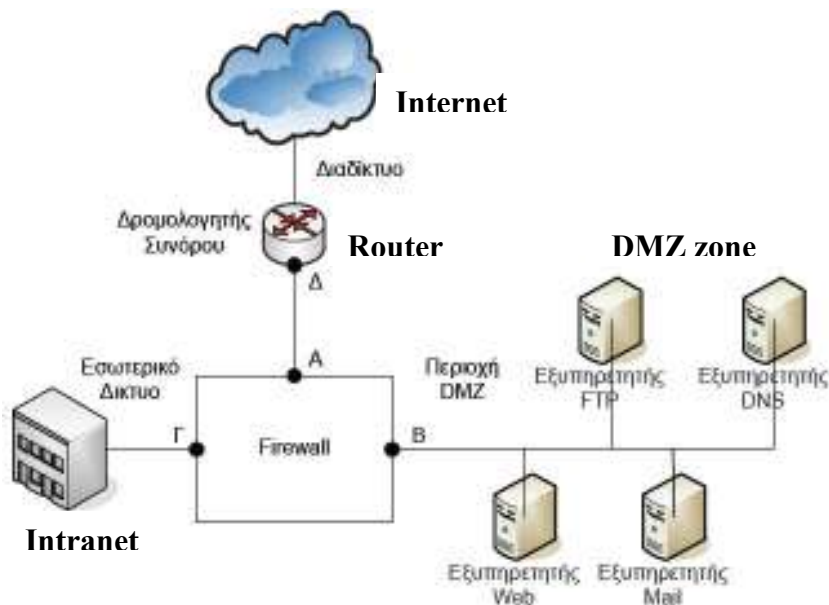
i. The network administrator has been assigned the following block of IP addresses **193.29.12.0/24**, which is divided into **3 subnets** (**line A-Δ**, **DMZ**, **Intranet**). Each interface of each network device is assigned the following IP addresses:
Firewall Interfaces: **A: 193.29.12.45**, **B: 193.29.12.86**, **Γ: 193.29.12.196**
Servers located in the DMZ: **Web server: 193.29.12.82**, **Mail server: 193.29.12.83**, **FTP server: 193.29.12.84**, **DNS server: 193.29.12.85**
   a. Which **IP address** shall be given to the Δ Interface (router's interface) so as to create the smallest possible functional subnet between router and firewall? Give more information about the new **subnet** with reference to the **mask** and the **IP addresses** involved.

_____
_____
_____
_____
_____
_____

b. Which is the smallest possible **subnet** that can be defined in the DMZ according to the IP address assigned to the Interface B of the firewall? Give the **mask** and the IP addresses of the subnet.

_____

_____

_____

_____

_____

_____

ii. The firewall has the following control rules for the incoming (from the Internet) packets, according to their source IP address:
Deny from 195.209.34.64/28
Deny from 195.209.34.96/29
Deny from 147.32.0.0/12
Allow from any
For each one of the incoming packets with the following source IP addresses, justify whether the packet will pass through the firewall or will be discarded.

   a. **195.209.34.78**

_____

_____

_____

_____

_____

   b. **195.209.34.89**

_____

_____

_____

_____

_____

   c. **195.209.34.103**

_____

_____

_____

_____

_____

   d. **147.47.21.214**

_____

_____

_____