Part I: General Networking Concepts

Question 1 [20 points]: Multiple Choice Questions

Q1) Which of the following is the wildcard mask for the subnet mask 255.224.0.0

a. 0.31.255.255
b. 0.32.255.255
c. 0.31.0.0
d. 255.31.0.0

Q2) Having the below access list, in order to prevent the access for the host 192.168.10.10, which of the below commands is used?

```
Router#show access-lists
Standard IP access list 15
    10 permit host 192.168.10.10
    20 deny 192.168.10.0 0.0.0.255
    30 permit any
```

a. Router(config)#ip access-list Standard 15
   Router(config-std-nacl)#no host 192.168.10.10
b. Router(config)#ip access-list Standard 15
   Router(config-std-nacl)#no 10
c. Router(config)#ip access-list Standard 15
   Router(config-std-nacl)#no 20
d. None of the above

Q3) What is the disadvantage of NAT?

a. Troubleshooting problems can become harder because you may no longer have full end to end traceability.
b. NAT adds a layer of security because hosts behind NAT will not be directly reachable from outside the network.
c. There are no public IPv4 addresses left and NAT means that we don't have to give every device on the Internet a dedicated public IP address.
d. All the above

Q4) Which command will show you the summary of NAT configuration

a. show ip nat translations
b. debug ip nat
c. clear ip nat translations
d. show ip nat statistics

Q5) Consider the below route entry, which of the below entries is true about it?

R* 0.0.0.0/0 [120/1] via 172.16.0.2, 00:00:07, Serial0/0/0

a. The above route is a static default route learned from a RIP neighbor router
b. The above route is a static default route configured on a router.
c. The above route is a floating static route that enables backup routing.
d. The above route is a static route that has less priority over other routing protocols.

Q6) What information is used in the PAT table? (Choose all that apply)

a. Source IP address
b. Source MAC address
c. Destination IP address
d. Destination MAC address
e. Source TCP/UDP port
f. Destination TCP/UDP port

Q7) Which is true regarding when the same ACL is to be applied in the IN or OUT directions? (Choose two.)

a. The same policy may be applied either IN or OUT but on different interfaces
b. The same policy may be applied either IN or OUT on the same interface
c. IN direction may save routing process overhead
d. OUT direction may save routing process overhead

Q8) Which of the below DHCP PDU are considered as broadcast PDUs? (Choose two)

a. DHCP Discover
b. DHCP Offer
c. DHCP Request
d. DHCP Acknowledgment

Q9) Refer to the exhibit. Which address represent the inside global address?

```
R1(config)#ip nat inside source static 192.168.1.20 209.165.10.20
R1(config)#interface S0/0/0
R1(config-if)#ip address 172.16.10.1 255.255.0.0
R1(config-if)#no shutdown
R1(config-if)#ip nat inside
R1(config-if)#exit
R1(config)#interface S0/0/1
R1(config-if)#ip address 209.165.10.20 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#ip nat outside
R1(config-if)#exit
```

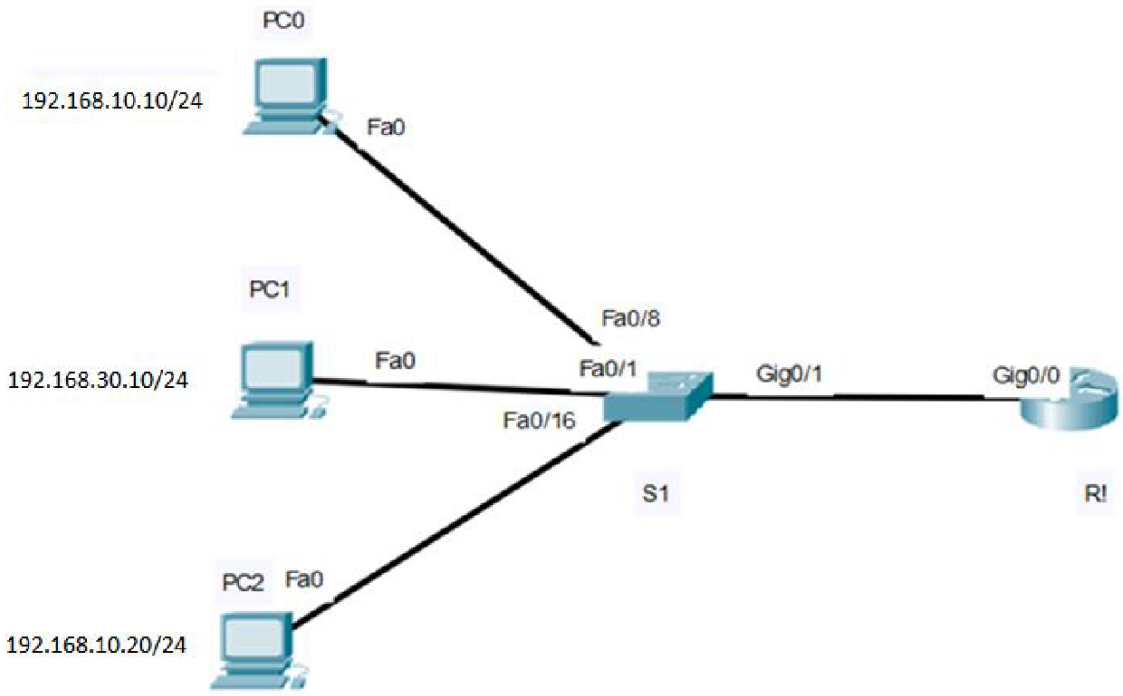
a. 172.16.10.1
b. 192.168.1.20
c. 209.165.10.20
d. any address in the 172.16.0.0 network

Q10) Which mechanism allows an external device to reach a device on a specific port number and the device is located on an internal (private) network.

a. Port Fast
b. Port Routing
c. Port forwarding
d. Port Duplication

VLAN / Intervlan configuration

For the network topology shown below, you are requested to configure the router based on the below requirements.

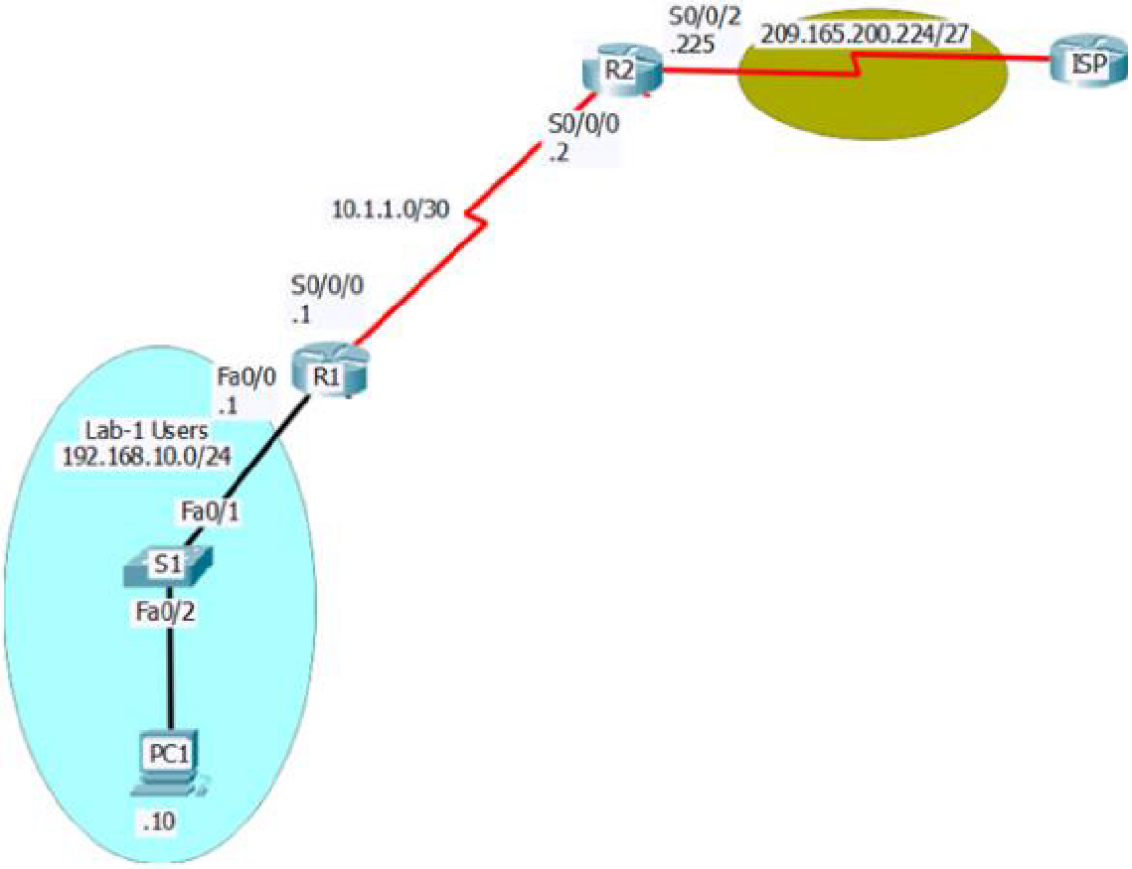


Q1) Configure the router sub-interfaces

R1(config)# interface_G0/0.10_____
R1(config-if)# encapsulation _____dot1q 10_____
R1(config-if)#ip address __192.168.10.1 255.255.255.0_____
R1(config)# ____int G0/0.20_____
R1(config-if)# ____encapsulation dot1q 20_____
R1(config-if)# ____ip address 192.168.20.1 255.255.255.0___
R1(config)# interface G0/0
R1(config-if)# _____no shut_____

Network Address Translation Analysis

Consider the following network topology:



Q1) Write the command needed to define an access control list (use standard ACL number 77) to allow the LAN private IP address range 192.168.10.0/24 network to be translated.

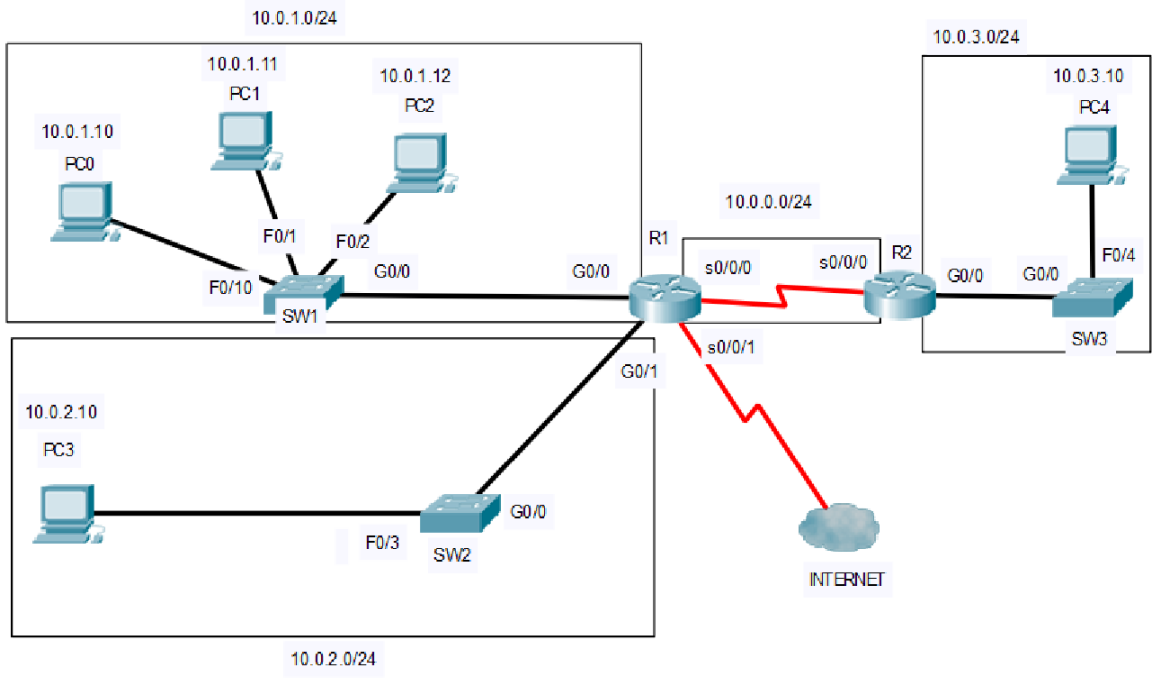
Q2) Complete the below command needed to define the pool (named POOL1) of the public IP address 209.165.200.225 shown in the topology.

Q3) Complete the below commands in order to define the NAT from the inside source list to the outside pool and to specify the interfaces. We are using NAT overload.

Edge router 1

Access-list 77 permit_____192.168.10.0 0.0.0.255_____
ip nat pool POOL1 209.165.200.225 209.165.200.225 netmask 255.255.255.224
ip nat inside source list 77 pool POOL1 overload
int s0/0/0
ip nat _____inside_____
int s0/0/2
ip nat _____outside_____

ACLs



Q1) Configure a numbered standard ACL which denies traffic from all hosts in the 10.0.1.0/24 subnet to 10.0.2.0/24. The PCs in the other subnets must maintain connectivity to each other. Write down the necessary commands:
access-list 10 deny 10.0.2.0 0.0.0.255----------
access-list 10 permit any----------

Q2) Configure a numbered standard ACL that prevents PC3 to send traffic to all external networks. Write down the necessary commands:
access-list 20 deny host 10.0.2.10----------
access-list 20 permit any ----------