

## Summer-22

Q<sub>1</sub>

(a) ① IPv4 Address : 19.253.99.49

Subnet Mask : 255.254.0.0

∴ Network address : 19.252.0.0 /15

∴ Broadcast address : 19.253.255.255 /15

① 15 .

① 19.252.0.2 /15 .

(b) Network address : 19.252.0.0 /15

$$1240 + 2 = 1242$$

$$510 + 2 = 512$$

$$3 + 2 = 5$$

$$2 + 2 = 4$$

$$2 + 2 = 4$$

		host	
1242	2048	11	3rd (8)
512	512	9	3rd (2)
5	8	3	4th (8)
4	4	2	4th (4)
4	4	2	4th (4)

(b) Network address : 19.252.0.0/15

$$1240 + 2 = 1242$$

$$510 + 3 = 513$$

$$3 + 2 = 5$$

$$2 + 2 = 4$$

$$2 + 2 = 4$$

		host	octate
1242	2048	11	3rd (8)
513	1024	10	3rd (4)
5	8	3	4th (8)
4	4	2	4th (4)
4	4	2	4th (4)

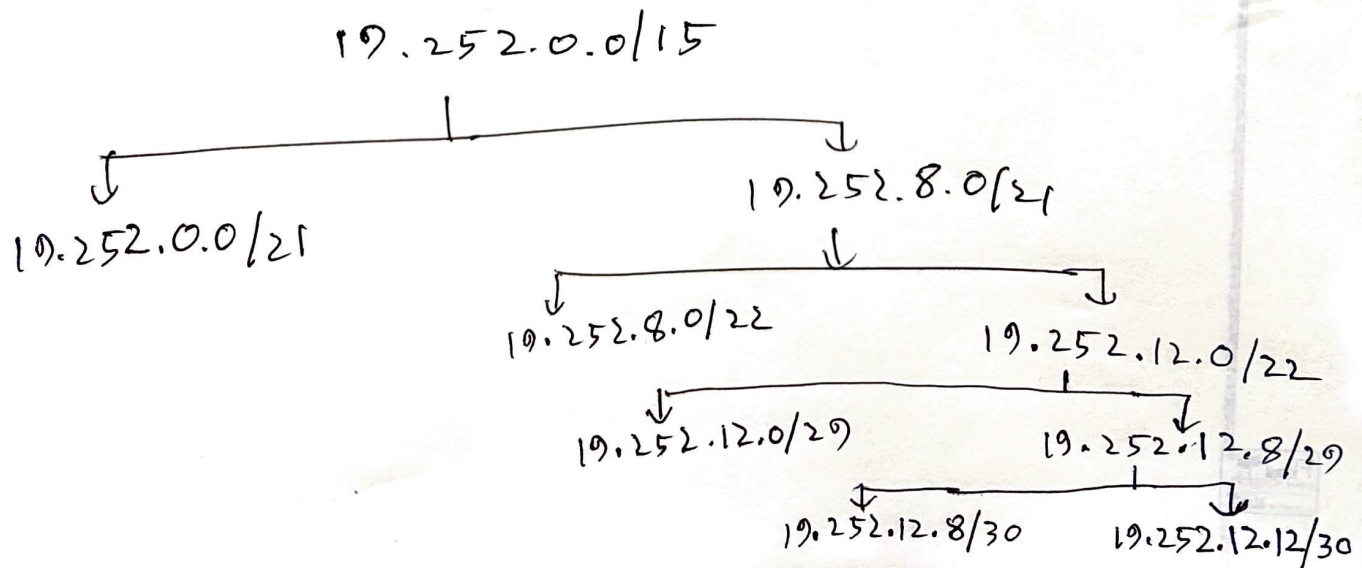
19.252.0.0/21

19.252.8.0/22

19.252.12.0/29

19.252.12.8/30

19.252.12.12/30



## Question-2

(a) Trace route is used to solve this problem.

Administrator can also inspect routing tables to find the error.

(b) not in syllabus

(c) Port forwarding

~~Q-3 is not in syllabus~~

~~Q-4~~  
~~(a)~~

(d) I) A Because DHCP assigns 210.10.10.12 to the default gateway but router's interface address is 210.10.10.15. Both addresses do not match.

B DNS server's IP → 210.10.10.10 is not excluded from the pool. So it can be assigned to any PC.

C No ip helper-address configured and  
int fa 0/0  
ip address 193.10.10.12 255.255.255.0 is not defined.

Ques-3 → not in syllabus

Question-4 :

(a) (i) The first command sets a default static route (0.0.0.0/0) so that all unknown destination traffic is forwarded through interface s0/0/0.

(ii) The second command sets a backup default route with a higher administrative distance, used only if the primary route fails.

(b) not in syllabus.

(c) R1: # en  
conf t  
ip route 167.18.10.0 255.255.255.240 192.168.10.2

R2: en  
conf t  
ip route 167.18.10.0 255.255.255.240 10.10.10.1

~~R3: en  
conf t  
ip route~~



Question-5

(a) Yes, there will be problem. IPv4 and IPv6 are not directly compatible.

sol<sup>n</sup>: Dual stack

(b) FF10:FF::AC10:0:0:E000

(c), (d) not in syllabus.

Question-6:

(a) 1) when the destination is in another network the source host ARPs for the default gateway's MAC address, not the destination host's MAC, and sends the packet to the router.

~~2)~~ 1) ARP frame (req from A):

source MAC: Host A's MAC address

Destination MAC: FF:FF:FF:FF:FF:FF

Ping frame:

source MAC: Host A's MAC address

Destination MAC: Default gateway's MAC address (router interface on Network A)

(b) i) The switches flood (broadcast) the frame out all ports except the incoming port to reach E.

(ii) S<sub>3</sub>:

MAC	Port	ttl
A	F0/0	60

(c) (i) First octet = E0

LSB = 0

∴ It is unicast MAC address

(ii) MAC address is associated with device, so wherever the device goes, the MAC address remains same.