

Summer-22

Q1

(a) ① IPV4 Address : 19.253.99.49

Subnet Mask : 255.254.0.0

∴ Network address : 19.253.0.0 /15

∴ Broadcast address : 19.253.255.255 /15

Host 11

15

Host 11

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	11	3rd (8)
	9	3rd (2)
	3	4th (8)
	2	4th (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

19.252.12.0/22

19.252.12.8/30

19.252.12.12/30

19.252.0.0/15

19.252.0.0/21

19.252.8.0/22

19.252.8.0/22

19.252.12.0/22

19.252.12.0/22

19.252.12.8/29

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) 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 fa0/0 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 $so/0/0$.

(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: ~~ip en conf t~~
~~ip route 167.18.10.0 255.255.255.240 192.168.10.2~~

R2: ~~ip en conf t~~
~~ip route 167.18.10.0 255.255.255.240 10.10.10.1~~

~~R3:~~ ~~ip en conf t~~
~~ip route~~

Question-5

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

Soln: Dual stack.

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

(c), (d) not in syllabus.

Question-6:

(a) i) 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.

ii) 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)

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

(ii) S₃:

MAC	Port	ttl
A	F0 0	60

(c) (i) First octate = E0

$$\text{LSB} = 0$$

∴ It is unicast

MAC address

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