

CSE421

Section 23

Riyajul Islam (22101222)

Assignment 2

Summer-24-B

Q1

I. 4094

II. 137.168.208.0/22 20

III.

Host	Bit	Prefix
2048	11	/21
512	9	/23
512	9	/23
4	2	/30
4	2	/30

(i) 137.168.208.0/21

(ii) 137.168.216.0/23

(iii) 137.168.218.0/23

(iv) 137.168.220.0/30

(v) 137.168.220.4/30

Q21

(I) Total II Fragment

(II)

$$10 \times 800 = 8k \text{ byte}$$

$$8240 - 8000 = 240 \text{ bytes remaining}$$

(III)

$$\text{7th Fragment offset} = 600$$

(IV) If the DF bit is set, the router drops the packet if router $MTU < \text{Packet}$ instead of fragmenting it and send an ICMP message to the sender.

Q101

(I) 98 → 0110 0010

↳ unicast MAC address

(II)

Mac address change because router works with layer 2 and it changes hop to hop for that reason.

Q51

(I) It's using recursive lookup. We can use exit interface to improve the speed

(II)

In router R1 and R2 should be configured to default static route.

Q71

The purpose of hop limit is to prevent packets from looping forever in the network. In IPv4 the field that does the same job is called (TTL)

Q81

It's called global routing protocol because each router maintains a complete view of the entire networking topology. It's efficient because it converges faster, avoids routing loops, and sends updates only when changes occur.

Q91

(I) R1 is not configured as DHCP relay. To solve the problem we've to configure DHCP relay on R1 using `ip helper-address DHCP-server-ip`

II) To renew a lease two step is followed.

① DHCPREQUEST

↳ sent by client (unicast)

↳ Req. for extension

② DHCPACK

↳ sent by DHCP server

↳ confirms and extend the lease

Q11]

The sender sends an ARP request for the default gateway, not the destination host. The IP address used for ARP is the default gateway's IP, obtained via DHCP or manual configuration.

Q61

(I) Receive and Forward: $S1 \rightarrow S2 \rightarrow S3$

Drop: R2

(II)

S1 table

MAC	Int.
D	S2
A	S0

S3 table

MAC	Int.
D	S1
A	S2

Q41

(I) $2001:0db8:0000:0000:0001:0000:0100:0000$

(II) $0000:0001:0000:0000:0000:0000:0000:0000$

(III) $2002:00cc:0000:0000:0000:db80:0000:0000$

Q2 / (I) The router decide based on the port number using its ~~PAT~~ PAT table

192.168.20.10 : 40540 → 139.200.200.100 : 50001

192.168.20.11 : 40540 → 139.200.200.100 : 50002

(II) Device A and B used private Ip address.

These are not routable on the internet. The single Ip used by the ISP is a public ip routable on the internet.