Name M. Muneezer Mehdi Roll No: 20f-0290

Lab # 8.

Q. No 1: (VLSM)

IP: 172.16.0.0.

Subnet Mask: 255.255.0.0.

- Department A:

200 hosts = 200+2 = 202 → network id.

200	202	2^8	255.255.0.00000000.

- we assign the IP address to Department A is (172.16.0.0) its subnet Mask is (255.255.0.0)

- Department B:

120 hosts = 120+2 = 122 → network id.

- for this we need to assign a new IP address because previous IP is fully used.

IP: 172.16.1.0

Subnet Mask: 255.255.255.0.

120	122	2^7	255.255.255.1000000

number of host id ← | → Subnet bits.

- Know we divide the IP address into 2 parts (Mean 128 or 128)

S1) - 172.16.1.0 ⋮ ⋮ 255.255.255.10000000
172.16.1.127 → 128.

Updated Mask: 255.255.255.128

- Department C:

90 host = 90+2 = 92 → network id.

- for this we assign the second part of above IP address. Means:

90	92	2^7	255.255.255.10000000

Subnet bits ↵

S1.2) - 172.16.1.128 ⋮ ⋮
172.16.1.255.

Mask : 255.255.255.128

- Department D:

60 host = 60+2 = 62 → network id

- for this we also assign a new IP address IP: 172.16.2.0.

Mask: 255.255.255.0.

60	62	2^6	255.255.255.11000000

Subnet host bits ↵

we divide this ip address into $(2^6 = 64)$ 4 parts.

S 2.1) - 172.16.2.0

⋮ ⋮ 255.255.255.11000000

172.16.2.63 ↳ 128+64

Subnet Mask : 255.255.255.192

- Department E.

40 hosts = 40+2 = 42 → Network id.

- for this we used the 2 part of above ip.

40	42	2^6	255.255.255.11000000

S 2.2) - 172.16.2.64

⋮ ⋮ 255.255.255.192

172.16.2.127

- Department F:

30 hosts = 30+2 = 32 → network id.

- for this we need to assign third part of ip (172.16.2.0)

30	32	2^5	255.255.255.11100000

- know we divide third part into ($2^5 = 32$) 2 parts.

S 2.3).

S 2.3.1).

172.16.2.128

⋮ ⋮ 255.255.255.111 00000

172.16.2.159 [→ 128+64+32

required: 255.255.255.224

- Department G:

20 host = 20+2 = 22 → network id.

for this we assign the 2nd part of (S 2.3)

20	22	2^5	255.255.255.11100000

S 2.3.2).

172.16.2.160

⋮ ⋮ 255.255.255.224.

172.16.2.191

- Department H:

10 host = 10+2 = 12 → network id

for this we used four part of.

ip (192.16.2.0)

16	12	2^4	255.255.255.11110000

S 2.4).

172.16.2.192.

⋮ ⋮

172.16.2.207

255.255.255.11110000

↳ 128+64+32+16

255.255.255.240

Q, No. 2: (FLSM)

- Department A

35 hosts = 35+2 = 37 → network id.

ip: 10.0.0.0

Mask: 255.0.0.0

35	37	2^6	255.255.255.11000000

Subnet bits ↑

Range S1).

10.0.0.0
⋮ ⋮
10.0.0.63

255.255.255.11000000.

↳ 128+64

subnet: 255.255.255.192.

- Department B:

25 hosts = 25+2 = 27 → network id.

25	27	2^6	255.255.255.11000000

S2).

10.0.0.64
⋮ ⋮
10.0.0.127.

255.255.255.11000000

255.255.255.192.

- Departmen C

15 host = 15+2 = 17 → network id.

185	17	2^6	255.255.255.11000000

S3).

10.0.0.128 ⋮ 10.0.0.191.

255.255.255.192.

- Departmen D

12 host = 12+2 = 14 → network id.

12	14	2^6	255.255.255.11000000

- S4).

10.0.0.192. ⋮ 10.0.0.256.

255.255.255.192.

- Departmen E

8 host = 8+2 = 10 → id.

8	10	2^6	255.255.255.11000000

- for this we assign a new ip address.

ip: 10.1.0.0

Mask: 255.255.0.0

S 5.1)

10.0.0.0

⋮ ⋮ 255.255.~~255~~.11000000

10.1.0.63

updated: 255.255.0.192.

- Department F

5 hosts = 5 + 2 = 7 → host id.

5	7	2^6	255.255.0.11000000

S 5.2)

10.1.0.64

⋮ ⋮ 255.255.20.11000000

10.1.0.127

updated: 255.255.0.192.