Date:

17k-3730
Eisha Tir Raazia
Sec C.

Question # 01

IP address: 192.168.2.0 — 255.255.255.0.
3 bits borow, subnet = ?

Borow = 3 bits.
no. of subnets = $2^n = 2^3 = 8$ → as by borowing 3 bits 8 subnets are possible.
no of hosts = $2^{8-3} = 2^5 = 32$.
usable host = 30.

Subnet mask = 225.225.225.0.
After borowing bits = 225.225.225.224/27.

* Range:
no. of hosts = 32. range will be 0–31.

192.168.2.0 → network host
192.168.2.1 → usable host 1
192.168.2.2 → " " 2
⋮ ⋮ " " ⋮
192.168.2.31 → " " 31

* Total Subnets:
[192.168.2.0 — 192.168.2.31] → Subnet 1
[192.168.2.32 — 192.168.2.63] → Subnet 2
[192.168.2.64 — 192.168.2.95] → Subnet 3
[192.168.2.96 — 192.168.2.127] → Subnet 4
[192.168.2.128 — 192.168.2.159] → Subnet 5
[192.168.2.160 — 192.168.2.191] → Subnet 6
[192.168.2.192 — 192.168.2.223] → Subnet 7
[192.168.2.224 — 192.168.2.255] → Subnet 8

Date:

Question # 02

IP : 192.16.10.22

Subnet : 255.255.255.252 → Class C.

252 → 1 1 1 1 1 1 | 0 0 → here 6 bits are active on.

22 → 0 0 0 1 0 1 | 1 0

0 0 0 1 0 1 | 0 0 → 20

0 0 0 1 0 1 | 1 1 → 23.

So,

network ID = 192.16.10.20

broadcast ID = 192.16.10.23

So Subnet = $2^6 = 64$.

Total host = $2^{8-6} = 2^2 = 4$

usable host = 4 - 2 = 2.

⇒ Subnet = 255.255.255.252/30

= 24 + 6

= 30 bits.

So, total subnets = 8

[192.16.10.0 — 192.16.10.3] Subnet 1

[192.16.10.4 — 192.16.10.7] Subnet 2

[192.16.10.8 — 192.16.10.11] Subnet 3

[192.16.10.252 — 192.16.10.255] Subnet 64

Date:

Question # 03

IP = 192.168.246.189/29

Subnet = 255.255.255.0/24 → class C.

⇒ 29 - 24 = 5 borrowed bits.

Subnets = 2^5 = 32.

Total hosts = $2^{8-5} = 2^3 = 8$.

Usable hosts = 8 - 2 = 6.

So, total subnets 8

192.168.246.0	—	192.168.246.7
192.168.246.8	—	192.168.246.15
192.168.246.16	—	192.168.246.23
⋮	⋮	⋮
192.168.246.240	—	192.168.246.247
192.168.246.248	—	192.168.246.255

∴ The IP will be found in subnet 24.

which is [192.168.246.184 — 192.168.246.191]

network ID would be: 192.168.246.184.

Question # 04

① 12.5.6.111/26

Subnet: 255.255.255.192.

1100 0000

→ Total hosts = 64. (0 — 63)

192 → 1100 0000

111 → 0110 1111

0100 0000

network ID = 12.5.6.64

Broadcast ID = 12.5.6.127.

Date:

② 100.20.200.200/25. → class A.

subnet mask = 255.255.255.128.

Total host = 128. (0—127)

200 → 11 00 1000

128 → 1000 0000

128 → 1000 0000

networkID = 100.20.200.128

BroadcastID = 100.20.200.255.

③ 216.0.0.189/30 → class C

Subnet = 255.255.255.252.

networkID = 216.0.0.188

broadcast = 216.0.0.191

252 → 1111 1100

189 → 1011 1101

188 → 1011 1100

④ 172.18.5.150/28. → class B.

Subnet = 255.255.255.240.

Thost = 16. (0—15)

240 → 1111 0000

150 → 1001 0110

144 → 10010000

networkID = 172.18.5.144

broadcastID = 172.18.5.159.

Date:

Question # 05

IP = 192.168.100.0/24.

Subnet mask = 255.255.255.0

for 50 hosts:

2^6 = 64 total host. (0–63)

Subnets = 2^2 = 4.

∴

network ID = 192.168.100.0/26

broadcast ID = 192.168.100.63/26.

Subnet mask = 255.255.255.192 → after borrowing 2 bits.

for 40 hosts:

2^6 = 64 total hosts. (0–63)

2^2 = 4 subnets.

∴

network ID = 192.168.100.64/26.

broadcast ID = 192.168.100.127/26

Subnet Mask = 255.255.255.192/26 → after borrowing 2 bits.

for 8 hosts:

2^4 = 16 total hosts. (0–15)

∴

network ID = 192.168.100.64/28

Broadcast ID = 192.168.100.79/28

64 + 15 = 79.

Subnet mask = 255.255.255.240

Date:

for 6 hosts =

$2^3 = 8$ total hosts (0–7)

∴

netID = 192.168.100.64/28

b.ID = 192.168.100.79/28

Subnet Mask = 255.255.255.240

for 4 hosts :

$2^3 = 8$

∴

netID = 192.168.100.88/29

b.ID = 192.168.100.95/29

Subnet Mask = 255.255.255.248

for 40 hosts

$2^6 = 64$ total hosts (0 – 63)

$2^2 = 4$ subnets

2 borrow bits.

∴ netID = 192.168.100.96/26

b.ID = 192.168.100.159/26.

Subnet Mask = 255.255.255.192

for 22 hosts

$2^5 = 32$.

∴ 3 borrow bits.

netID = 192.168.100.160/27

b.ID = 192.168.100.191/27.

Subnet Mask = ~~192.168.100~~ 255.255.255.224

Date:

for 10 hosts :

$2^4 = 16$ total host (0 — 15)

so

netID = 192.168.100.192/28

$\Rightarrow 192 + 15 = 207$

b.ID = 192.168.100.207/28

Subnet Mask = 255.285.255.240

Question #06

IP = 180.10.0.0/16

$2^{Pow} = Ans$

$\log_2 Ans = Pow$

for 9000 hosts

Allocated size = 16382.

netID = 180.10.0.0/18

B.ID = 180.10.63.255/18

SubnetMask = 258.255.192.0

for 5000 hosts :

Allocated Size = 8190

net ID = 180.10.64.0/19

B. ID = 180.10.95.255/19

SubnetID = 255.255.224.0

for 1500 hosts

Allocated Size = 2046

net. ID = 180.10.96.0/21

B. ID = 180.10.103.225/21

SubnetID = 255.255.248.0

Date:

for 1000 hosts

Allocated Size = 1022

net · ID = 180.10.104.0/22

B.ID = 180.10.107.255/22

Subnet Mask = 255.255.252.0

for 1000 hosts

Allocated Size =

net. ID = 180.10.108.0/22

B.ID = 180.10.111.255/22

Subnet Mask = 255.255.252.0