③ (a)

190.100.0.0/16

Group 1 → 64 customers → 256 address

$2^8 = 256$

∴ no. of 0's = 8

∴ no. of 1's = 32 − 8 = 24

Sub block 1: 190.100.0.0/24 – 190.100.0.255/24

Sub block 2 : 190.100.1.0/24 – 190.100.1.255/24

~~Sub block 3:~~

Sub block 3 : 190.100.2.0/24 – 190.100.2.255/24

Sub block 4 : 190.100.3.0/24 – 190.100.3.255/24

⋮

Sub block 64 : 190.100.63.0/24 – 190.100.63.255/24

Group 2 → 128 customers → 128 address

2^7

∴ no. of 0's = 7

∴ no. of 1's = 25

$16+7 = 23$

Sub block 1: 190.100.64.0/25 – 190.100.64.127/25

Sub block 2 : 190.100.64.128/25 – 190.100.64.255/25

Sub block 3 : 190.100.65.0/25 – 190.100.65.127/25

Sub block 4 : 190.100.65.128/25 – 190.100.65.255/25

⋮

Sub block 128 : 190.100.127.128/25 – 190.100.127.255/25

Group 3 → 128 customers → 64 address
$\downarrow 2^6$

∴ no. of 0's = 6

∴ no. of 1's = 32 − 6 = 26

Subnet 1 : 190.100.128.0/26 − 190.100.128.63/26

Subnet 2 : 190.100.128.64/26 − 190.100.128.127/26

⋮

subnet 128 : 190.100.159.192/26 − 190.100.159.255/26

G1 ⇒ 64 × 256 = 16,384

128 × 128 = 16,384

128 × 64 = 8112

40,960

no. of granted address ISP = 65,536

allocated address = 40,960

24579

Remaining address = 24579