**Number of Hosts #200:**

Here, 256 = 2^8

So, our subnet mask’s length will be 9 bits long.

Thus, our slash notation will be n = (32-8) = /24

Network Address: 172.19.0.0/24

Mask: 11111111 11111111 11111111 00000000 or 255.255.255.0

Last Address: first address + complement of mask = (172.19.0.0 + 0.0.0.255) = 172.19.0.255/24

Address Range: 172.19.0.0/24 to 172.19.0.255/24

**Number of Hosts #100:**

Here, 128 = 2^7

Thus, our slash notation will be n = (32-7) = /25

Network Address: 172.19.1.0/25

Mask: 11111111 11111111 11111111 10000000 or 255.255.255.80

Last Address: first address + complement of mask = (172.19.1.0 + 0.0.0.127) = 172.19.0.127/24

Address Range: 172.19.1.0/25 to 172.19.1.127/24

**Number of Hosts #30:**

Here, 32 = 2^5

Thus, our slash notation will be n = (32-5) = /27

Network Address: 172.19.2.0/27

Mask: 11111111 11111111 11111111 11100000 or 255.255.255.224

Last Address: first address + complement of mask = (172.19.2.0 + 0.0.0.31) = 172.19.2.31/27

Address Range: 172.19.2.0/27 to 172.19.2.31/27

**Number of Hosts #14:**

Here, 16 = 2^4

Thus, our slash notation will be n = (32-4) = /28

Network Address: 172.19.3.0/28

Mask: 11111111 11111111 11111111 11110000 or 255.255.255.240

Last Address: first address + complement of mask = (172.19.3.0 +0.0.0.15) =

172.19.3.15/28

Address Range: 172.19.3.0/28 to 172.19.3.15/28

**Network between router 0 and router 1:**

Here, 8 = 2^3

Thus, our slash notation will be n = (32-3) = /29

Network Address: 172.19.3.16/29

Mask: 11111111 11111111 11111111 11111000 or 255.255.255.248

Last Address: first address + complement of mask = (172.19.3.16+0.0.0.7) = 172.19.3.23/29

Address Range: 172.19.3.16/29 to 172.19.3.23/29

**Network between router 1 and router 2:**

Here, 8 = 2^3

Thus, our slash notation will be n = (32-3) = /29

Network Address: 172.19.3.24/29

Mask: 11111111 11111111 11111111 11111000 or 255.255.255.248

Last Address: first address + complement of mask = (172.19.3.24+0.0.0.7) = 172.19.3.31/29

Address Range: 172.19.3.24/29 to 172.19.3.31/29

**Network between router 1 and router 4:**

Here, 8 = 2^3

Thus, our slash notation will be n = (32-3) = /29

Network Address: 172.19.3.32/29

Mask: 11111111 11111111 11111111 11111000 or 255.255.255.248

Last Address: first address + complement of mask = (172.19.3.32+0.0.0.7) = 172.19.3.38/29

Address Range: 172.19.3.32/29 to 172.19.3.38/29

**Network between router 2 and router 4:**

Here, 8 = 2^3

Thus, our slash notation will be n = (32-3) = /29

Network Address: 172.19.3.39/29

Mask: 11111111 11111111 11111111 11111000 or 255.255.255.248

Last Address: first address + complement of mask = (172.19.3.39+0.0.0.7) = 172.19.3.46/29

Address Range: 172.19.3.39/29 to 172.19.3.46/29

**Network between router 0 and router 2:**

Here, 8 = 2^3

Thus, our slash notation will be n = (32-3) = /29

Network Address: 172.19.3.47/29

Mask: 11111111 11111111 11111111 11111000 or 255.255.255.248

Last Address: first address + complement of mask = (172.19.3.47 +0.0.0.7) = 172.19.3.54/29

Address Range: 172.19.3.47/29 to 172.19.3.54/29

**PC0: [belongs to Network Address: : 172.19.0.0/24]**

IP Address: 172.19.0.2/24

Mask: 255.255.255.0

Default gateway: : 172.19.0.1/24

**PC1: [belongs to Network Address:** 172.19.1.0/25**]**

IP Address: 172.19.1.2/25

Mask: 255.255.255.80

Default gateway: 172.19.1.1/25

**PC2: [belongs to Network Address: 172.19.3.0/28 ]**

IP Address: 172.19.3.2/28

Mask: 255.255.255.240

Default gateway: 172.19.3.1/28

**PC3: [belongs to Network Address:** 172.19.2.0/27**]**

Address: 172.19.2.2/27

Mask: 255.255.255.224

Default gateway: 172.19.2.1/27

**R1:**

Router#config t

Router(config)#no ip route 172.19.3.16 255.255.255.248 172.19.3.23

Router(config)#router rip

Router(config-router)#network 172.19.3.16

Router(config-router)#exit

Router(config)#exit