ASSIGNMENT

COURSE	Networking Fundamentals	**ASSIGNMENT NO**	7
MODULE	subnetting	**ASSIGNMENT DATE**	27/08/2024
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Q1. Find the following

- Subnet the IP belongs to
- 1st Host in that Network
- Last Host in that Network
- Broadcast Address of that Network

- 192.168.224.29/19
- 172.6.248.156/21
- 209.28.34.76/25
- 10.17.0.106/14

Ans:

"Answer in points showing the maths to arrive the result"

① 192.168.224.29/19

N/w = 19

Host = 32 − 19 = 13

N/w

192.168.224

11000000.10101000.11100000

11111111.11111111.11100000

⋮

11000000 · 10101000 · 11111111 ·

Host

29

00011101

00000000 → 192.168.224.0/19

+1

00000001 → 192.168.224.1/19

+1

00000010

⋮

11111110 → 192.168.255.255

−1

11111110 → 192.168.255.254

1) S/b :- 192.168.224.0/19

2) First host :- 192.168.224.1

3) Last Host :- 192.168.255.254

4) Boadcast :- 192.168.255.255

② 172.6.248.156/21

N/w :- 21

Host :- 32 − 21 = 11 bits

N/w

172.6.248

10101100.00000110.11111000

10101100.00000110.11111000

⋮

10101100.00000110.11111111

10101100.00000110.11111111

① S/b :- 172.6.248.0/21

② First H/t :- 172.6.248.1

③ Last H/t :- 172.6.255.254

④ B/c :- 172.6.255.255

Host

156

10011100

00000000 → 172.6.248.0/21

+1

00000001

+1

00000010

⋮

11111111 → 172.6.255.255

−1

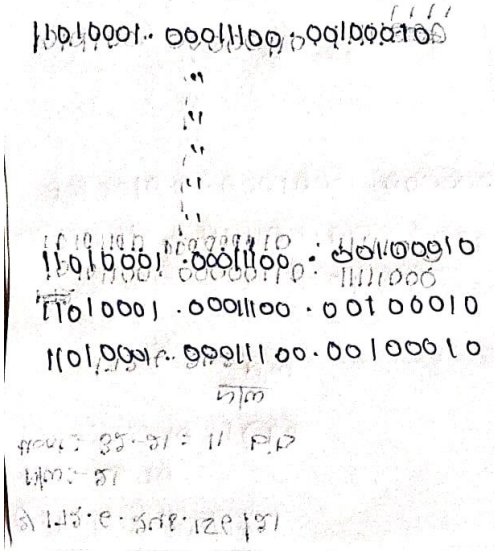
11111110 → 172.6.255.254

③ 209.28.39.76/25

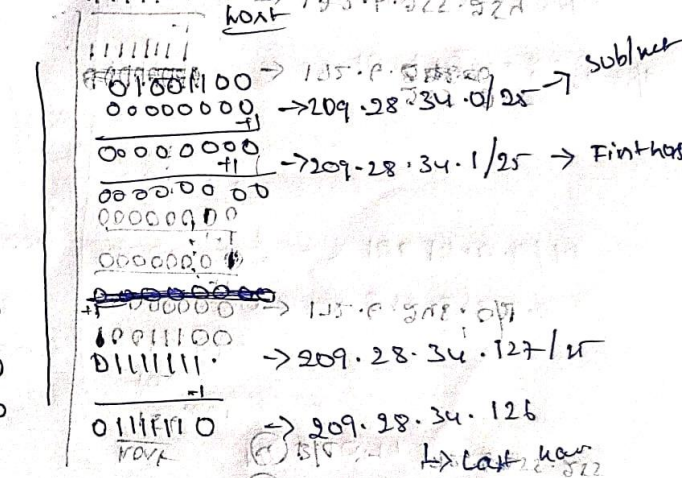
N/w = 25

Host = 32-25 = 7

N/w



Host

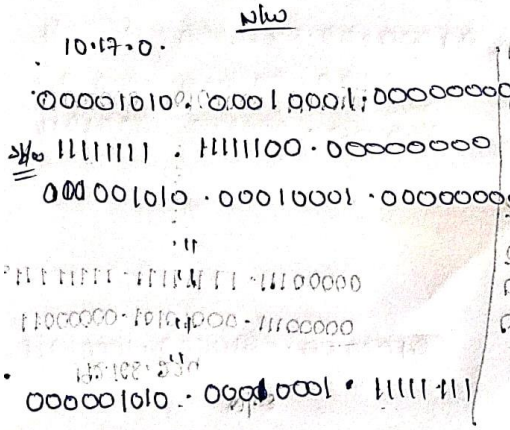


④ 10.17.0.106/14

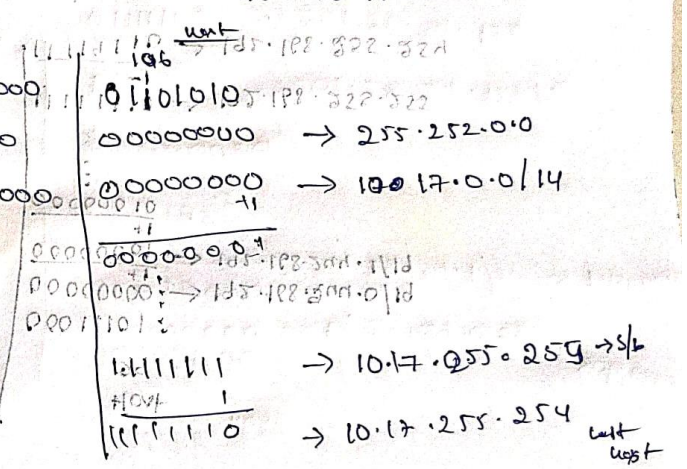
N/w: 14

Host: 32-14 = 18 bits

N/w

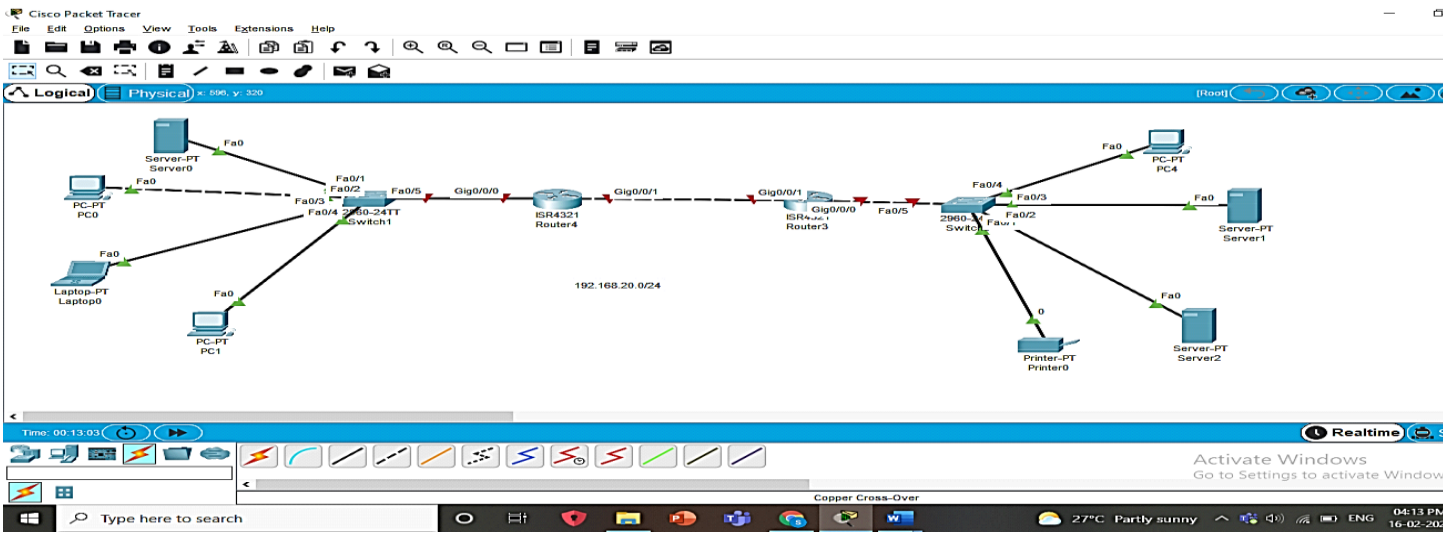


Host

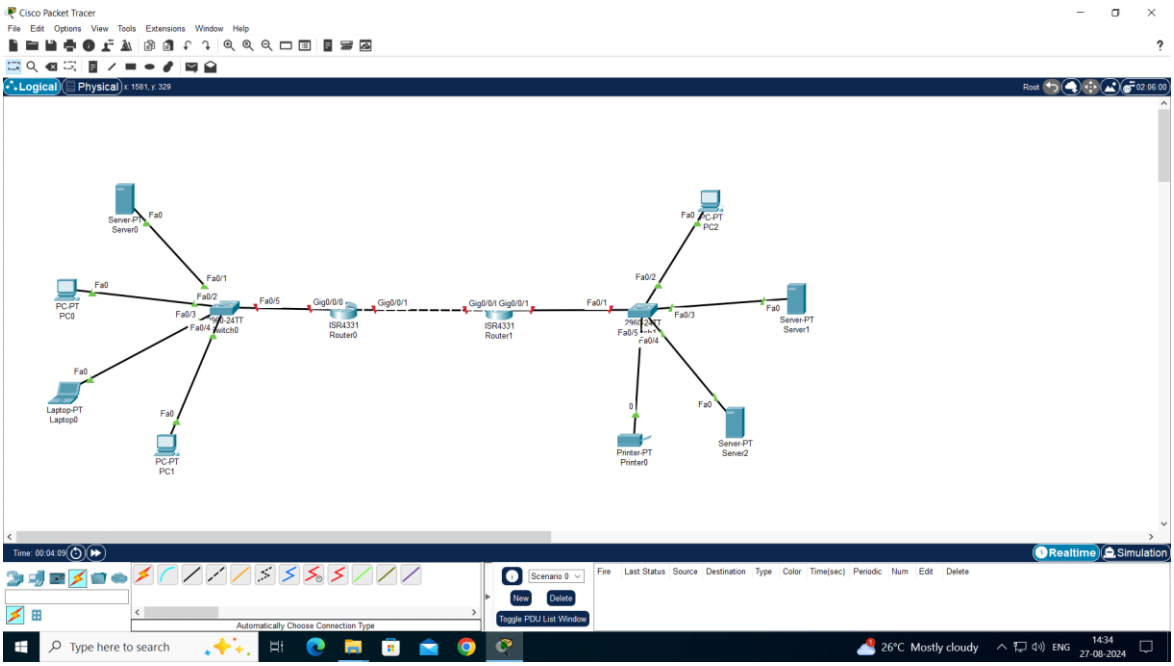


Q2. A new start-up upfront.com is establishing the network, you are given additional responsibility of helping the network administrator to subnet the network and assign the IP's to their devices. You have been given the Network 192.168.20.0/24 Network, assign the subnet IP's to each LAN.

Also, keep two subnets reserved for future expansion.



- **<u>Draw the Network and show the topology in Packet Tracer</u>**



- **<u>Calculate the total subnet required, show the maths on how many networks required and host ID's</u>**

N/w portion → 24

Host → 32 - 24 = 8

original SM :- 11111111.11111111.11111111.00000000

N/w

255. 255. 255. 0

192.168.20.0/24 → 01000000.10101000.00010100.00000000

11111111 11111111 11111111 00000000

192.168.20.0

255.255.255.0

Subnet cal:- 2(LAN) + 2 (Reserved for future) = 4

$2^n \Rightarrow 2^2 = 4$ Subnet

New subnet mask

: 11111111.11111111.11111111.11 000000

255. 255. 255. 192/26

192.168.20.0/26 → 01000000.10101000.00010100.00 000000

N/W

First host → 01000000.10101000.00010100.00 000001

0's bit

192.168.20.0

11111

N/W

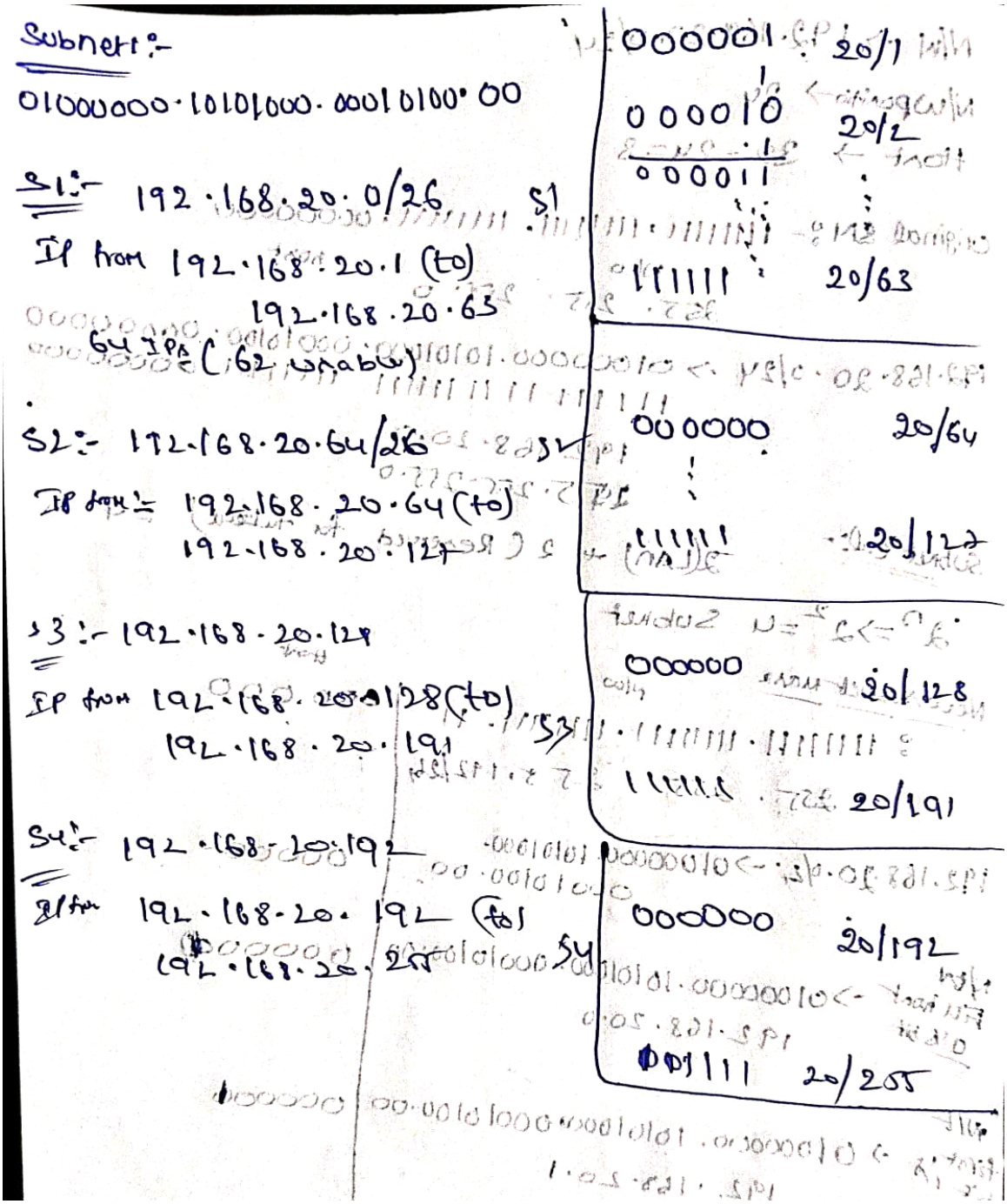
first → 01000000.10101000.00010100.00 000001

192.168.20.1

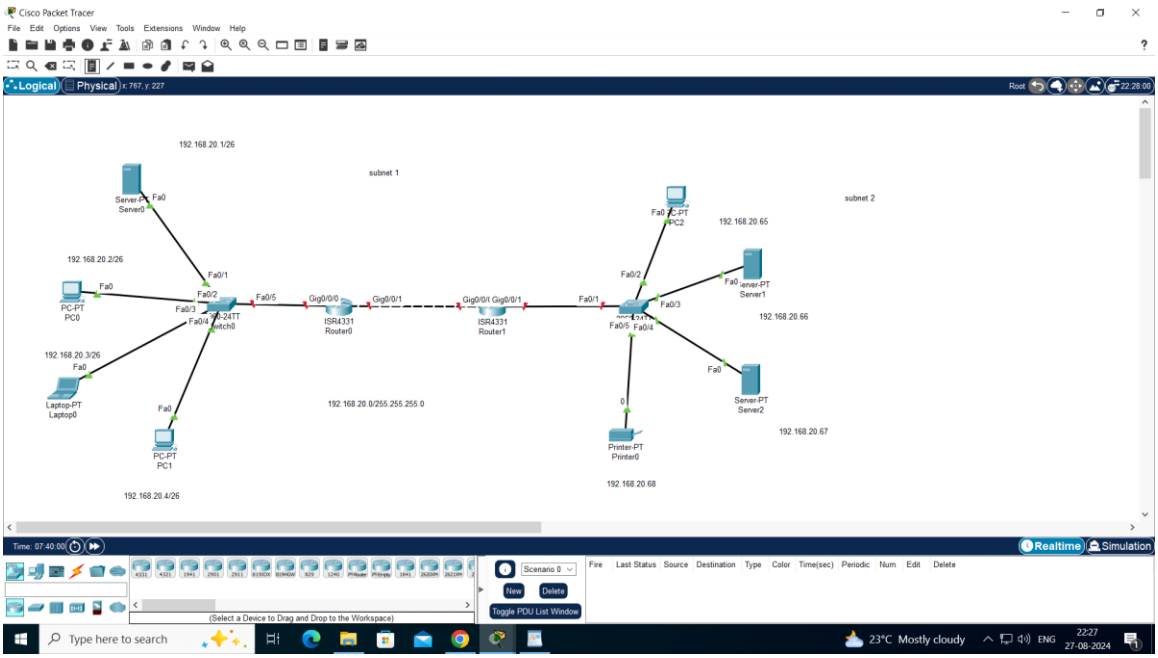
last host

01000000.10101000.00010100.00 111110

192.168.20.254



- **<u>Configure the IP's on packet tracer</u>**


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical x: 767, y: 227
Root 22:28:09
192.168.20.1/26
subnet 1
Server-PT Server0
Fa0
192.168.20.2/26
PC-PT PC0
Fa0/1
Fa0/2
Fa0/3
Fa0/4
Fa0/5
2960-24TT Switch0
Gig0/0/0
Gig0/0/1
ISR4331 Router0
Gig0/0/0
Gig0/0/1
ISR4331 Router1
Fa0/1
Fa0/2
Fa0/3
Fa0/4
Fa0/5
PC-PT PC2
192.168.20.65
subnet 2
Server-PT Server1
192.168.20.66
192.168.20.3/26
Laptop-PT Laptop0
192.168.20.0/255.255.255.0
PC-PT PC1
192.168.20.4/26
Server-PT Server2
192.168.20.67
Printer-PT Printer0
192.168.20.68
Time: 07:40:00
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
Type here to search
23°C Mostly cloudy
ENG
22:27
27-08-2024