

PRACTICAL NO. 3.

a) IP version for Addressing and subnetting.

→ Determine the following information about the IP address.

a) Network address.

b) Network broadcast address.

c) Total no. of hosts.

IP Address :- 192.168.109.50

Network mask :- 255.255.255.0

a) Network address.

It is the 1st address which can be calculated by doing Bitwise AND operation between IP address & Network mask address.

First Address = (IP Add) AND (Network mask)

192	168	109	50
11000000	10101000	01101101	00110010

AND

11111111	11111111	11111111	00000000
11000000	10101000	01101101	00000000

Network Address = 192.168.109.0

b) Network broadcast Address
 Network broadcast Address as the last address which is calculated by doing bitwise OR operation between IP address and Compliment of network mask address.

$$\text{Last address} = (\text{IP Add}) \text{ OR } (\text{NOT} [\text{Network mask Add}])$$

192 . 168 . 109 . 50
 11000000 10101000 1101101 110010

255 . 255 . 255 . 0

NOT(11111111 11111111 11111111 00000000)
 11000000 . 10101000 01101101 11111111

$$\text{Last Address} = 192.168.109.255$$

c) Total No. of host.

$$\text{Bits} = \text{Total no. of bits} - \text{Total no. of 1's in the network}$$

$$= 32 - 24$$

$$= 8 \text{ bit.}$$

b) Find network address and network class type.

i) Class A.

a) Identify the type of network and find the network address of the IP address 24.68.9.2.

Step 1:- Examine the first byte, it's 24
so it's between 1 to 126 range.

Step 2:- So, It is class A network layer.

Step 3:- So, first byte defines the Net id.

Step 4:- So, we can replacing host id with 0's.

24.86.9.2



Replace by 0's.

Network add → 24.0.0.0

Step 5:- So, Net id is 24.0.0.0

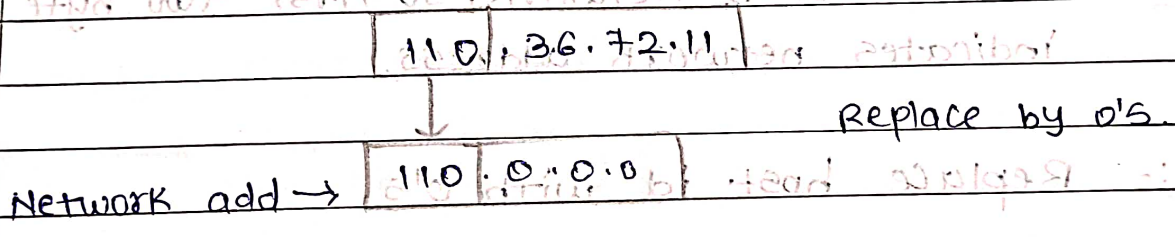
b) Identify the type of network and find the network address of the Ip address 110.36.72.11

Step 1:- Examine the first byte it's 110.
so, it's between 1 to 126 range.

Step 2:- So, It is class A network layer.

Step 3:- So, first byte defines the Net id.

Step 4:- So, we can replacing host id with 0's.



Step 5:- So, Net id is 110.0.0.0

2] Class B

a) For the address 132.127.71.10 find out the type of network and network address.

Step 1:- Examine first byte, it's 132.

Step 2:- It is between range 128 to 191.

Step 3:- So, It is Class B network layer.

Step 4:- It's Class B network, so first two byte indicates network address.

Step 5:- Replace host id with 0's.

132.127.71.10



132.127.0.0

Replace by 0's.

Step 6:- So, Net id is 132.127.0.0.

b) For the address 150.69.11.19 find out the type of network and network address.

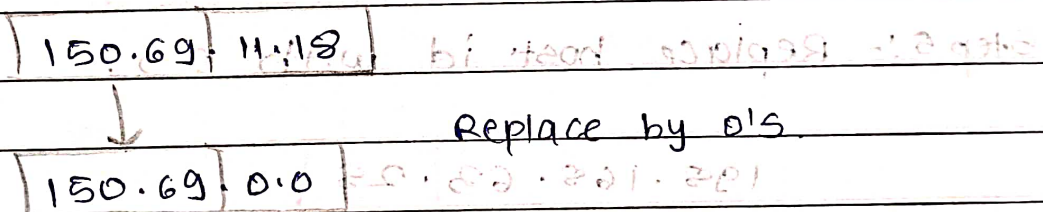
→ Step 1:- Examine first byte it's 150.

Step 2:- It is between range 127 to 191.

Step 3:- So, It is class B network.

Step 4:- It's class B network, so first two byte indicates network address.

Step 5:- Replace host id with 0's.



Step 6:- So, Network id is 150.69.0.0.

3] class C

a] For the address 198.168.63.28 find out the type of network and network address.

→ step 1:- Examine first bit, it's 198.

step 2:- It is between range 192 to 255.

step 3:- So, it is Class C network.

step 4:- It's class C network, so first three byte indicates network address.

step 5:- Replace host id with '0's.

198	168	63	28	0	0	0
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Replace by 0

198	168	63	0			
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step 6:- So, Network id is 198.168.63.0

b) For the address 201.33.177.54 find out the type of network and network address.

Step 1:- Examine first byte it's 201.

Step 2:- It is between range 192 to 255.

Step 3:- So, it is class C network.

Step 4:- It's class C network, so first three byte indicates network address.

Step 5:- Replace host id with 0's.

201.33.177.54

201.33.177.0

Step 6:- So, Network id is 201.33.177.0