

# Computer Networks

## Assignment -1

MC308

Ans 1(i) we convert down the given address 192.0.0.25 from dotted decimal notation to binary notation

192.0.0.25  
1100 0000 0000 0000 0000 0000 0001 1001

classic IP address  $\Rightarrow$  the first 3 bytes are the network id  $\Rightarrow$  the last byte is the host id.

192.0.0  $\rightarrow$  network id

25  $\rightarrow$  host id.

Clearly all the bits of host are neither 0 nor 1.

$\therefore$  the given IP address is a Normal IP address.

(ii) 139.255.0.0

1000 1011 1111 1111 0000 0000 0000 0000

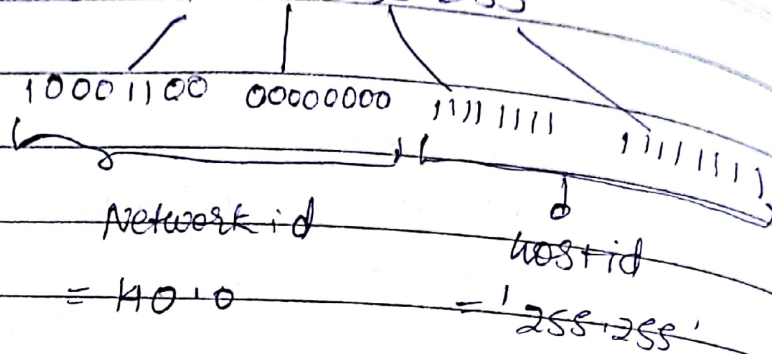
it is a class B address  $\Rightarrow$  2 bytes for Network id & 2 bytes for host id.

Network id = 139.255

host id = 0.0

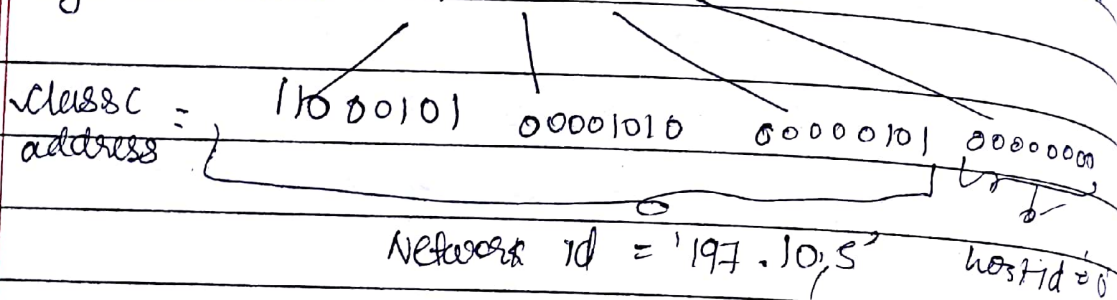
Clearly since all bits of host id are zero. Thus it is a network address.

(iii) given IP address = 140.0.255.255



clearly all the bits of the host id are 1. Thus the given IP address is broadcasting address.

(iv) given address = 197.10.5.0



clearly all bits of IP address are 0, the given IP address is a network address.

Ans: To determine the network address for a given IP address we need to perform a logical AND with the default mask.

we first write observe from the IP address that it lies within the range of 0.0.0.0 to 127.255.255.255.  $\therefore$  it belongs to class A (i.e. 1 byte for network id & 3 bytes for host id).

To create a default mask we set all bits of network id to 1 and all host id to 0.



Default mask =  $\underbrace{11111111}_{255} \cdot \underbrace{00000000}_0 \cdot \underbrace{00000000}_0 \cdot \underbrace{00000000}_0$

Now we perform logical AND operation.

$(65 \cdot 100 \cdot 200 \cdot 250) \& (255 \cdot 0 \cdot 0 \cdot 0)$

$01000001 \ 01100100 \ 11001000 \ 11110110$

$\& \ 00000000 \ 00000000 \ 00000000 \ 00000000$

$01000001 \ 00000000 \ 00000000 \ 00000000$

Network id is  $65 \cdot 0 \cdot 0 \cdot 0$

Ans 3 To find network broadcast address of  $180 \cdot 75 \cdot 99 \cdot 101$

$180 \cdot 75 \cdot 99 \cdot 101$

$10110100 \ 01001010 \ 01100011 \ 01100101$

Network id

Host id

$180 \cdot 75$

$99 \cdot 101$

To find out the broadcast address we connect the all bits of host id to 1

Host id =  $\underbrace{11111111}_{255} \cdot \underbrace{11111111}_{255} = '255 \cdot 255'$

is broadcast address =  $180 \cdot 75 \cdot 255 \cdot 255$

Ans 4. no. of addresses in the given block =  $2^{32-20} = 2^{12}$   
= 4096

and default mask has 20 bits as 1 and rest as 0

Default mask = 11111111 11111111 11110000 00000000

the network address for the given address is IP's  
default mask

IP = 00101110 . 00111011 . 10011111 . 10110011

Default mask = 11111111 . 11111111 . 11110000 . 00000000

they can be 1 more  
larger

The network address is 46.59.149.0

the last address is

00101110 . 00111011 . 10011111 . 11111111

46.59.149.255

∴ the range of the given block is from 46.59.149.0 to  
46.59.149.255 (4096 addresses)