

Practical Assignment - 10

Page No. : 01

Date : _____

1. Find default subnet masks, network bits, host bits, host per subnet, no. of subnets, subnet number, 1st valid IP address, last valid IP address and broadcast address.

i) 8.1.4.5/16

Class A

Subnet mask: 255.255.0.0

Network bits: 16, Host bits: 16

Host per subnet: $2^{16} - 2 = 65534$

No. of subnets within the classful: $2^{16-8} = 256$

Subnet number: 8.1.0.0

First usable: 8.1.0.1

Last usable: 8.1.255.254

Broadcast address: 8.1.255.255

Network address: 8.1.0.0

ii) 130.4.102.1/24

Class B

Subnet mask: 255.255.255.0

Network bits: 24, Host bits: 8

Host per subnet: $2^8 - 2 = 254$

No. of subnets within the classful: $2^{24-16} = 256$

Subnet number: 130.4.102.0

First usable: 130.4.102.1

Last usable: 130.4.102.254

Broadcast address: 130.4.102.255

iii) 130.4.102.1/22

Class B

Subnet mask : 255.255.255.0

Network bit: 22, Host bits: 10

Host per subnet: $2^{10} - 2 = 1022$ No. of subnet within the class: $2^{22-16} = 64$

Subnet number: 130.4.100.0

First usable: 130.4.100.1

Last usable: 130.4.103.254

Broadcast address: 130.4.103.255

iv) 199.1.1.100/27

Class C

Subnet mask: 255.255.255.224

Network bits: 27, Host bits: 5

Host per subnet = $2^5 - 2 = 30$ No. of subnets within the class: $2^{27-24} = 8$

Subnet number: 199.1.1.96

First usable: 199.1.1.97

Last usable: 199.1.1.126

Broadcast address: 199.1.1.127

2. A host in a class C network has been assigned an IP 192.168.17.9. Find the number of addresses in the network block, the first address and the last address.

Block : 24 = 255.255.255.0

Number of addresses in the block: $2^{32-24} = 256$

First address: 192.168.17.0

First usable address: 192.168.17.1

Last address: 192.168.17.255

Last usable address: 192.168.17.254

3. An address in a block is given as 185.28.17.9. Find the no. of addresses in the block, the first address and the last address.

Block : 16 = 255.255.0.0

Number of addresses in the block: $2^{32-16} = 65536$

First address: 185.28.0.1

Last address: 185.28.255.255

First usable address: 185.28.0.1

Last usable address: 185.28.255.254

4. A block of addresses is granted to small organization that one of the address is 205.16.37.39/28. What is the first address, last address, number of address in.

Subnet mask : 255.255.255.240

Block size : $2^{32-28} = 16$

Fourth octet block : 16 \Rightarrow cover 32-47

First address : 205.16.37.32

First usable address : 205.16.37.33

Last address : 205.16.37.47

Last usable address : 205.16.37.46

Number of addresses in the block : 16

5. Subnet the IP address 216.21.3.0 into 30 hosts in each subnet. Find class, Default Mask, Subnet mask, Bit borrowed, New subnet mask, No. of Host & subnet network ranges (subnets).

Class : C

Default Subnet mask : 255.255.255.0

Bits borrowed : 3

New subnet mask : 255.255.255.224

Number of subnets : $2^3 = 8$

Host per subnet : $2^5 - 2 = 30$

Network Range:

- 1) 216.21.5.0 - 216.21.5.31
- 2) 216.21.5.32 - 216.21.5.63
- 3) 216.21.5.64 - 216.21.5.95
- 4) 216.21.5.96 - 216.21.5.127
- 5) 216.21.5.128 - 216.21.5.159
- 6) 216.21.5.160 - 216.21.5.191
- 7) 216.21.5.192 - 216.21.5.223
- 8) 216.21.5.224 - 216.21.5.255

6. Subnets IP address 192.10.20.0 into 52 hosts in each subnet. Find class, Default mask, Bit borrowed, New Subnet mask, No. of subnets & subnet, Network Ranges (Subnets).

Class C

Bit Borrowed = 2

Net subnet mask : 255.255.255.192

No. of subnet : $2^2 = 4$

Host per subnet : 62

Network ranges:

- 1) 192.10.20.0 - 192.10.20.63
- 2) 192.10.20.64 - 192.10.20.127
- 3) 192.10.20.128 - 192.10.20.191
- 4) 192.10.20.192 - 192.10.20.255

7.) Determining the subnet mask for device A and B:

a.) Device A: 172.16.17.30/20
Third - octet block size: 16
Network: 172.16.16.0
Usable : 172.16.16.1 - 172.16.31.254
Broadcast: 172.16.31.255

b.) Device B: 172.16.28.15/20

Same block : 16-31
Network : 172.16.16.0
Usable : 172.16.16.1 - 172.16.31.254
Broadcast: 172.16.31.255