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Session: 2021-22
Course Code: CSE314

Problem - 01

Given: Host IP : 192.168.200.139

original subnet mask : 255.255.255.0

New subnet mask : 255.255.255.224

Solution:

① No. of subnet bits; = New subnet bits − Original subnet bits

$= (27 - 24)$

$= 3$

② Number of subnet created: $2^3 = 8$

③ Number of host bits per subnet: $32 - 27 = 5$

④ " " " " : $2^5 - 2 = 30$

⑤ Network address of this subnet:

~~192.168.200.139~~

192.168.200.139 : 11000000.10101000.11001000.10001011

255.255.255.224 : 11111111.11111111.11111111.11100000

network address : 192.168.200.128

⑥ IPV4 1st host : 192.168.200.129

⑦ " last " : 192.168.200.158

⑧ " broadcast : 192.168.200.159

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Problem: 02

Host: 10.101.99.228
Subnet: 255.0.0.0
New Subnet: 255.255.128.0

① No. of subnet bits: 17 − 8 = 9
② No. of " created: 2^9 = 512
③ Host bits per subnet: 32 − 17 = 15
④ No. of hosts : $2^{15} - 2 = 32766$
⑤ Network address : 10.101.0.0
⑥ First hosts : 10.101.0.1
⑦ Last host : 10.101.127.254
⑧ Broadcast : 10.101.127.255

Problem − 03

Host: 172.22.32.12
Subnet: 255.255.0.0
New " : 255.255.224.0

① No. of subnet bits = 19 − 16 = 3
② No. of " created = 2^3 or 8
③ Host bits per subnet: 32 − 19 = 13
④ No. of hosts : $2^{13} - 2 = 8190$
⑤ Network add. : 172.22.32.0
⑥ first host : 172.22.32.1
⑦ last host : 172.22.63.254
⑧ Broadcast add. : 172.32.63.255

172.22.00100000.00000001
11111.111111
63.255

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Problem - 04

Host : 192.168.1.245
subnet mask : 255.255.255.0
New " " : 255.255.255.252

① Number of subnet bits : 6
② " " of " created : $2^6 = 64$
③ " of host bit persubnet : $32 - 30 = 2$
④ " " " " " " : $2^2 - 2 = 2$
⑤ Network addr. : 192.168.1.244
⑥ First host : 192.168.1.245
⑦ Last host : 192.168.1.246
⑧ Broadcast addr. : 192.168.1.247

Last host
11110101
11111100
11110100
244

Problem - 05

Host : 128.107.0.55
original subnet mask : 255.255.0.0
New subnet mask : 255.255.255.0

① Number of subnet bits : 8
② " " " created : $2^8 = 256$
③ " of host bits : 8
④ " " " per subnet : $2^8 - 2 = 254$
⑤ Network addr. : 128.107.0.0
⑥ First host : 128.107.0.1
⑦ Last host : 128.107.0.254
⑧ Broadcast addr. : 128.107.0.255

Problem – 06

Host : 192.135.250.180

Original Subnet mask : 255.255.255.0

New subnet mask : 255.255.255.248

① number of subnet bits : 5

② Number of " created : $2^5 = 32$

③ " " host bits : 3

④ " " " per subnet : $2^3 - 2 = 6$

⑤ Network addr. of this subnet : 192.135.250.176

⑥ First host : 192.135.250.177

⑦ Last host : 192.135.250.182

⑧ Broadcast addr : 192.135.250.183

Last 8 bits

128 64 16 8

10101010

11111000

10101000

176