

### Lab Exercise 4: Subnet Calculations

#### Problem 1:

Network address: 204.17.5.0/24

# of borrowed bits: 3

# of subnets:  $2^3 = 8$

11111111.11111111.11111111.11100000

New Subnet Mask: 255.255.255.224/27

Number of hosts =  $2^5 = 32$  (-2 marker and broadcast) = 30

Network Address	Host Address Range	Sample Host IP	Broadcast Address
204.17.5.0	1 → 30	204.17.5.20	204.17.5.31
204.17.5.32	33 → 62	204.17.5.51	204.17.5.63
204.17.5.64	65 → 94	204.17.5.69	204.17.5.95
204.17.5.96	97 → 126	204.17.5.120	204.17.5.127
204.17.5.128	129 → 158	204.17.5.143	204.17.5.159
204.17.5.160	161 → 190	204.17.5.169	204.17.5.191
204.17.5.192	193 → 222	204.17.5.200	204.17.5.223
204.17.5.224	225 → 254	204.17.5.233	204.17.5.255

#### Problem 2:

Network Address: 192.135.248.0

# of bits borrowed: 4

# of subnets:  $2^4 = 16$

11111111.11111111.11111111.11110000

New subnet Mask: 255.255.255.240/28

Number of hosts =  $2^4 = 16$  (-2 marker and broadcast) = 14

Network Address	Host Address Range	Sample Host IP	Broadcast Address
192.135.248.0	1 → 14	192.135.248.13	192.135.248.15
192.135.248.16	17 → 30	192.135.248.30	192.135.248.31
192.135.248.32	33 → 46	192.135.248.46	192.135.248.47
192.135.248.48	49 → 62	192.135.248.62	192.135.248.63
192.135.248.64	65 → 78	192.135.248.69	192.135.248.79
192.135.248.80	81 → 94	192.135.248.93	192.135.248.95
192.135.248.96	97 → 110	192.135.248.99	192.135.248.111
192.135.248.112	113 → 126	192.135.248.125	192.135.248.127
192.135.248.128	129 → 142	192.135.248.141	192.135.248.143
192.135.248.144	145 → 158	192.135.248.158	192.135.248.159
192.135.248.160	161 → 170	192.135.248.170	192.135.248.171
192.135.248.172	173 → 190	192.135.248.190	192.135.248.191
192.135.248.192	193 → 206	192.135.248.206	192.135.248.207

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192.135.248.208	209 → 222	192.135.248.222	192.135.248.223
192.135.248.224	225 → 238	192.135.248.238	192.135.248.239
192.135.248.240	241 → 254	192.135.248.254	192.135.248.255

Show your **complete solution** and submit your work as pdf format.