HW2 Subnetting

Question 1:

1) Divide 16.35.157.128/25 into sub-blocks of sizes: 32, 32, 16, 16

Number	Block size	NetID/mask
1	32	16.35.157.128/27
2	32	16.35.157.160/27
3	16	16.35.157.192/28
4	16	16.35.157.208/28

2) Divide 16.35.157.128/25 into sub-blocks of sizes: 64, 16, 16, 16, 8

Number	Block size	NetID/mask
1	64	16.35.157.128/26
2	16	16.35.157.192/28
3	16	16.35.157.208/28
4	16	16.35.157.224/28
5	8	16.35.157.240/29

3) Divide 16.35.157.0/26 into sub-blocks of sizes: 32, 8, 8

Number	Block size	NetID/mask
1	32	16.35.157.0/27
2	8	16.35.157.32/29
3	8	16.35.157.40/29

4) Divide 16.35.157.64/26 into sub-blocks of sizes: 16, 16, 8, 8

Number	Block size	NetID/mask
1	16	16.35.157.64/28
2	16	16.35.157.80/28
3	8	16.35.157.96/29

4	**8**	16.35.157.104/29

5) Divide 16.35.157.128/26 into sub-blocks of sizes: 32, 16, 8, 8

Number	Block size	NetID/mask
1	**32**	16.35.157.128/27
2	**16**	16.35.157.160/28
3	**8**	16.35.157.176/29
4	**8**	16.35.157.184/29

6) Divide 16.35.157.128/26 into sub-blocks of sizes: 16, 16, 16

Number	Block size	NetID/mask
1	**16**	16.35.157.128/28
2	**16**	16.35.157.144/28
3	**16**	16.35.157.160/28

7) Divide 16.35.157.192/26 into sub-blocks of sizes: 32, 16, 4, 4

Number	Block size	NetID/mask
1	**32**	16.35.157.192/27
2	**16**	16.35.157.224/28
3	**4**	16.35.157.240/30
4	**4**	16.35.157.244/30

8) Divide 16.35.157.192/26 into sub-blocks of sizes: 32, 8, 8, 8, 4

Number	Block size	NetID/mask
1	**32**	16.35.157.192/27
2	**8**	16.35.157.224/29
3	**8**	16.35.157.232/29
4	**8**	16.35.157.240/29
5	**4**	16.35.157.248/30

Question 2:

Divide the network **144.37.128.0/17** among 10 buildings of CSUSM. The table below gives the name of each building and the size of network required at each building. Divide the given network range into different-size subnets following the given info. In the second step divide the SBSB building network into smaller networks following the given info. **Complete the tables**

Step1: Subnets of CSUSM (25 points)

Number	Building	Block size	NetID/mask	Bcast	Range of valid IP addresses
1	**SCI1**	2^{14}	144.37.128.0/18	144.37.191.255	144.37.128.1-144.37.191.254
2	**SCI2**	2^{13}	144.37.192.0/19	144.37.223.255	144.37.192.1-144.37.223.254
3	**SBSB**	2^{11}	144.37.224.0/21	144.37.231.255	144.37.224.1-144.37.231.254
4	**CRA**	2^{10}	144.37.232.0/22	144.37.235.255	144.37.232.1-144.37.235.254
5	**UNV**	2^{10}	144.37.236.0/22	144.37.239.255	144.37.236.1-144.37.239.254
6	**KEL**	2^{10}	144.37.240.0/22	144.37.243.255	144.37.240.1-144.37.243.254
7	**MARK**	2^{9}	144.37.244.0/23	144.37.245.255	144.37.244.1-144.37.245.254
8	**ACD**	2^{9}	144.37.246.0/23	144.37.247.255	144.37.246.1-144.37.247.254
9	**ARTS**	2^{9}	144.37.248.0/23	144.37.249.255	144.37.248.1-144.37.249.254
10	**PSB**	2^{7}	144.37.250.0/25	144.37.250.127	144.37.250.1 – 144.37.250.126

Step 2: Subnets of SBSB Building (40 points)

SBSB Building Network: NetID/mask 144.37.224.0/21

Floor number	Block size	NetID/mask	Bcast	Range of valid IP addresses
1	2^{10}	144.37.224.0/22	144.37.227.255	144.37.224.1 - 144.37.227.254
2	2^{9}	144.37.228.0/23	144.37.229.255	144.37.228.1 - 144.37.229.254
3	2^{9}	144.37.230.0/23	144.37.231.255	144.37.230.1 - 144.37.231.254

SBSB Building, first floor Network: NetID/mask 144.37.224.0/22

Room number	Block size	NetID/mask	Bcast	Range of valid IP addresses
101	2^8	144.37.224.0/24	144.37.224.255	144.37.224.1 - 144.37.224.254
102	2^7	144.37.225.0/25	144.37.225.127	144.37.225.1 - 144.37.225.126
103	2^6	144.37.225.128/26	144.37.225.191	144.37.225.129 - 144.37.225.190
104	2^6	144.37.225.192/26	144.37.225.255	144.37.225.193 - 144.37.225.254
105	2^6	144.37.226.0/26	144.37.226.63	144.37.226.1 - 144.37.226.62
106	2^5	144.37.226.64/27	144.37.226.95	144.37.226.65 - 144.37.226.94

SBSB Building, second floor Network: NetID/mask 144.37.228.0/23

Room number	Block size	NetID/mask	Bcast	Range of valid IP addresses
201	2^7	144.37.228.0/25	144.37.228.127	144.37.228.1 - 144.37.228.126
202	2^6	144.37.228.128/26	144.37.228.191	144.37.228.129 - 144.37.228.190
203	2^5	144.37.228.192/27	144.37.228.223	144.37.228.193 - 144.37.228.222
204	2^4	144.37.228.224/28	144.37.228.239	144.37.228.225 - 144.37.228.238

SBSB Building, third floor Network: NetID/mask 144.37.230.0/23

Room number	Block size	NetID/mask	Bcast	Range of valid IP addresses
301	2^7	144.37.230.0/25	144.37.230.127	144.37.230.1 - 144.37.230.126
302	2^5	144.37.230.128/27	144.37.230.159	144.37.230.129 - 144.37.230.158
303	2^5	144.37.230.160/27	144.37.230.191	144.37.230.161 - 144.37.230.190

Step 3: Collect some information about CSUSM servers (3 points)

Use https://www.ultratools.com/tools/ipWhoisLookup and lookup hostnames given below. What is the IP address for each hostname?

Hostname	IP address
cc.csusm.edu	144.37.5.117
my.csusm.edu	144.37.5.150
empress.csusm.edu	144.37.1.24

What are the name and IP address of one of CSUSM DNS servers?

Note: You can use http://www.tcpiputils.com/browse/ip-address. Enter “csusm.edu” in the search box and look for the DNS servers (NS Records). 2 records are enough.

DNS Name(s): ns1.csu.net & atlas.csusm.edu

DNS IP address(es): 130.150.102.100 & 144.37.1.250