City University of Hong Kong
Department of Electronic Engineering

EE3009 Data Communications and Networking

Solution to Tutorial 2

1. 200.58.20.165 – Class C
   128.167.23.20 – Class B
   16.196.128.50 – Class A
   150.156.10.10 – Class B
   230.10.24.96 – Class D

2. 200.58.20.165 – 11001000 00111010 00010100 10100101
   128.167.23.20 – 10000000 10100111 00010111 00010100
   16.196.128.50 – 00010000 11000100 10000000 00110010
   150.156.10.10 – 10010110 10011100 00001010 00001010
   230.10.24.96 – 11100110 00001010 00011000 01100000

3. Class A: 1.0.0.0 to 126.0.0.0
   Class B: 128.0.0.0 to 191.255.0.0
   Class C: 192.0.0.0 to 223.255.255.0
   Class D: 224.0.0.0 to 239.255.255.0

4.

i	Subnet mask	no. of subnets	no. of hosts
2	255.255.255.192	2	62
3	255.255.255.224	6	30
4	255.255.255.240	14	14
5	255.255.255.248	30	6
6	255.255.255.252	62	2

5. Similar to Question 4, the following table corresponds to subnetting in Class B networks. Expand and complete the table.

i	Subnet mask	no. of subnets	no. of hosts
2	255.255.192.0	2	16,382
3	255.255.224.0	6	8190
4	255.255.240.0	14	4094
5	255.255.248.0	30	2046
6	255.255.252.0	32	1022
7	255.255.254.0	126	510
8	255.255.255.0	254	254
9	255.255.255.128	510	126
10	255.255.255.192	1022	62
11	255.255.255.224	2046	30
12	255.255.255.240	4094	14
13	255.255.255.248	8190	6
14	255.255.255.252	16,382	2

6. 10010110 00100000 01000000 00100001
   AND 11111111 11111111 11110000 00000000
   Address of subnet: 10010110 00100000 01000000 00000000
   150.32.64.0
   IP address is from 150.32.64.1 to 150.32.79.254

7. To support 20 subnets and 5 hosts per subnet, 5 bits are borrowed from the last byte. So, subnet mask is 255.255.255.248, and the three smallest subnet addresses are: 201.222.5.8, 201.222.5.16 and 201.222.5.24
   For subnet 201.222.5.8, the host addresses are from 201.222.5.9 to 201.222.5.14