# City University of Hong Kong
# Department of Electrical Engineering

## EE3009 Data Communications and Networking

### Tutorial 3

1. In the following table, *i* denotes the number of bits borrowed from the host portion of a Class C IP address to create a subnetwork address. Note that all 0s or 1s in the subnetwork address field are also reserved. Complete the following table.

| *i* | Subnet mask | no. of subnets | no. of hosts |
|---|---|---|---|
| 2 | 255.255.255.192 | 2 | 62 |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |

2. Similar to Question 1, 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. A host in an organization has an IP address 150.32.64.34 and a subnet mask 255.255.240.0. What is the address of this subnet? What is the range of IP addresses that a host can have on this subnet?

4. You have been assigned a Class C address of 201.222.5.0, and you are asked to create 20 subnets, each supporting 5 hosts. Give the three smallest subnet addresses. For the subnet with the smallest address, list all the possible host IP addresses.

5. A small ISP owns the following networks: 128.56.24.0/24, 128.56.25.0/24, 128.56.26.0/24, 128.56.27.0/24. Perform CIDR aggregation of these networks.

6. Abbreviate the following IPv6 addresses:

   a. 0000:0000:0F53:6382:AB00:67DB:BB27:7332

   b. 0000:0000:0000:0000:0000:0000:004D:ABCD

   c. 0000:0000:0000:AF36:7328:0000:87AA:0398

   d. 2819:00AF:0000:0000:0000:0035:0CB2:B271

7. Suppose you have purchased a wireless router and connect it to your cable modem. Also suppose that your ISP dynamically assigns your connected device (that is, your wireless router) one IP address. Also suppose that you have five PCs at home that use WiFi to connect to your wireless router. How are IP addresses assigned to the five PCs? Does the wireless router use NAT? Why or why not?