City University of Hong Kong
Department of Electrical Engineering

EE3009 Data Communications and Networking

Tutorial 2

1. Suppose a router receives an IP packet containing 600 data bytes and has to forward the packet to a network with maximum transmission unit of 200 bytes. Assume that the IP header is 20 bytes long. Show the fragments that the router creates and specify the relevant values in each fragment header (i.e., total length, fragment offset, and more bit).

2. 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	4	62
3			
4			
5			
6			

3. You have been assigned a network 201.222.5.0/24, 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.

4. 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.

5. 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