

## Solutions to Assignment 4 Questions

### 1) Problem R18, R12 and R14, Chapter 4

- a) 11011111 00000001 00000011 00011011
- b) Yes. They have one address for each interface
- c) 10 interfaces
- d) 4 forwarding tables

### 2) Problem P8, Chapter 4

- a) 2.a.1
- b) Link interface 4
- c) Link interface 2
- d) Link interface 3

### 3) Problem P10, Chapter 4

220.2.240.0/21          220.2.248.0/22          220.2.252.0/22

### 4) Problem P19, Chapter 4

> 2000. Explanation: MP3 file size = 3 million bytes. Assume the data is carried in TCP segments, with each TCP segment also having 20 bytes of header. Then each datagram can carry  $1500 - 40 = 1460$  bytes of the MP3 file. Number of datagrams required

$$= \left\lceil \frac{3 \times 10^6}{1460} \right\rceil = 2055$$

All but the last datagram will be 1,500 bytes; the last datagram will be  $116 + 40 = 120$  bytes. Note that here there is not fragmentation – the source host does not create datagrams larger than 1500 bytes, and these datagrams are smaller than the MTUs of the links.

### 5) Problem P15, Chapter 4

- a) Home addresses: 192.168.0.1, 192.168.0.2, 192.168.0.3 with the router interface being 192.168.0.4
- b) NAT Translation Table

WAN Side	LAN Side
126.13.89.67,4000	192.168.0.1,3345
126.13.89.67,4001	192.168.0.1,3346
126.13.89.67,4002	192.168.0.2,3445
126.13.89.67,4003	192.168.0.2,3446
126.13.89.67,4004	192.168.0.3,3545
128.13.89.67,4005	192.168.0.3,3546