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CS 320 001

**Assignment 8**

**1. Consider a router that interconnects three subnets: Subnet 1, Subnet 2 and Subnet 3.**

**Suppose all the interfaces in each of these three subnets are required to have the**

**prefix 230.1.17/24. Also suppose that Subnet 1 is required to support up to 60 interfaces, Subnet 2 is required to support up to 90 interfaces and Subnet 3 is required to support up to 12 interfaces. Provide three network addresses (of the form a.b.c.d/x) that satisfy these constraints.**

223.1.17.0/26

223.1.17.128/25

223.1.17.192/28

**2. Consider a subnet with prefix 128.119.40.128/26. Give an example of one IP address (of form xxx.xxx.xxx.xxx) that can be assigned to this network. Suppose an ISP owns the block of addresses of the form 128.119.40.64/26. Suppose it wants to create four subnets from this block, with each block having the same number of IP addresses. What are the prefixes (of form a.b.c.d/x) for the four subnets?**

IP address range: 128.119.40.128 to 128.119.40.191

Note: 128.119.40.128(last 8 bits: 10000000, reserved address)

128.119.40.191(last 8 bits: 10111111, reserved address, broadcast)

Four subnets:

128.119.40.64/28

128.119.40.80/28

128.119.40.96/28

128.119.40.112/28

**3. Consider sending a 2400-byte datagram into a link that has an MTU of 700 bytes. Suppose the original datagram is stamped with the identification number 422. How many fragments are generated? What are the values in the various fields in the IP datagram(s) generated related to fragmentation?**

The maximum size of data field in each fragment = 680 bytes because there are 20 bytes IP header.Thus, the number of required fragments [2400 − 20 / 680 ] = 4 bytes

Each fragment will have an Identification number 422. Each fragment except the last one will be of size 700 bytes, including the IP header. The last datagram will be of size 360 bytes, including the IP header.

The offsets of the 4 fragments will be 0, 85, 170, 255. Each of the first 3 fragments will have

flag = 1and the last fragment will have flag = 0.