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Assignment answers

1. Subnet 1: 62 interfaces. Example of address in subnet 1: 223.1.17.200/
   Subnet 2: 95 interfaces. Example of address in subnet 2: 223.1.17.130/25
   Subnet 3: 16 interfaces. Example of address in subnet 3: 223.1.17.230/27

2. Packet 1: 1024 bytes
   Packet 2: 1024 bytes
   Packet 3: 1024 bytes
   Packet 4: 428 bytes
   Total: 3500 bytes

3.
   a. $\frac{1}{2^n - 1} = \frac{1}{31}, when\, n = 5$
   b. $5.12\mu s \cdot 4 = 20.48\mu s$

4.
   a. With cached ARP tables, A makes a ARP lookup of the closest router, and sends the IP packet to it. The router then receives the packet, makes a ARP lookup for the other router, and then forwards the packet to it. The second router then makes an ARP lookup for the receiver (F) and then forwards the packet to F, that then receives the packet.

   b. If host A:s ARP table is empty, host A sends out an ARP request to all hosts in the network asking for the MAC-address of the router. The ARP request contains the IP-address and MAC-address of the sender. Each host checks if the IP address matches their own. If the IP address doesn't match, the ARP request is dropped. If the IP-address matches, the router(in this case) adds the IP- and MAC-address of the sender to its ARP-cache. The router sends back a ARP reply with its IP- and MAC-address to Host A. Host A adds the IP- and MAC-address of the router to its ARP-cache. Then it follows the steps described in 4a.