**Worksheet 17**

1. How big is the MAC address space? 2^48

The IPv4 address space? 2^32

The IPv6 address space? 2^128

2. Suppose nodes A, B, and C each attach to the same broadcast LAN (through their adapters). If A sends thousands of IP datagrams to B with each encapsulating frame addressed to the MAC address of B, will C’s adapter process these frames?

* C’s adapter will process the frames, but the adapter will not pass the datagrams up the protocol stack

If so, will C’s adapter pass the IP datagrams in these frames to the network layer C?

* No.

How would your answers change if A sends frames with the MAC broadcast address?

* If the LAN broadcast address is used, then C’s adapter will both process the frames and pass the datagrams up the protocol stack.

3. Why is an ARP query sent within a broadcast frame?

* The querying host doesn’t know which adapter address corresponds to the IP address of the receiver.

Why is an ARP response sent within a frame with a specific destination MAC address?

* The host already knows which adapter address the response should be sent to.

4. For the network in the figure on Slide 6-47, the router has two ARP modules, each with its own ARP table. Is it possible that the same MAC address appears in both tables?

* Not possible.
* MAC Address in the table is only locally connected on the table.
* Each table has its own distinct adapters connected.

5. Consider the figure on Slide 6-69. How many subnetworks are there, in the addressing sense of Section 4.3?

* Dependent on the number of routers.
* Answer: 2
  + (1) To external network, (1) Internal Network



