Hwk 2 - Chapter

- **KR, #R4**
  There will be a collision in the sense that while a node is transmitting it will start to receive a packet from the other node.

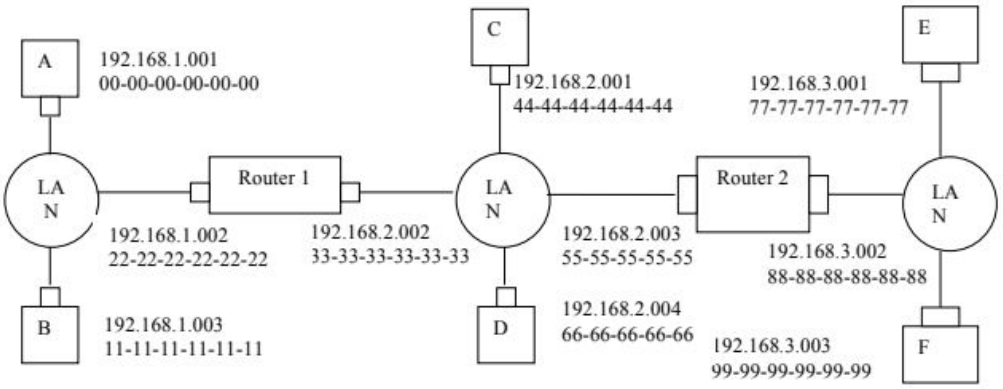
- **KR, #R10**
  C's adapter will process the frames, but the adapter will not pass the datagrams up the protocol stack. If the LAN broadcast address is used, then C's adapter will both process the frames and pass the datagrams up the protocol stack.

- **KR, #R11**
  An ARP query is sent in a broadcast frame because the querying host does not which adapter address corresponds to the IP address in question. For the response, the sending node knows the adapter address to which the response should be sent, so there is no need to send a broadcast frame (which would have to be processed by all the other nodes on the LAN).

- **KR, #R13**
  The three Ethernet technologies have identical frame structures.

- **KR, #R15**
  In 802.1Q there is a 12- bit VLAN identifier. Thus 212 = 4,096 VLANs can be supported.

- **KR, #P14**
  a) **See figure below**
  b) **See figure below**



c)

i) **Forwarding table in E determines that the datagram should be routed to interface 192.168.3.002.**
ii) **The adapter in E creates and Ethernet packet with Ethernet destination address 88-88-88-88-88-88.**
iii) **Router 2 receives the packet and extracts the datagram. The forwarding table in this router indicates that the datagram is to be routed to 198.162.2.002.**
iv) **Router 2 then sends the Ethernet packet with the destination address of 33-33-33-33-33-33 and source address of 55-55-55-55-55-55 via its interface with IP address of 198.162.2.003.**
v) **The process continues until the packet has reached Host B.**

d) **ARP in E must now determine the MAC address of 198.162.3.002. Host E sends out an ARP query packet within a broadcast Ethernet frame. Router 2 receives the query packet and sends to Host E an ARP response packet. This ARP response packet is carried by an Ethernet frame with Ethernet destination address 77-77-77-77-77-77.**

- **KR, #P23**
  If all the 11=9+2 nodes send out data at the maximum possible rate of 100 Mbps, a total aggregate throughput of 11*100 = 1100 Mbps is possible.

- **KR, #P24**
  Each departmental hub is a single collision domain that can have a maximum throughput of 100 Mbps. The links connecting the web server and the mail server has a maximum throughput of 100 Mbps. Hence, if the three collision domains and the web server and mail server send out data at their maximum possible rates of 100 Mbps each, a maximum total aggregate throughput of 500 Mbps can be achieved among the 11 end systems.