**Worksheet 10**

1. What are the two most important network-layer functions in a datagram network? Forwarding and Routing

2. What is the difference between routing and forwarding?

Forwarding: move packet from router input port to the proper output port

Routing: determine the whole route from source to destination

3. What are the three types of switching fabrics? Which can send multiple packets across the fabric in parallel?

Memory, bus, crossbar Parallel: -Crossbar: as long as they are sent to different output puts.

4. Describe how packet loss can occur at input ports. Describe how packet loss at input ports can be eliminated (without using infinite buffers).

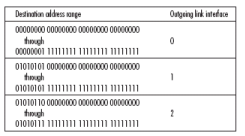
Occurs at input because the rate of arrival is faster than the fabric can handle. Then packets become more queued. Once the queue is full, packets will be dropped.

Eliminate packet loss by switching to crossbar. .Increase switching speed.

Describe how packet loss can occur at output ports. Can this loss be prevented by increasing the switch fabric speed? If the rate of arrival at output is higher, packet loss occurs.No, it cannot be prevented by increasing switch fabric speed.

6. What is HOL blocking? Does it occur in input ports or output ports? Head-of-the-Line Blocking. Occurs at input ports.

7. Consider a datagram network using 32-bit host addresses. Suppose that a router has three interfaces, numbered 0 through 2, and that packets are to be forwarded to these link interfaces as follows. Any address not within the ranges in the table below should not be forwarded to an outgoing link interface. Create a forwarding table using longest prefix matching.



Prefix outgoing interface

0 0 0 0 0 0 0 0

0 1 0 1 0 1 0 1 1

0 1 0 1 0 1 1 2