1. Highlight the differences between distance-vector and link-state routing approaches in terms of
   a) the nature of the routing information originating from each router
   b) to whom the information is sent

2. Explain the need for “sequence number” and “age” in a flooding algorithm

3. An IP packet (without any optional headers) has a size of 2000 bytes. What is the maximum number of fragments into which the packet can be broken into. In this case, what is the size of each fragment?

4. State True or False
   a) The “Type of Service” field in IP header is often ignored by most routers
   b) The “Time to Live” field indicates the lifetime of the IP packet in UNIX time
   c) The “header checksum” is recomputed at every hop
   d) The binary value of IHL field is interpreted as the length of the IP header in kilobytes
   e) If the IP packet has the bit MF set to 0 in its header, this implies that the IP packet has not been fragmented

5. State True or False
   a) ARP protocol employs IP packets to send ARP requests and responses
   b) DHCP allows both manual and automatic assignment of IP addresses
   c) If a new transport layer protocol (apart from TCP and UDP) is invented all routers will require modification
   d) If a new transport layer protocol (apart from TCP and UDP) is invented all NATs will require modification
   e) ICMP echo packets are addressed to port 14

(For grad students only)

A router has the following CIDR entries in its routing table

<table>
<thead>
<tr>
<th>Address/Mask</th>
<th>Next Hop</th>
</tr>
</thead>
<tbody>
<tr>
<td>135.46.56.0/22</td>
<td>Interface 0</td>
</tr>
<tr>
<td>135.46.60.0/22</td>
<td>Interface 1</td>
</tr>
<tr>
<td>192.53.40.0/23</td>
<td>Router 1</td>
</tr>
<tr>
<td>default</td>
<td>Router 2</td>
</tr>
</tbody>
</table>

For each of the following IP addresses, what does the router do?
   a) 135.46.63.10
   b) 135.46.57.14
   c) 135.46.52.2
   d) 192.53.40.7
   e) 192.53.56.7