**CS 3800 Computer Networks**

Instructor: John Korah

**Quiz # 6**

**Duration: 15 minutes**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**SECTION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Host A with the ip address/network mask of 192.168.5.1/26 is sending a packet to host B with IP address 192.168.5.65.

The binary equivalents of these addresses are:

Host A ip address = 11000000 10101000 00000101 00000001

Host B ip address = 11000000 10101000 00000101 01000001

1. Do hosts A and B belong to the same subnet? Provide answer with relevant calculations.

Host A has a netmask of 26. Therefore its network ID is depicted in red below.

11000000 10101000 00000101 00000001

If Host B belongs to the same subnet, it should also have the same netmask and the same network ID as host A.

Assume that host B has the same netmask as A, then the network ID of host B is

11000000 10101000 00000101 01000001

The network ID and host A and B do not match. **Therefore they cannot belong the same subnet.**

1. Does the packet sent by A have to go through a router? Provide explanation.

Since they do not belong to the same subnet, the packet from A to B has to pass through a router. A simple intermediate switch won’t do as the network layer and IP addresses have to be accessed for routing.

**Please Turn Over**

1. Which of the following assertions is FALSE about the Internet Protocol (IP)? (question disregarded for grading due to typo in option a)
2. It is impossible for a computer to have multiple IP addresses
3. IP packets from the same source to the same destination can take different routes in the network
4. IP ensures that a packet is discarded if it is unable to reach its destination within a given number of hops
5. The packet source cannot set the route of an outgoing packets; the route is determined only by the routing tables in the routers on the way
6. Routers forward a packet using forwarding table entries. The network address of incoming packet may match multiple entries. How routers resolve this?
7. Forward it to the output port whose entry matches with the longest prefix of incoming packet
8. Forward the packet to all routers whose network addresses match.
9. Discard the packet.
10. Forward it to the output port whose entry matches with the longest suffix of incoming packet
11. In the network 200.10.11.144/27, the fourth octet of the last IP address of the network which can be assigned to a host is \_\_\_\_\_\_\_\_. Note the binary equivalent of 200.10.11.144 is 11001000 00001010 00001011 10010000
12. 11111111
13. 10011110
14. 11011110
15. 10001111