Internet Protocols Quiz #1 - Solutions

Name _____ Student ID _____

1. In the OSI 7-layer model,
   A. Which layer specifies methods for communicating in a multihop fashion across potentially different types of link networks? _____ [5pts]
   B. Which layer specifies methods for multiple connections constituting a communication session? _____
   C. Which layer is responsible for converting between different data representation formats? _____ [5pts]
   D. Which layer specifies methods for connections between multiple programs running on the same or different systems? _____ [5pts]
2. How many Class A blocks are there? _____ [5pts]
3. What are the two most compact representations of the IPv6 address 2001:0db8:0:0:1:0:0:2 ?

   _____ and _____ [10pts]
4. Given a network 163.152.0.0/16 and the subnet mask 255.255.240.0, at most how many subnets can you have in this Class B network? _____ [5pts]
5. Given the subnet configuration in Prob. 4, what is the directed broadcast address that reaches the subnet that has 163.152.161.4 as a member? _____ [10pts]
6. Consider Ethernet address 6c:29:95:41:86:ab
   A. Is it a unicast address? (Y/N) _____ [5pts]
   B. Is it a globally unique address? (Y/N)_____ [5pts]
7. If you aggregate 190.154.27.0/26 and 190.154.27.64/26 into a single entry in the IPv4 routing table, what will you get? Use the CIDR notation in your answer. _____ [10pts]
8. What is the private address block in Class B space? Use the CIDR notation in your answer. _____ [5pts]
9. What is the standardized link-local unicast address block in IPv6? Use the CIDR notation. _____ [5pts]
10. What is the UBM address block for Korea University? Use the CIDR notation. _____ [5pts]
11. ISP “A” guarantees that its Internet connection is up 90% of the time. (Assume the outages take place totally randomly.) In order to maintain the Internet connectivity over 95%, you want to hire another ISP (called “B”) that connects your network to the Internet.
    A. Should this new ISP provide a better guarantee than ISP A? (Y/N)_____ [5pts]
    B. Why (why not)? Provide a quantitative argument. [15pts]