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A. Research (Screen Shot or written (30points)

1. What are the differences between IPv4 and IPv6? Why do we need to migrate to IPv6?
    - IPv4 addresses are separated by using periods while IPv6 addresses are being separated by semi colons. They also have different header fields. Since IPv6 has better features and is more advanced, it is now better to use it than IPv4, including the feature of having an infinite number of addresses. Migrating to IPv6 can eliminate IP address exhaustion problem.
2. What are the characteristics and uses of the unicast, broadcast, and multicast IPv4 and IPv6 addresses?
    - Unicast has one sender and one receiver and is applied by standard unicast applications.
    - Broadcast has one sender but has receivers connected to the sender. Network layer protocols support this kind of transmission
    - Multicast is "addresses identify a group of interfaces in such a way that a packet sent to a multicast address is delivered to all of the interfaces in the group."
3. What are the differences among public, private, and reserved IPv4 addresses?
    - Public addresses are used outside a network and is provided by an ISP and private is used within a local network
4. What are classless and classful addressing?
    - Classless imports subnet masks and triggered updates are used. While classful does not import subnet masks.
5. What is VLSM?
    - Variable Length Subnet Mask. The subnet design uses more than one mask in the same network. Subnets have classes: A, B, C, or D.
6. Benefits of VLSM?
    - It allows engineers to better match the need for addresses based on the size of their subnets.

Note: Include your resources/links:

https://www.linksys.com/us/support-article?articleNum=139604

https://docs.oracle.com/cd/E19455-01/806-0916/6ja8539be/index.html

https://erg.abdn.ac.uk/users/gorry/course/intro-pages/uni-b-mcast.html

https://www.tutorialspoint.com/difference-between-private-and-public-ip-addresses#:~:text=Private%20IP%20Address%20and%20Public,is%20used%20outside%20the%20network.&text=Public%20IP%20Address%20is%20used%20to%20communicate%20outside%20the%20network.

https://www.ciscopress.com/articles/article.asp?p=2731924#:~:text=VLSM%20provides%20many%20benefits%20for,the%20size%20of%20the%20subnet.

https://www.geeksforgeeks.org/difference-between-classful-routing-and-classless-routing/