Question 2: What happens if a host sends a datagram with the destination address of 255.255.255.255? What is special about this IP address?

If a host sends a datagram to the destination address of 255.255.255.255 it will send it to everyone on the same subnet. It could send it all at once instead of doing it one by one.

Question 3: What are the 4-steps involved in a client obtaining an IP from a DHCP server? Describe each step.

The 4 steps in DHCP server are first DHCP discover, second DHCP offer, third DHCP request, and fourth is DHCP ACK. Discover is used to find the host using a discover message within a UDP. Then, offer responds to the discover message with an offer message that broadcasts to all the nodes in the subnet with the destination of 255.255.255.255. The request step will choose an offer from one or more sever and then send a request message. Final step ACK message responds to the request message confirming the requested parameters.

Question 4: What is a subnet mask?

In IP terminology a subnet is created by one router interface and 3 host interfaces. IP addresses might have a “/24” at the end which is considered a subnet mask. Which means that the 24 bits of 32 bits define the subnet address.

Question 6: What is CIDR?

CIDR or Classless Interdomain Routing generalizes the notions of subset addressing. The IP address is divided into two parts and has the dotted decimal form a.b.c.d/x and x is the number of bits in the first part of the address.

Question 8: What is a network prefix?

The x most significant bits in an address of CIDR form constitute the network portion of the IP and are often called the prefix of an address.

Question 10: What is address aggregation?

Address aggregation is the ability to use a single prefix to advertise multiple networks.

Question 15: How does network address translation work? Why is NAT useful?

Network translation is used for allocation an address. It is useful because it enhances network security and simplifies the configuration of the network.

Question 16: Describe RFC 1918.

RFC 1918 or Request for Comment 1918 is an address allocation for private internets. Similar to Network address tunneling or NAT, RFC allows an expansion of the usable IP addresses available under the fourth version of internet protocol. The RFC was used to make networking equipment assign IP addresses to private networks; a private network can use one single public IP address. There are also certain IP addresses in the RFC range that cannot be connected to the internet.

Question 19: Describe how a basic subnet might look. What devices are involved and how do they work together?