

# CS447 – Networks and Data Communications

## Quiz #3, June 30, 2026

### Sample Questions

**At least five questions in the following list will appear in Quiz #3 on 6/30 (no all questions in this list will be asked). At most five new questions (those that do not appear in this list can be asked in Quiz #3).**

**#1:** Which of the followings is a correct description of “IP addresses (except for class-D and E) addresses” (select the best option):

- (a) IP addresses are identifiers of a host computer.
- (b) IP addresses are identifiers of a host computer for non-technical Internet users (such as www.siu.edu).
- (c) IP addresses are identifiers of a host computer mainly for reducing packet collisions in local area networks.
- (d) None of the above.

**Solution:**

**#2:** Which of the following descriptions is a correct description of domain and host addresses in IP addresses (select the best option):

- (a) Domain addresses are used by the routers and switches within a network domain, while host addresses are used by the (core) routers in the Internet backbone.
- (b) Host addresses are used by the routers and switches within a network domain, while domain addresses are used by the (core) routers in the Internet backbone.
- (c) Both domain and host addresses are used by the (core) routers in the Internet backbone.
- (d) Both domain and host addresses are used by the routers and switches within a network domain.

**Solution:**

**#3:** Which of the followings is a correct description of the three-class (class-A, B, and C) IP addresses (select the best option):

- (a) The three-class IP address structure was invented because having the three-class structure makes routers/switches to handle (forward) packets to their right direction quicker.
- (b) The three-class IP address structure was invented because having the three-class structure will make human users easy to use the Internet.
- (c) The three-class IP address structure was invented because having the three-class structure allows network domains to be different sizes (in terms of the number of host computers in each domain).
- (d) The three-class IP address structure was invented because having the three-class structure will make the Internet secure.

**Solution:**

**#4:** For which of the following cases DHCP should not be used for assigning IP addresses (select all that apply)?

- (a) Web servers
- (b) Email servers
- (c) File servers
- (d) DHCP servers
- (e) None of the above.

**Solution:**

**#5:** Which of the followings is a correct description of “subnets” (select the best one)?

- (a) Subnets are for partitioning the Internet.
- (b) Subnets are for partitioning local area networks.
- (c) Subnets are for partitioning host computers.
- (d) None of the above.

**Solution:**

**#6:** Which of the followings are true about subnet masks (select all that apply)?

- (a) Using a subnet mask, we can identify the size (how many host computers) of a network domain.
- (b) Using a subnet mask, we can identify the host address in an IP address.
- (c) Using a subnet mask, we can identify the domain address in an IP address.
- (d) Using a subnet mask, we can identify the type of a domain (commercial, non-profit, government, and etc.).
- (e) None of the above.

**Solution:**

**#7:** Which of the followings is a correct description about the internal structure of IP addresses from the LSB to the MSB bits?

- (a) The domain address, the subnet address, followed by the host address
- (b) The subnet address, the domain address, followed by the host address
- (c) The host address, the subnet address, followed by the domain address
- (d) The domain address, the host address, followed by the subnet address

**Solution:**

**#8:** Which of the descriptions for the purpose of the CIDR (Classless Inter Domain Routing) is correct (select the best option)?

- (a) CIDR was introduced to make internet routing more reliable for reducing the probability of forwarding IP packets to incorrect destinations.
- (b) CIDR was introduced to make internet routing more secure for avoiding IP packets from going through untrusted domains.
- (c) CIDR was introduced to make internet routing more secure for avoiding IP packets from going through untrusted domains.
- (d) CIDR was introduced to have more domains in the Internet than the three-class IP address structure.

**Solution:**

**#9:** Equivalent of Class-A, B, and C domains (select all that apply)

- (a) A /15 domain is equivalent to a 1/2 class-B domain
- (b) A /19 domain is equivalent to 64 class-C domains
- (c) A /10 domain is equivalent to 4 class-A domains
- (d) A /20 domain is equivalent to a 1/16 of a class-B domain

**Solution:**

**#10:** Which of the followings is (are) possible (select all that apply):

- (a) A domain that is represented by a CIDR-prefix of /17 while the domain has (consists of) three subnets and 9,000 host computers (including any devices each of which needs an IP address).
- (b) A domain that is represented by a CIDR-prefix of /14 while the domain has (consists of) 30 subnets and 7,500 host computers (including any devices each of which needs an IP address).
- (c) A domain that is represented by a CIDR-prefix of /24 while the domain has (consists of) 15 subnets and 12 host computers (including any devices each of which needs an IP address).
- (d) A domain that is represented by a CIDR-prefix of /17 while the domain has (consists of) 24 subnets and 2100 host computers (including any devices each of which needs an IP address).

**Solution:**