

# CS447-002 Network and Data Communication

## Possible Quiz Questions for Quiz #7 on March 25th, 2024

The following is a list of possible questions for our Quiz #7 on March 25th. Some of the questions will not be asked in the quiz. All the questions that will appear in the quiz will appear exactly as shown below (however, parameters may be changed). The quiz is closed textbook, closed notes and closed neighbors. Note that the questions, which did not appear in this quiz, still may appear in the exams.

- #1: What are the two major problems in IEEE-802.3 CSMA?
- #2: How does “1-persistent algorithm” work?
- #3: What is the primary advantage of “1-persistent algorithm”? What is the primary disadvantage of “1-persistent algorithm”?
- #4: How does “non-persistent algorithm” work?
- #5: What is the primary advantage of “non-persistent algorithm”? What is the primary disadvantage of “non-persistent algorithm”?
- #6: How does “p-persistent algorithm” work?
- #7: How is “p-persistent algorithm” a good compromise between “1-persistent” and “non-persistent” algorithms?
- #8: What is the major problem in CSMA/CD?
- #9: What is “BEB (Binary Exponential Back-off) algorithm” for?
- #10: What does “BEB” stand for?
- #11: What particular problem in CSMA/CD does BEB solve and how?
- #12: If you have (too) many packet collisions in your LAN, what should you do (to alleviate the negative impacts from a large number of packet collisions)? Tell me what. Tell me why it is a reasonable solution.
- #13: What is “IP address” (what does each IP address represent)?
- #14: Each IP address consists of two “addresses”. What are they?
- #15: What is “domain address”?
- #16: What is “host address”?

- #17:** Why does each IP address consist of two addresses of “domain address” and “host address” (what is the motivation behind the design)?
- #18:** What is “DHCP” for?
- #19:** Why can not some host computers in a network domain be dynamically assigned an IP address by DHCP?
- #20:** What is “subnet”?
- #21:** What is “subnet” for?
- #22:** Mention two purposes of subnet mask.
- #23:** Is “254.254.80.90” a valid subnet mask? If yes, how it is a valid subnet mask? If not, why not?
- #24:** Given a following IP address: 191.56.98.201/10 and there are up to 64 sub-networks in that domain, find the actual host address (without including the sub-network address) if the domain’s subnet mask is “255.255.240.0”. Show all your work. **Note:** the parameters (the IP address, IP prefix, the number of sub-networks and the subnet mask) will be changed in the real quiz question.
- #25:** What does “CIDR” stand for?
- #26:** How many host computers can exist for a network domain that has “/25” CIDR block-prefix?
- #27:** How do Internet core routers use CIDR block-prefix?
- #28:** Given a following IP address: 191.56.98.201/10 and there are up to 64 sub-networks in that domain, find the sub-network address if the domain’s subnet mask is “255.255.240.0”. Show all your work. **Note:** the parameters (the IP address, IP prefix, the number of sub-networks and the subnet mask) will be changed in the real quiz question.
- #29:** If a domain has 8,000 host computers (i.e., needs 8,000 IP addresses) and if the domain is supposed to have 10 subnets, what is its subnet mask (answer in the standard “x.x.x.x” format, where ‘x’ is a decimal number between 0 and 255)?