

# Physical and Data Link Layer Test

1. A modern Ethernet might transmit at 100 megabits per second and have a latency of 1 ms and a maximum packet size of 1500 bytes. What's the maximum time needed to successfully send a packet?
2. Suppose I change the Ethernet collision algorithm. When there is a collision I keep transmitting. I'm the only one to make this change; everyone else uses the standard algorithm. What will happen?
3. (Yes/Kinda/No) Do you know who Anna Nicole Smith is?
4. My ethernet is transmitting very slowly and has lots of collisions. What can I do to make things better?
5. I'm in Hawaii listening to the Aloha transmitters. They seem to be transmitting very often, even when the system has no data to send. Which type of Aloha is being used?
  1. Normal Aloha
  2. Slotted Aloha
  3. Reservation Aloha
6. (Yes/No) Did Anna Nicole Smith ever get the money from her rich ex-husband?
7. (True/False) Under real world conditions Ethernet can be operated at 90% of it's maximum bandwidth.
8. Suppose I want to use Ethernet to send LOTS of packets just containing one letter (the letter 'A'). It's a 100 megabit/second ethernet. How many packets can I send per second?
  1. About give-or-take 100 million
  2. About give-or-take 35% of 100 million
  3. About give-or-take 12.5 million
  4. About give-or-take 36% of 12.5 million
  5. Some number even smaller

9. (Me/My cable modem)I can walk from my house to my work in about an hour. I can carry a CD holding 700 megabytes of information. My cable modem can transmit at about 200 kilobits per second. Which moves information faster, me or my cable modem?
10. What is the meaning of the last byte of an ethernet packet? Is it the last byte of the data to be sent? Is it the address of the sender? What is it? (Hint: Feel free to Google.)
11. I send a packet of 1,200 bytes on a 1,000 megabit/second ethernet. The latency is 0.2ms There are no errors and no collisions and the packet is successfully received. How long does it take?
12. What does read return on success?  
`int a = read(fd, buf, len);`
13. What does write return when the other side hangs up?  
`int a = write(fd, "Hello", 7);`