

1. Consider an end system X that wants to send a 3MB file to another end system Y in a packet-switched network. Each package is 32KiB. There are two routers between X and Y using store and forward transmission with a transmission rate of 10Mbps. Propagation delay and processing delay can be ignored. How much time does it take for the first package to arrive completely at end system Y?
  - a. 105 ms
  - b. 210 ms
  - c. 315 ms
  - d. 420 ms
2. Consider the same situation as in the previous question. How much time does it take until the last bit is received in end system Y?
  - a. 131 s
  - b. 11 s
  - c. 1 s
  - d. 13110 ms
3. Ignoring propagation and processing delays, sending one packet of L bits from source to destination over a path with N routers and each link of rate R has a total delay of
  - a.  $\frac{L}{R}$
  - b.  $\frac{N}{R}$
  - c.  $N \times \frac{L}{R}$
  - d.  $(N + 1) \times \frac{L}{R}$
4. What is the size of a MAC address?
  - a. 48 bits
  - b. 42 bits
  - c. 36 bits
  - d. 24 bits
5. In a Time Division Multiplexing link, if there are N sources of the same data rate, how many slots are there in a frame?
  - a.  $N^2$
  - b. N
  - c.  $\frac{N}{2}$
  - d.  $N \times 2$