1.3 QUIZ QUESTION 1 (1/1 point)

Which of the following is/are true?

- [ ] In circuit switching, links are shared using a technique called statistical multiplexing.
- [x] In packet switching, when a host wants to send a large amount of data to another host, it breaks the data into smaller chunks. ✔
- [x] In circuit switching, link resources must be reserved in advance before two hosts can communicate. ✔
- [ ] In packet switching, since user activity is assumed to be random, there is always a non-zero probability that the link will be overloaded, no matter what the number of users.

✔

Note: Make sure you select all of the correct options—there may be more than one!

EXPLANATION

In circuit switching, links are shared by making a fixed reservation of resources. In packet switching, if the number of users is zero, then there is no possibility that the link will be overloaded.

1.3 QUIZ QUESTION 2 (1/1 point)

Consider a packet switching network where 20 users are attempting to access the same link, which can support 9 Megabits per second. Suppose that when active, each user requires 750 kilobits per second, but that

users are active only 15% of the time. At any time, what is the numerical probability that the link is overloaded to two significant digits (e.g. 1.3e-2)?

5.3e-7 ✔ **Answer:** 5.2951e-07

5.3×10^{-7}

EXPLANATION

Since 9 Megabits/750 kilobits = 12, so if more than 12 users attempt to access the same link at the same time, the link will be overloaded.

Using Matlab code to calculate

n = 20;

p = 0.15;

x=13:20;

y=nchoosek(n,x).*p.^x.*(1-p).^(n-x);

sum(y) = 5.2951e-07


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