Practice 1

P7.

a. Bandwidth must be reserved in circuit switching.

So, total 10 users can be supported.

b. The question itself mentioned that the user transmits only 10 percent of the time so, the probability would be p=0.1.

c. Binomial distribution

Where, there are different ways of choosing n users from 40 users, is the probability of choosing these n users, and is the probability of n-k users not being chosen.

d. The probability that there are 11 users or many more users is which is equal to the summation as follows = =0.999 So, P (11 or more users) = 1-0.999 = 0.001

P18.

1. The distance between A and B (D) is 10,000 km = .

Transmission rate (R) is 1Mbps = .

Speed (S) is

= 0.04 sec

So, the bandwidth-delay product is

= 40000 =

1. File size = 400000 bits =

= 40000 =

Therefore, the maximum number of bits at a given time will be 40000 bits.

1. The product of bandwidth-delay is equal to the maximum number of bits on the transmission line.

1. Length of 1 bit on transmission line = = = 250 m/bit

Therefore, it is longer than a football field.

1. Width =