Comp3721 A#4

# DUE: April 11 at 5pm

1. A group of n stations share a 56-kbps pure ALOHA channel. Each station outputs a 1000-bit frame on an average of once every 100 s, even if the previous one has not yet been sent (e.g. the stations can buffer outgoing frames). What is the maximum value of N?

Recall the maximum throughput for pure ALOHA is 18.4% (throughput = Ge-2G with load G=1/2 for max)With pure ALOHA the usable bandwidth is 0.184 X 56 kps = 10.3kbps. Each station requires 10 bps, so N = 10300/10 = 1030 stations

1. Consider building a CSMA/CD network running at 1 Gbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/s. What is the minimum frame size?

For a 1-kim cable, the one-way propagation time is 5usec, so 2t = 10usec. To make CSMA/CD work, it must be impossible to transmit an entire frame in this interval. At 1 Gbps, all frames shorter than 10,000 bits can be completely transmitted in under 10usec, so the minimum frame is 10,000 bits or 1250 bytes.

1. Consider the subnet shown below. Distance vector routing is used, and the following vectors have just come in to router C: from B: (5,0,8,12,6,2); from D: (16,12,6,0,9,10); and from E (7,6,3,9,0,4). The measured delays to B, D, and E are 6, 3, and 5, respectively. What is C’s routing table? Give both the outgoing line to use and the expected delay.

B C

A

E F

3

D

Going via B gives (11,6,14,18,12,8)

Going via D gives (19,15,9,3,9,10)

Going via E gives (12, 11, 8, 14, 5, 9)

Taking the minimum for each destination except C gives (11,6,0,3,5,8).

The outgoing lines are (B,B,\_,D,E,B)

1. Chpt15: Q12,14,18







1. Chpt 19 Q20,22,26









1. Chpt20 Q12,18,23







1. Chpt22 Q18,19,24



