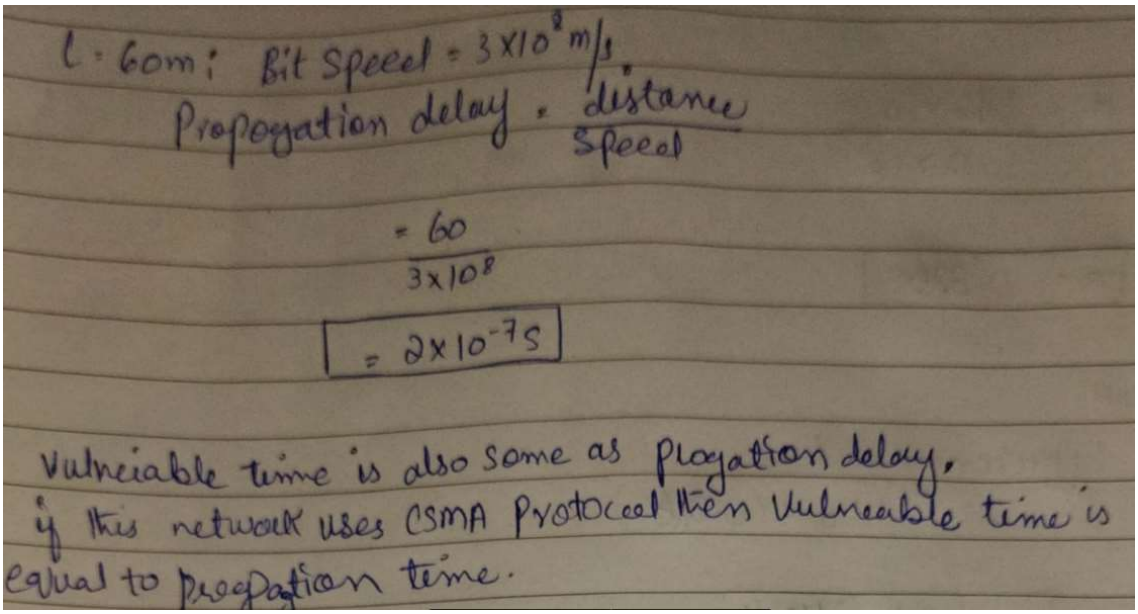
Mohammad Ali Jinnah University

Data Communication and Networking

Assignment 3 – Solution

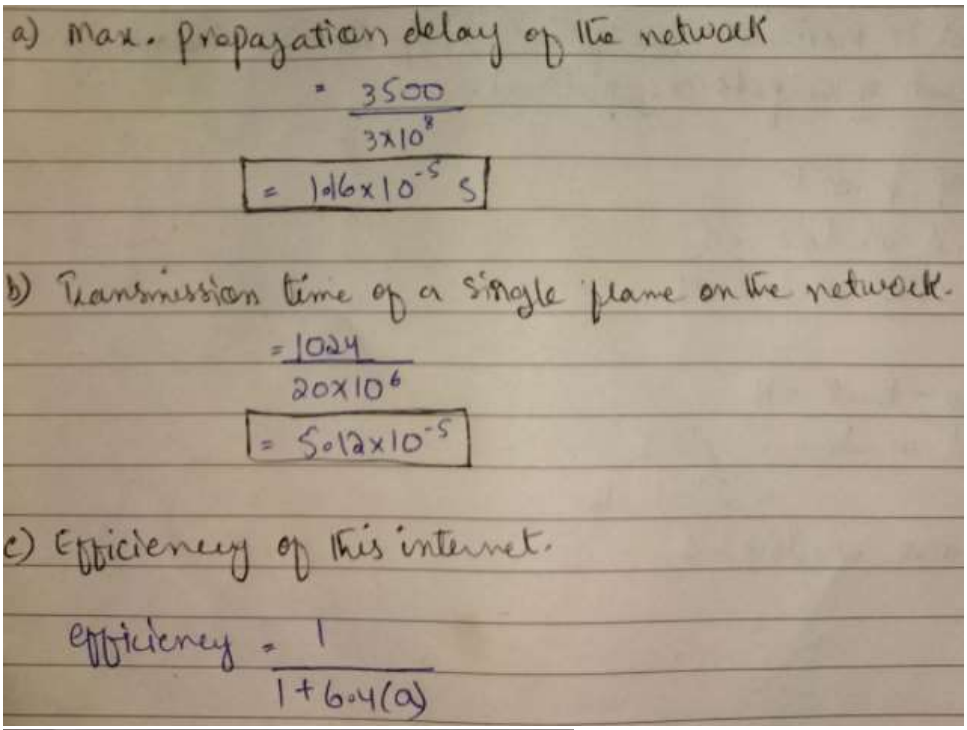
BS/BE (CS) – CM, DM

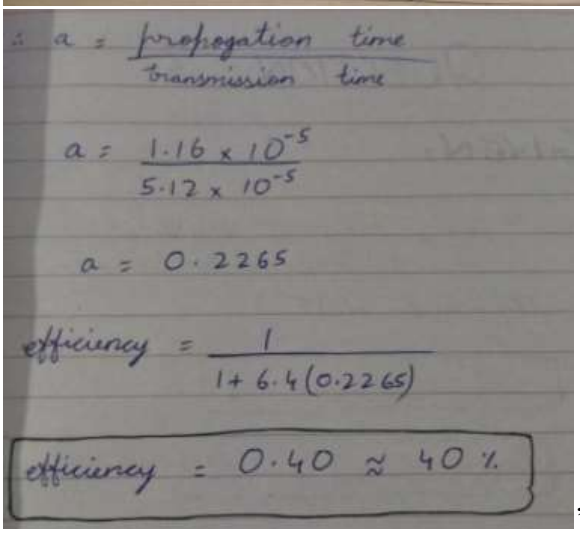
Question 1: Suppose an IT office has a network with maximum distance equal to 60 meters. Find out maximum propagation delay of this network (Bit travelling speed = $3x10^8$ m/s). Also, find vulnerable time if this network uses CSMA protocol.



Question 2: In a standard Ethernet with transmission rate of 20 Mbps, cable length of 3500 meters, fixed frame size of 1024 bits and bit travelling speed of $3x10^8$ m/s, find out the following: -

a) Maximum propagation delay of the network.
b) Transmission time of a single frame on the network.
c) Efficiency of this Ethernet.





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Question 3: Using 4-bit sequence numbers, what is the maximum size of the send and receive windows for each of the following protocols?

a. Stop-and-Wait

b. Go-Back-*N*

c. Selective-Repeat

a) STOP-and-WAIT

Send window = 1

Recieve window = 1

b) Go-Back-N

Send window = $2^n - 1$

Send window = $2^4 - 1$

Send window = $16 - 1$

Send window = 15

Recieve window = 1

c) SELECTIVE -REPEAT

Send window $= \frac{2^n}{2}$

Send window $= \frac{2^4}{2}$

Send window $= \frac{16}{2}$

Send window = 8

Recieve window = 8