

ITS323 – Quiz 4

Name: _____ ID: _____ Marks: _____ (10)

Question 1 [5 marks]

Consider stop-and-wait ARQ being used on a link from A to B. Device A has 3 frames to send to B. The link propagation delay is 100ms, the frame transmission time is 50ms, the ACK transmission time is 5ms and the timeout interval is 400ms (timer starts after data frame transmission is complete). If A starts transmitting at time 0 and the 2nd frame transmitted by A is lost, what is the minimum time before which A can receive the entire ACK for the last transmitted frame? You must draw a diagram illustrating the exchange of frames. [4 marks]

Question 2 [2 marks]

Consider question 1 above. If all delays were fixed and could be predicted by device A, what would the ideal timeout interval be? Explain your answer stating any assumptions.

Question 3 [3 marks]

You have 9000 bits of data to transmit across a link using stop-and-wait ARQ. If 1 out of the 9000 bits is in error, then in terms of efficiency which option is better (ignore fairness and buffer sizes):

- Option 1: Frame with 1000 bits of data and 10 bit header
- Option 2: Frame with 90 bits of data and 10 bit header

Explain your answer showing any calculations.