**Solution notes**

**Digital Communication II 2005 – Paper 8 Question 3 (JAC)**

(*a*) *Outline the mechanism that most TCP implementations use today to set the retransmission timer dynamically.* [10 marks]

So here I want to see clear explanation of unambiguous sampling (i.e. don't use retransmit packet/ack to measure rtt sample). Then how samples are used to compute mean plus variance of distribution of RTTs, then how RTO is computed as mean + some number of variance (actually mean square difference) – 3 each for these 3 points. 1 more for any clarity or suggestion about actual pseudocode (was presented in lectures and is in notes)

(*b*) *How does TCP mitigate the problems of loss of throughput due to AIMD, when there is moderate packet loss?* [5 marks]

This is plain "Fast Retransmit" and "Fast Recovery", as discussed in lecture 5/6/7. Basically, duplicate acks signal small packet loss followed by reception of "out-of-sequence" packets at far end, and hint to transmitter to resend (what and when!). The recovery is that we do not do multiplicative decrease of the "repair" fixes things.

(*c*) *What might you propose to solve the problem of repeated slow-start of TCP in networks where packet loss due to noise was high (e.g. 50% packet loss probability), but there was still the possibility of congestion?* [5 marks]

I discussed SACK in lectures. Also link layer FEC – this does require them to think outside the box just a tad tho:)