2007 Paper 8 Question 4

Digital Communication II

Routing in the Internet is distributed, adaptive, and above all *opportunistic*.

(*a*) Describe, using simple topologies, the operation of *distance vector* and *link state* algorithms.   [5 marks each]

(*b*) End-to-end reliability, flow control, and congestion avoidance are provided through TCP. Describe the impact on throughput for an end-to-end TCP connection of a link failure, followed by the provision of a new end-to-end path by the convergence of the distributed route computation.   [5 marks]

(*c*) How would the same failure and repair affect a Voice-over-IP session in terms of packet deliveries?   [2 marks]

(*d*) How could one mitigate the impact of dynamic single path routing on so-called realtime flows, and what would the impact (overhead) of this mitigation be?
[3 marks]