

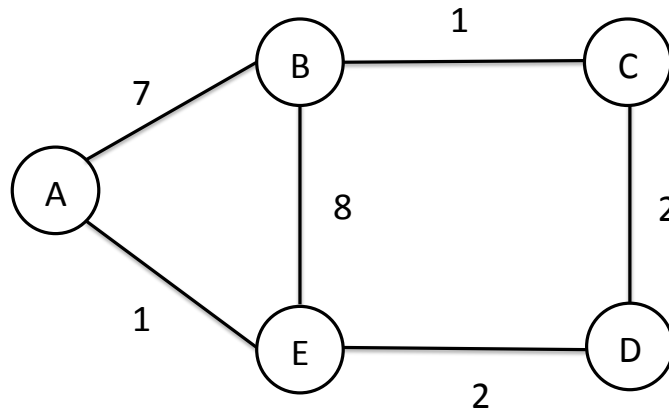
12 Principles of Communications (JAC)

- (a) The network illustrated below is running a distance vector routing algorithm, with update periodicity configured to 30 second intervals. The links are all 100Mbps Ethernets, including the host attachments to routers. The edge weights on the network are the (fixed) delays in milliseconds.

A source host connected to router A opens a TCP flow to a destination host connected to router B, and starts to move a file across the path, which has packet sizes (maximum segment size) of 1500 bytes, and an underlying RTT given by the sum of link metrics on a path (e.g. 2x6ms). Assume that prior to the start of the TCP flow, the network topology and routing have reached a steady state.

Suppose that the link between B and C fails 30 seconds after the TCP flow has started and the link is repaired after 5 minutes.

- (i) Explain the route computations that follow the failure and the repair of the link. [8 marks]
- (ii) Draw a time sequence diagram of TCP data and acknowledgement packets, illustrating the congestion window alongside. [8 marks]



- (b) How much simpler would the computations have been if we ran Link State rather than Distance Vector routing? [4 marks]