Advanced Systems Topics

(a) The Border Gateway Protocol (BGP) uses two mechanisms to reduce the number of update messages: route-flap damping and rate-limiting.

(i) Describe the rate-limiting mechanism. [3 marks]

(ii) Discuss what might happen if every BGP speaking router in the Internet turned off rate-limiting. [3 marks]

(b) Professor Bell claims that BGP could be replaced by a simple shortest paths routing protocol. Is Professor Bell correct? Explain. [4 marks]

(c) Content Delivery (or Distribution) Networks (CDNs) are becoming an important component of the Internet.

(i) What is a CDN? [2 marks]

(ii) What impact could the growth of CDNs have on inter-domain routing? [3 marks]

(d) The growth of routing tables has led to proposals to make an explicit separation between identifiers and locators.

(i) Explain how this could reduce routing table size. [2 marks]

(ii) Explain how tunnelling is required by this scheme. [3 marks]