4 Computer Networking (AWM)

(*a*) Two network-architecture approaches are commonplace: *hop-by-hop*, and *end-to-end*.

Briefly compare these two approaches with reference to the encryption of a web-page and the use of WPA2 (or similar schemes) to secure WiFi. [4 marks]

(*b*) Consider four components that constitute delay for a packet network: queueing delay, processing delay, propagation delay, and transmission delay.

(*i*) Order these delays by magnitude, giving typical values for each and making clear your justification. [8 marks]

(*ii*) (A) Describe circumstances where processing delay for one packet type varies significantly from the mean processing delay of a packet. [2 marks]

(B) Estimate what such a difference in delay might be. State your assumptions and show your working. [2 marks]

(*iii*) Packet-network delays of a typical datacentre may vary significantly from those found in the Internet.

Discuss why this should be the case, with particular reference to the Bandwidth-Delay product and discuss the implications for network architectures in datacentres where we wish to minimise delay. [4 marks]