COMPUTER SCIENCE TRIPOS Part II – 2015 – Paper 8

11 Topical Issues (RKH)

(*a*) Compare and contrast the radio channels used by Bluetooth Low Energy (BLE) and WiFi in the 2.4 GHz ISM radio band. Explain why BLE uses only three channels for advertisements and how the three were selected.   [6 marks]

(*b*) Consider a wireless mouse computer peripheral. Analyse the use of WiFi, BLE and a proprietary radio system for communication with the computer, giving advantages and disadvantages for each.   [10 marks]

(*c*) Bluetooth 4.0 specifies a per-packet Cyclic Redundancy Check (CRC) to protect each 31-octet BLE packet as a whole. In contrast the longer WiFi packets contain a separate CRC for each of the packet header and the packet payload. When Bluetooth 4.1 introduced longer BLE packets, it retained a single CRC for the entire packet. What are the consequences of this decision?   [4 marks]