COMPUTER SCIENCE TRIPOS Part II – 2014 – Paper 9

12   Topical Issues (RKH)

(a) Give five differences between a passive UHF RFID tag and a standard printed barcode. [5 marks]

(b) Consider a group of four 4-bit passive UHF RFID tags with the identifiers {1011, 1010, 0111, 1001}.

    (i)   Give the sequence of queries necessary to enumerate the group of four tags when using the Binary Tree Walking Algorithm (BTWA). [3 marks]

    (ii) Show how the Query Tree Walking Algorithm (QTWA) can fully enumerate the same four tags using just four queries. [4 marks]

    (iii) Discuss the extent to which a passive eavesdropper can identify the RFID tags in range of a given reader for both BTWA and QTWA. Consider eavesdroppers that are very close to the reader and also eavesdroppers near the maximum transmission range of the reader. Illustrate your answer using your solutions to (b)(i) and (b)(ii). [8 marks]