

## 2002 Paper 4 Question 4

### Data Structures and Algorithms

- (a) Carefully describe how Shellsort works and state an estimate of its efficiency using big  $O$  notation. [8 marks]
- (b) Robert Sedgewick suggests that a good sequence of separations used in the algorithm is  $\dots, 121, 40, 13, 4, 1$ . Explain why this is a good sequence. Under what circumstances would you recommend a sequence that approaches 1 more rapidly? [4 marks]
- (c) Describe how radix sort from the least significant end works and suggest a data structure that could be used in its implementation. [8 marks]