Write your answers in the D1 answer book for this paper.

1.

24 16 34 21 38 12 31 5 9 14 23

The eleven numbers above are to be packed into bins of size 60

(a) Calculate a lower bound for the minimum number of bins required.

(2)

(b) Use the first-fit bin packing algorithm to pack the numbers into bins of size 60

(3)

(c) Use bubble sort to sort the list of numbers into descending order, showing the result after each pass.

(4)

(d) Use the first-fit decreasing bin packing algorithm to pack the numbers into bins of size 60

(2)

(Total for Question 1 is 11 marks)