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

1. 175 135 210 105 100 150 60 20 70 125

The numbers in the list above represent the weights, in kilograms, of ten crates. The crates are to be transported in trucks that can each hold a maximum total crate weight of 300 kg.

(a) Calculate a lower bound for the number of trucks that will be needed to transport the crates.

(2)

(b) Using the list provided, carry out a bubble sort to produce a list of the weights in descending order. You need only give the state of the list after each pass.

(4)

(c) Use the first-fit decreasing bin packing algorithm to allocate the crates to the trucks.

(3)

(Total for Question 1 is 9 marks)

1.

175 135 210 105 100 150 60 20 70 125

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Question 1 continued

(Total for Question 1 is 9 marks)