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

**1.**

5.2 4.7 6.5 4.5 3.1 5.1 1.8 2.9 3.4 3.8 1.2

(a) Use the first-fit bin packing algorithm to determine how the eleven numbers listed above can be packed into bins of size 14

**(3)**

(b) The list of numbers is to be sorted into **ascending** order. Use a quick sort to obtain the sorted list. You should show the result of each pass and identify your pivots clearly.

**(4)**

(c) Apply the first-fit decreasing bin packing algorithm to the sorted list to pack the numbers into bins of size 14

**(3)**

(d) Explain why the number of bins used in part (c) is optimal.

**(1)**

(e) Use the binary search algorithm to **try** to locate 3.0 in the list of numbers. Clearly indicate how you choose your pivots and which part of the list is rejected at each stage.

**(3)**

**(Total for Question 1 is 14 marks)**

**1.**

5.2 4.7 6.5 4.5 3.1 5.1 1.8 2.9 3.4 3.8 1.2

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**Question 1 continued**

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**Question 1 continued**

**(Total for Question 1 is 14 marks)**