

**QUESTIONS/HOMEWORK ON SORTING**

1.(i) Apply the Bubble Sort Algorithm to the set of numbers below.

**5, 3, 8, 0, 9, 6, 8, 4** **[3]**

(ii) How many comparisons and swaps did you make in 1? **[1]**

2. (i) Now apply a shuttle sort to the numbers in question 1. **[3]**

(ii) How many comparisons and swaps were made using the shuttle sort? **[1]**

3. In a test **Ali scores 57, Bill scores 67, Cleo scores 43 and Debbie scores 73.**

(i) Use the bubble sort to rearrange the individuals from alphabetic order into descending order of merit. Show the list of scores after each pass of the algorithm. **[2]**

Ewan’s score of 60 subsequently becomes available. He is inserted into the list by comparing his score with the best score, then with the second best, etc., until it can be put in the correct place.

(ii) How many comparisons were made in performing the bubble sort and then inserting Ewan into the list? **[1]**

(iii) How many comparisons would have been made if Ewan’s score had been available in the first place, and he had been listed after Debbie initially? **[1]**

4. A project is to be completed in 13 days. The activities involved in the project and their durations in days are given in the table.

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J |
| 3 | 8 | 7 | 5 | 8 | 4 | 5 | 4 | 4 | 4 |

To determine how many workers are required

(a)Apply the first-fit algorithm **[2]**

(b)Apply the first-fit decreasing algorithm **[2]**

(c)Is it possible to obtain a better solution than either (a) or (b) **[2]**