R-4.14 Answer:

|  |
| --- |
| None of these algorithms are stable.  Justification:  Stable sorting algorithms maintain the relative order of records with equal keys (i.e. values). Therefore, a sorting algorithm is stable if whenever there are two records R and S with the same key and with R appearing before S in the original list, R will appear before S in the sorted list. |

R-4.16 Answer:

|  |
| --- |
| NO, bucket sort is not in-place because we need to move the items into the bucket for sorting. |

R-4.13 Answer:

|  |
| --- |
| Algorithm isSameSetElements**(**A**,**B**)**  Input**:** Sequence A**,** B  Ouput**:** **true** **if** they are elements of same set**,**othewise **false**  **if** A**.**size**()** **=** B**.**size**()** then  D1**<-** Dictionary**(**hastable**)**  D2**<-** Dictionary**(**hastable**)**    **for** each x of A **do**  cnt**<-**D1**.**findElement**(**x**)**  **if** cnt **!=** NO\_SUCH\_KEY then  D1**.**insertItem**(**x**,** cnt **+** 1**)**  **else**  D1**.**insertItem**(**x**,** 0**)**  **for** each x of B **do**  cnt**<-**D2**.**findElement**(**x**)**  **if** cnt **!=** NO\_SUCH\_KEY then  D2**.**insertItem**(**x**,** cnt **+** 1**)**  **else**  D2**.**insertItem**(**x**,** 0**)**  **for** each x of A **do**  **if** D1**.**findElement**(**x**)** **!=** D2**.**findElement**(**x**)** then  **return** **false**  **return** **true** |

R-5.4 Answer: