COMSATS University Islamabad, Lahore Campus

Assignment 1 – FALL 2024

Course Title:	Data Structures & Algorithms			Course Code:	CSC 211	Credit Hours:	4(3,1)
Course Instructor:	Moazzam Ali Sahi			Program Name:	BCE		
Semester:	4th	Batch:	FA21	Section:	A & B	Date Given:	March 8, 2024
Submission Date:	**March 13, 2024**			**Maximum Marks:**		**50**	
Name:				**Registration Number:**			

Important Instructions / Guidelines:

- ***Please add this page on your Assignment***
- Do your own work, PLAGARISM will be graded as ZERO
- **No late submission**.

Question 1: **[CLO1-PLO1-C2]** **[10 Marks]**

Convert the pseudocodes(given in slides) of the given sorting operations into a proper algorithm (as discussed in the class).

a) Insertion sort

b) Selection sort

Question 2: **[CLO1-PLO1-C2]** **[10 Marks]**

Comprehend the codes(snippets) given below and find out their worst case time complexity

a)

```
int a = 0;
for (i = 0; i < N; i++) {
    for (j = N; j > i; j--) {
        a = a + i + j;
    }
}
```

b)

```
int a = 0, i = N;
while (i > 0) {
    a += i;
    i /= 2;
}
```

Question 3: **[CLO3-PLO2-C3]** **[30 Marks]**

For the given array ***apply*** the sorting algorithms and show each passthrough in tabular form

1) Bubble sort
2) Insertion sort
3) Selection sort
4) Merge sort
5) Shell sort
6) Quick sort

70	**54**	**59**	**30**	**31**	**78**	**2**	**77**	**82**	**72**

end of assessment