Student Name: **UID:**

Branch: CSE   **Section/Group:**

Semester: 4   **Date of Performance:21-02-2022**

Subject Name: Design and Analysis of Algorithm lab

Subject Code: 22E-20CSP-285

Aim/Overview of the practical:

Implementation of quick sort algorithm.

Task to be done:

Write a program to implement quick sort algorithm.

Algorithm/Flowchart (For programming based labs):

1. Start the program.
2. Define the function.
3. Declare the variables.
4. If first < last (Else Step 8)
5. Set pivot = a[first]
6. Set i = first
7. Set j = last
8. Repeat step 4-6 while i<j
9. Repeat while a[i] < = pivot and i < last

10. Set i++
11. Repeat while a[j]>pivot
12. Set j—
13. If i<j
14. Swap a[i] and a[j]
15. If i>=j
16. Swap a[j] and a[first]
17. Call quicksort (a, first, j-1)
18. Call quicksort (a, j+1, last)
19. Exit.

Code:

```cpp
#include<iostream>
using namespace std;
void quicksort(int arr[],int first,int last)
{
    int i,j,pivot,temp;
    if(first<last)
    {
        pivot=first;
        i=first;
        j=last;

        while(i<j)
        {
            while(arr[i]<=arr[pivot]&&i<last)
            {
                i++;
            }
            while (arr[j]>arr[pivot])
            {
```

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

```cpp
            j--;
        }
        if(i<j)
        {
            temp=arr[i];
            arr[i]=arr[j];
            arr[j]=temp;
        }


    }
    temp=arr[pivot];
    arr[pivot]=arr[j];
    arr[j]=temp;
    quicksort(arr,first,j-1);
    quicksort(arr,j+1,last);
    }
}
int main()
{
    int i,n;
    cout<<"Enter (n) size of array::";
    cin>>n;
    int arr[n];
    cout<<"Enter elements of array::\n";
    for(i=0;i<n;i++)
    {
        cin>>arr[i];

    }

    quicksort(arr,0,n-1);
    cout<<"After Sorting::\n";
    for(i=0;i<n;i++)
```

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

```cpp
    {
        cout<<arr[i]<<"\n";
    }

    return 0;
}
```

Result/Output/Writing Summary:

```
Enter (n) size of array::5
Enter elements of array::
1
2
3
6
5
After Sorting::
1
2
3
5
6
```

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			