Bennett University Greater Noida
Department of CSE

Subject Lab: Algorithms & Complexity **Lab Duration: 10:40-12:35**
Lab Code: ECSE202L **Max Marks: 10**

Submission Guidelines:

1. The purpose of the course is to learn how to analyse the complexity of the algorithm.
2. You are supposed to do this assignment on your own. While you may discuss the problem with other students, you are not allowed to copy any part of the code from other students or to copy from any other source. Any form of **plagiarism** will not be tolerated. If there is substantial overlap between the codes submitted by two students, both will get reduction in the course grade.
3. The assignment should be **shown to lab instructor** in the lab session and **must be submitted** on LMS by **given date**.

It should also carry the following statement:

"***I have done this assignment on my own. I have not copied any code from another student or any online source. I understand if my code is found similarto somebody else's code, my case can be sent to the Disciplinary committee of the institute for appropriate action.***"

Lab Assignment 8

Q1. In this assignment, students are required to read a file (Lab8_input.txt) and write down the sorted array in a file named Lab8_output.txt using **Shell sort** with the time complexity (No. of required iterations) for reading and writing data in file. The increment sequence to be followed is 5,3,1.

For example, suppose the lab8_input.txt holds following value: First number gives the total number in array

```
9
8
1
4
1
5
9
2
6
5
```

Expected output: A output file by name "Lab8_output.txt"

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```
9
          1
          1
          2
          4
          6
          5
          2
          8
          9
```

```
Complexity is: ---
```

Q2. In this question, students are required to store the matrix representation of graph in the file Lab8_input2.txt and find the minimum spanning tree using either Kruskal/Prim's Algorithm and store the result back into Lab8_output2.txt. Also return the time complexity for generating Lab8_output2.txt file.