Time Allowed: 1 hrs.

Max. Marks: 20

1.	Explain Stack and its basic operations. Write algorithm/pseudo code for the operations.	(5)
2.	What do you mean by the space complexity and time complexity of an algorithm? Write an algorithm/pseudo code for linear search and mention the best-case and worst-case time complexity of the Linear Search algorithm.	(5)
3.	You are given a set of intervals. You have to write an algorithm/pseudo code that creates an interval by merging all overlapping intervals and prints all non-overlapping intervals. For example, Input: Intervals = {{1,4}, {6,8}, {2,5}, {11,13}, {7,9}} Output: {{1, 5}, {6, 9}, {11, 13}}. What is the time complexity and space complexity of your algorithm? (Hint: Stack data structure may be used).	(5)
4.	You are given an integer array arr of size n. Assume a sliding window of size k starting from index 0. In each iteration, the sliding window moves to the right by one position till n-k. Write an algorithm/pseudo code to return an array representing the maximum number in all sliding windows. What is the time complexity and space complexity of your algorithm? (Hint: Deque data structure can solve this problem in O(n) time complexity).	(5)