INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR
CS21003 Algorithms I: Second Class Test 2022 Spring

Date of Examination: 22ⁿᵈ February 2022
Duration: 40 minutes + 5 minutes (for scanning, concatenating, and uploading)
Full Marks: 20
Subject: CS21003 Algorithms I

Part I

Answer the following questions by presenting

 ▷ The solution idea in a couple of sentences.

 ▷ The detailed algorithm including initial and final versions as needed.

 ▷ Its working on a non-trivial example.

 ▷ Analysis of its Complexity

1. An ordered set of distinct integers is said to be 'almost sorted' in ascending order if every element is either in its correct place or at most two positions away on either side. Given two such 'almost sorted' sets of arrays A and B, each of size greater than 20, where all elements are assumed to be distinct, present an algorithm for finding the **MEDIAN** of the combined elements of A and B.

[10 Marks]

2. Present an algorithm for finding the Longest Common Subsequence between two character strings S and P, both of equal length L, L > 20, such that the difference between the positions of the matched letters is less than or equal to 2.

[10 Marks]

All the best