Student Name: _____ Section: _____ Roll No: _____

Program: CS20 A & B

Semester: Spring – 2021 *[Covid19 Online Exam]*

Time Allowed: 1 hour + 40 Minutes

Course: **Design & Analysis of Algorithms**

Examination: Sessional – I & II

Total Marks: 50 Weightage: 20 %

Date: 28th May, 2021

Instructor: Mr. Fazl-e-Basit

NOTE: Attempt all questions. *NO ANSWER SHEET REQUIRED*

Time: 20 Minutes   Marks: 8

Q.7) Show that the longest path from a node x in a red-black tree to any descendant leaf has length at most twice that of the shortest path from node x to any other descendant leaf.   **[4]**

Q.8) Prove Mathematically (Not Theoretically) that what is the height of Heap in any one of the asymptotic notations.   **[1+3]**