**Design and Analysis of Algorithm (PCCCS-404)**

**Assignment 1**

**Submission Date: 25/4/21**

1. Solve the following recurrances using Masters Theorem, [10]

(i) T(n) = 0.7 T(n/2) + 1/n

(ii) T(n) = 16T (n/4) + n

(iii) T(n) = 4T (n/4) + n log n

(iv) T (n) = 2nT(n/2) + nn

(v) T (n) = 3T (n/3)+ n1/2

2. Which of the following algorithm is better when dealing reverse sorted numbers? Explain [5]

a) Quick sort b) Heap sort c) Insertion sort d) all are equally good

3. Explain why the statement, “ The running time of Algorithm A is at least O(n2),” is meaningless.

[5]

4. Prove that if f(n) is O(h(n)) and h(n) is O(g(n)) then f(n) is O(g(n)). [5]