Mid Semester Online Examination 2021 PART-B

Name of the Program: Bachelor of Technology *Semester: 5th*
Name of the Course: Design and Analysis of Algorithms *Course Code:* TCS 505

Time: 1 Hour Maximum Marks: 20

Note:

(i) Answer **all the questions** by choosing ***any one of the sub questions***.
(ii) Each question carries 10 marks

Q1	(10 marks)	**CO1/2/3**
a)	Write the iterative algorithm for binary search. Find the Time and Space complexity of the algorithm.	
OR		
b)	Write the algorithm for insertion sort and explain why insertion sort is better than merge or quick sort in case of almost sorted array.	
Q2	(10 marks)	**CO1/2**
a)	Following keys are inserted in an initially empty min heap in the following order: 20, 27, 15, 6, 19, 24, 72. What will be the final min heap.	
OR		
b)	Solve each of the following recurrences for tight asymptotic upper bound (O notation). Take base case as T(1) = 1 a) $T(n) = T(\ n\ /2) + \sqrt{n}$ b) $T(n) = T\ (\ n/2\ ) + T\ (\ n/4\ ) + 5n$	