Roll No ....

CS-3004-CBGS
B.E., III Semester
Examination, December 2020
Choice Based Grading System (CBGS)
Data Structures - II
Time : Three Hours

Maximum Marks : 70

Note: i)   Attempt any five questions.
     ii)   All questions carry equal marks.
     iii) Assume data suitably.

1. a)   How do you find the complexity of an algorithm? What is the relation between the time and space complexities of an algorithm? Justify your answer with an example.

    b)   Write a program to print out the elements of a singly linked list?

2. a)   Explain various algorithm used in data structure.

    b)   Provide the solution for the following recurrences:

$$T(n) = 2T\left(\frac{n}{2}\right) + n \log n$$

3. Explain AVL tree. Insert the following elements in AVL search tree.
48 25 10 5 7 3 28 20 8 16

    b)   Explain Hash function and symbol table in detail.

4. What do you understand by Merge sort? Write the algorithm to sort using merge sort. Take an example to explain your answer.

5. a) Explain Red Black Trees also discuss the properties of Red Black tree.

   b) What do you mean by Sorting? Discuss the need for sorting.

6. Suppose the elements in the array are A = < 2, 13, 5, 18, 14, 20 > Does this array can be represent in INSERTION SORTING justify your answer with all the steps.

7. a) Explain basic file operations with example.

   b) Differentiate between direct file organization and sequential file organization.

8. a) Write short note on Quick sort. Radix sort and Bucket sort with example.

   b) Sort using quick sort algorithm
      36, 25, 32, 5, 8, 65, 38, 47, 95

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