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Roll No .....

CS-223 (CBCS)

B.E., III Semester

Examination, December 2017

Choice Based Credit System (CBCS)

Data Structures - II

Time : Three Hours

Maximum Marks : 60

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Discuss briefly the various asymptotic notation used in algorithm analysis.

   b) Explain various algorithm used in data structures.

2. a) Give the solution for the following recurrences

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

   b) Explain the common operations performed on data structures.

3. a) What are Red Black trees? Write down the properties of Red Black trees.

   b) Construct a leap tree for the following nodes:

   8, 15, 24, 48, 3, 12, 18, 32, 54, 11, 6

4. a) Sort the following integer using quick sort:

   95, 55, 42, 36, 12, 18, 48, 65, 72, 82

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

5. a) Differentiate between internal sorting and external sorting.

   b) Discuss and explain how to augment a data structure.

6. a) How can we receive on element with a given rank? Give the procedure to determine the rank of element.

   b) Write a brief note on interval trees.

7. a) Explain sequential file organization and indexed sequential file organization. Also write down their benefits.

   b) Explain multiway merge sort with an example.

8. Write short notes:

   a) Tournament tree

   b) Replacement selection

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