PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech. Winter 2017 - 18 Examination

Semester: 1   Date: 28/12/2017
Subject Code: 03205102   Time: 2:00 PM to 4:30 PM
Subject Name: Advance Data Structure and Algorithms   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Perform Insertion sort for the numbers 12 11 13 5 6 **(05)**

    B) Write Short notes on Asymptotic notations. **(05)**

    C) Solve the following using recurrence tree method $T(n) = T(n/4) + T(n/2) + cn^2$ **(05)**

Q.2 Answer the following questions. (Attempt any three)

    A) Describe DFS in detail with an example. **(05)**

    B) List the steps to build Huffman code. **(05)**

    C) With steps elaborate how to search 23 using binary search in the list 2 5 8 12 16 23 38 56 72 91 **(05)**

    D) How many methods are available to pick the pivot element in quick sort, list the same? **(05)**

Q.3 A) Sketch a note on Red-Black Trees **(07)**

    B) Write an algorithm to delete (AVL) a node from a tree. **(08)**

<div align="center">OR</div>

    B) Differentiate height and weight balanced trees. **(08)**

Q.4 A) Explain in detail about KMP Algorithm with an example **(07)**

<div align="center">OR</div>

    A) With an example state Rabin-Karp algorithm. **(07)**

    B) What is Class P and NP? Draw and differentiate the same. **(08)**