JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- September 2018
B.Tech, Vth Semester

COURSE CODE: 10B11CI411   MAX. MARKS: 15

COURSE NAME: Fundamentals of Algorithms

COURSE CREDITS: 04   MAX. TIME 1Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. Trace the heap sort algorithm for the following list of numbers.

   $\{8, 20, 9, 4, 15, 10, 7, 22, 3, 12\}$ [CO2], MARKS [4]

2. Write an algorithm for merge sort and explain the complexity analysis for this algorithm.

             [CO2], MARKS [4]

3. Show that, $3n^3 + 5n^2 + 11n + 18$ is $\Theta(n^3)$.   [CO1], MARKS [3]

4. Prove that, the best case and worst case running times of insertion sort algorithm are $O(n)$ and $O(n^2)$ respectively.   [CO1], MARKS [4]