JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- Feb 2018

B.Tech/M.Tech VIII/II Semester

COURSE CODE: 10M11CI211 MAX. MARKS:15

COURSE NAME: ADVANCED ALGORITHMS

COURSE CREDITS: 3 MAX. TIME: One Hour

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

Question 1: Explain the difference between back substitution method and recursive tree method, with the help of example. Apply Master theorem to deduce the complexity of:

i. $T(n) = 16T(n/4) + n$.

ii. $3T(n/2)+n$ [4 Marks]

Question 2: Write short nodes on: [5 Marks]

i. Asymptotic time complexity

ii. P,NP,NPC and NPH

iii. Proof: Vertex Cover problem is NPC.

Question 3: [6 Marks]

i. Difference between Dynamic Programming, Backtracking and Branch and Bound Technique.

ii. Use Branch and Bound Technique to solve the given "0/1 Knapsack problem".

Knapsack size: 20

Items	X_1	X_2	X_3	X_4
W	6	12	4	16
P	12	12	32	32

Write space complexity and compare time complexity of Branch and Bound with the Greedy approach.