

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKEUP EXAMINATION- 2016

B.Tech IV Semester

COURSE CODE: Fundamental of Algorithm

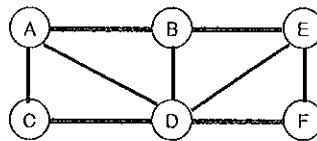
MAX. MARKS: 25

COURSE NAME: 10B11CI412

COURSE CREDITS: 04

MAX. TIME: 1Hr 30 Min

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



1. a) Draw a Breadth-First Tree beginning at A for the graph above. Is that the only Breadth-First Tree rooted at A for this graph? If not, draw others.
 b) Draw a Depth-First Tree beginning at A for the graph above. Is that the only Depth-First Tree rooted at A for this graph? If not, draw others. [2+3+2+3]
2. Present correct and efficient algorithms to convert an adjacency matrix into an adjacency list, for an undirected graph G with n vertices and m edges. You must give the time complexity of each algorithm. [3+2]
3. Consider a numerical questions game. In this game, player 1 thinks of a number in the range 1 to 64. Player 2 has to figure out this number by asking the fewest number of true/false questions. Assume that nobody cheats.
 a) What is an optimal strategy when a Skip list is used?
 b) What is the minimum number of comparison required in the worst case? [3 + 3]
4. Prove that if the weights of the edges of a connected graph G are distinct, then G has a unique minimum spanning tree. [4]