JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- April 2019

B.Tech IV Semester

COURSE CODE: 10B11CI411

COURSE NAME: Fundamentals of Algorithms

COURSE CREDITS: 04

MAX. MARKS: 25
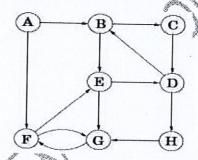
MAX. TIME: 1Hr 30 Min

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

1. [CO-4] Perform depth-first search on the following graph (show the states of associated stack); whenever there's a choice of vertices, pick the one that is alphabetically first. Classify each edge as a tree edge, forward edge, back edge, or cross edge, and give the pre-visit and post-visit number of each vertex.   [3+3]

2. [CO-4] Prove that the complexity of breadth first search algorithm on a connected graph to find BFS tree is O(V+E).   [3]

3. [CO-3] Write the properties of red black tree. Construct a red black tree for following numbers:
   10, 20, 9, 4, 15, 8, 7, 22, 3, 21, 22, 23.   [2+ 4]

4. [CO-2, 3, 4] Write short note on:

   a) Random insertion.
   b) Lazy delete.
   d) Linear sorting.
   c) Collision resolution.
   e) Sparse and dense graph.   [5 X 2]