B.Tech. SEM -VI Info. Tech. 2014 Course (CBCS) : WINTER - 2017

SUBJECT: DESIGN AND ANALYSIS OF ALGORITHMS

Day : **Wednesday** Time **10.00 AM TO 01.00 PM**

Date : **22/11/2017** **W-2017-2218** Max.Marks:60

N.B.

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Use of non-programmable **CALCULATOR** is allowed.
4) Neat diagram must be drawn **WHEREVEER** necessary.
5) Assume suitable dada wherever necessary.

Q.1 What are linear and non linear data structures? Explain in detail one data structure of each type. **(10)**

OR

What is "analysis of algorithms" ? Which are the various ways of analyzing algorithms? Explain in detail any one. **(10)**

Q.2 Enlist the features of brute force algorithm. Explain and analyze any one brute force algorithm in detail. **(10)**

OR

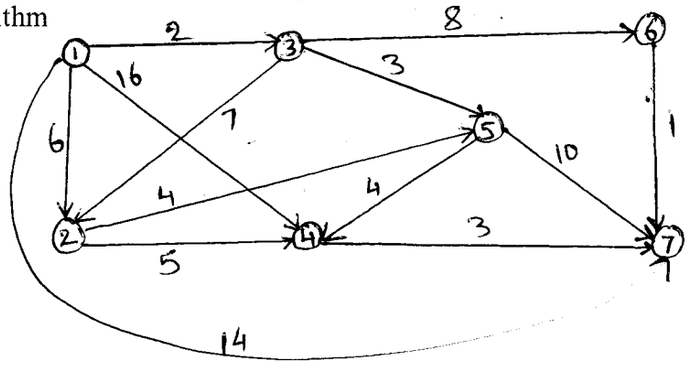
What is the convex hull problem? How can brute force strategy be applied for convex hull problem? Explain with the help of algorithm and its efficiency. **(10)**

Q.3 How is divide and conquer strategy most efficient for binary tree traversal than any other available strategy? Explain any one binary tree traversal using divide and conquer strategy. **(10)**

OR

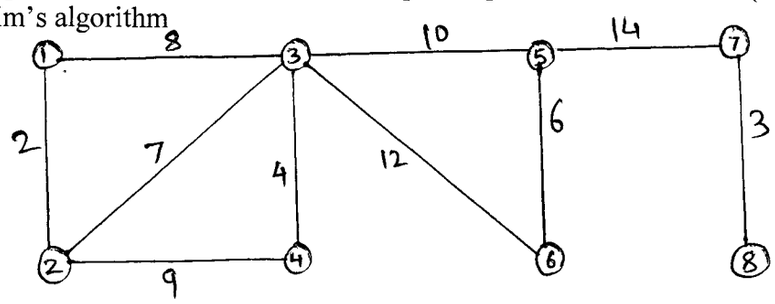
What is a heap? Explain the heap sort algorithm and analyze is efficiency. **(10)**

Q.4 State greedy technique. Find the shortest path from node 1 to all nodes using Dijkstra's algorithm **(10)**



OR

State Prim's algorithm. Find out the minimum spanning tree for the below graph using Prim's algorithm **(10)**



Q.5 State backtracking design strategy. State N- Queen's problem and solve 4 Queen's problem by stating two possible solutions. **(10)**

OR

State P, NP Complete and NP Hard problems. Explain each with example. **(10)**

Q.6 What is deadlock? Explain deadlock detection with example. **(10)**

OR

State resource allocation algorithm with deadlock avoidance using suitable example. **(10)**

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