

Code: IT4T3

**II B.Tech - II Semester – Regular Examinations - JUNE 2015**

**DESIGN ANALYSIS OF ALGORITHMS  
(INFORMATION TECHNOLOGY)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

- 1 a) Define omega notation. Explain the terms involved in it.  
Give an example. 9 M
- b) Show that  $f_1(n) \times f_2(n) = O(g_1(n) \times g_2(n))$  where  
 $f_1(n) = O(g_1(n))$  and  $f_2(n) = O(g_2(n))$ . 5 M
- 2 a) Give strengths and weaknesses of Brute force algorithm. 6 M
- b) What is Brute force algorithmic strategy? Explain with  
suitable Example. 8 M
3. Write and explain a procedure for the post order traversal  
of a binary tree with an example. Also Analyze the time  
and space complexity of the procedure. 14 M
- 4 a) Discuss the general method of Transform and Conquer  
method. 6 M
- b) Explain Horner's rule for polynomial evaluation. 8 M

5. Explain set representation using trees and develop algorithms for UNION and FIND using weighing and collapsing rules. 14 M
- 6 a) Explain how to implement Warshall's algorithm without using extra memory for storing elements of the algorithm's intermediate matrices. 7 M
- b) Give an example of a graph or a digraph with negative weights for which Floyd's algorithm does not yield the correct result. 7 M
- 7 a) What puts a problem into class NP. 7 M
- b) Differentiate between NP-complete and NP-Hard. 7 M
- 8 a) Write an algorithm of FIFO Branch and Bound to find the minimum Cost answer node. 9 M
- b) Differentiate between LIFO Branch and Bound and FIFO Branch and Bound. 5 M