

BACHELOR OF ENGG. COMPUTER SCIENCE EXAMINATION, 2012

(3rd Year, 2nd Semester, Supplementary)

Design & Analysis of Algorithms

Time : Three hours.

Full Marks : 100

Answer q.no. 1 and any **three** from the rest.

1. (a) With suitable examples define the following notations for indicating time complexity of algorithms. 10
 - (i) $f(n) = O(g(n))$
 - (ii) $f(n) = \Omega(g(n))$
 - (iii) $f(n) = \theta(g(n))$
- (b) Design an algorithm to find the minimum spanning tree (MST) of a graph $G(V,E)$. Discuss about the time complexity of the algorithm. 10
- (c) Define the following :
 - (i) P problem
 - (ii) NP problem
 - (iii) NP-hard problem
 - (iv) NP-Complete problem. 10
- (d) Write an algorithm to merge two sorted files which contain N_1 and N_2 elements respectively. What are the time and space complexity of the above algorithm? 10

(Turn Over)