

SSN COLLEGE OF ENGINEERING, KALAVAKKAM – 603 110
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

B.E. Computer Science and Engineering
CS6402 Design and Analysis of Algorithms

Date: 17.02.2017, 8.00-9.30 AM UNIT TEST – 2 Max. Marks: 50
Academic Year: 2016-2017 Even Batch: 2015-2019
Semester: 4 Faculty: Dr. R. S. Milton / Mr. V. Balasubramanian

Qn. No	Part – A (5 * 2 = 10)	Marks	(KL,CO _n)
1	State how Binomial Co-efficient is computed.	2	K1,CO1
2	Give the general strategy for divide and conquer method.	2	K1,CO1
3	Define 0/1 knapsack problem.	2	K1,CO1
4	If Fibonacci number is solved using the recurrence $f(n) = f(n-1) + f(n-2)$, how many subproblems are solved for $f(4)$? If duplicate subproblems are eliminated, how many subproblems are left?	2	K3,CO3
5	What is convex hull problem?	2	K1,CO1
Part – B Answer all questions (13+13)			
8	Explain Strassen’s Matrix multiplication with its procedure and analyse the complexity	13	K3,CO3
$\begin{bmatrix} 1 & 0 & 2 & 1 \\ 4 & 1 & 1 & 0 \\ 0 & 1 & 3 & 0 \\ 5 & 0 & 2 & 1 \end{bmatrix} * \begin{bmatrix} 0 & 1 & 0 & 1 \\ 2 & 1 & 0 & 4 \\ 2 & 0 & 1 & 1 \\ 1 & 3 & 5 & 0 \end{bmatrix}$			
And multiply the given matrix using the same.			
OR			
9	Find an optimal solution to the knapsack instance $n=4, W=10, \{p_1 \dots p_4\}=\{10,40,30,50\}, \{w_1 \dots w_4\} = \{5,4,6,3\}$. Using dynamic programming approach with appropriate algorithm and analyse it.	13	K3,CO3
10	Write the algorithm of Large Integer multiplication using divide and conquer technique. Explain how divide and conquer can be used to solve them. $2101 * 1130$	13	K1,CO1
OR			
11	Write the algorithm of Quick sort using divide and conquer technique. Write the recurrence for the time complexity of quicksort and solve it. Trace the algorithm for $\{5,3,1,9,8,2,4,7\}$.	13	K3,CO3
Part – C (14)			
12	Construct the all pair shortest path for the digraph with the weight matrix given below. Write the algorithm.	14	K4,CO4

	A	B	C	D
A	0	∞	∞	3
B	2	0	∞	∞
C	∞	7	0	1
D	6	∞	∞	0

OR

- 13 Define and analyse the convex hull problem using divide and conquer technique.
Define and analyse the closest pair problem using divide and conquer technique.

14 K4,CO4

*******BEST OF LUCK*******

Prepared by

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Reviewed by HoD, CSE

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