

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: 23.02.2017, 1.50-3.20 AM **UNIT TEST – 2 (Retest)** **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	What is the complexity of Strassen Matrix multiplication?	2	K1,CO1
2	What is the advantage of dynamic programming?	2	K1,CO1
3	Define 0/1 knapsack problem.	2	K1,CO1
4	What is meant by Principle of Optimality?	2	K3,CO3
5	List out the memory functions used under Dynamic Programming	2	K3,CO3

Part – B Answer all questions (13+13)

8	Explain Strassen’s Matrix multiplication with its procedure and analyse the complexity	13	K3,CO3
---	--	----	--------

$$A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 1 & 2 & 3 \\ 4 & 5 & 6 & 7 \end{bmatrix} \quad B = \begin{bmatrix} 8 & 9 & 1 & 2 \\ 3 & 4 & 5 & 6 \\ 7 & 8 & 9 & 1 \\ 2 & 3 & 4 & 5 \end{bmatrix}$$

And multiply the given matrix using the same.

OR

9	Write the algorithm of Large Integer multiplication using divide and conquer technique. Explain how divide and conquer can be used to solve them. 5678*9423	13	K1,CO1
---	---	----	--------

10	Find an optimal solution to the knapsack instance	13	K3,CO3
----	---	----	--------

item	weight	value
1	3	\$25
2	2	\$20
3	1	\$15
4	4	\$40
5	5	\$50

capacity $W = 6$.

Using dynamic programming approach with appropriate algorithm and analyse it.

OR

11	Define and analyse the convex hull problem using divide and conquer technique.	13	K3,CO3
----	--	----	--------

Define and analyse the closest pair problem using divide and conquer technique.

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 Write the algorithm of Quick sort using divide and conquer technique 14 K3,CO3
the recurrence for the time complexity of quicksort and solve it.
Trace the algorithm for {310,285,179,652,351,423,861,254,450,520}.

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

Prepared by	

Reviewed by HoD, CSE

