Q.P. Code: 16HS601 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations November 2018

DESIGN AND ANALYSIS OF ALGORITHMS

(CSE)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	Compare time complexity with space complexity?	6M
	b	Write about Union and Find algorithms with Example and find Time complexity?	6M
		OR	
2	**a**	Write the pseudo code for expressing algorithms.	5M
	b	Briefly explain Graph traversals with examples?	7M

UNIT-II

3	**a**	Explain strassen's matrix multiplication and derive its time complexity.	7M
	b	Explain control abstraction of Divide and Conquer approach and Derive its complexity.	5M
		OR	
4	**a**	Write about Merge sort algorithm with example & time complexity?	7M
	b	Explain Greedy Knapsack Problem with algorithm and an example where n=3, m=20, (x_1,x_2,x_3), (w_1,w_2,w_3) = (18,15,10), (p_1,p_2,p_3) = (25,24,15). Describe all the cases of greedy techniques of above problem.	5M

UNIT-III

5	**a**	Define Sum Of Subsets Problem And Give The Algorithm	7M
	b	Discuss about n-queen problem	5M
		OR	
6	**a**	Solve the following instance of 0/1 Knapsack problem using Dynamic programming n = 3; (W1, W2, W3) = (3, 5, 7); (P1, P2, P3) = (3, 7, 12); M = 4	7M
	b	Explain how to find Hamiltonian path and cycle using backtracking algorithm.	5M

UNIT-IV

7	**a**	Solve the Travelling Salesman problem using branch and bound algorithms.	7M
	b	Give The Algorithm For LCBB For The 0/1 Knapsack With Example	5M
		OR	
8	**a**	Draw the portion of state space tree generated by LCBB for the 0/1 Knapsack	
	b	instance: n = 5, (p1,p2,…,p5) = (10,15,6,8,4), (w1,w2,..,w5) = (4,6,3,4,2) and m=12. Find an optimal solution using fixed – tuple sized approach.	12M

UNIT-V

9	**a**	Briefly explain the non-deterministic algorithms with example?	7M
	b	Distinguish between deterministic and non-deterministic algorithms?	5M
		OR	
10	**a**	Explain the class of P and NP with example?	7M
	b	Differentiate between NP- complete and NP-hard problems?	5M

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