CMR INSTITUTE OF TECHNOLOGY

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Improvement Test

Sub:	DESIGN & ANALYSIS of ALGORITHMS							Code:	15CS43
Date:	22/05/2018	Duration:	90 mins	Max Marks:	50	Sem:	IV	Branch:	ISE

Answer Any **FIVE** Complete Questions.

		Marks	OBE CO	OBE RBT
1	What is N-Queen's problem? Give the state space tree for solving 4 Queen's problem for at least one solution.	[10]	CO2	L1
2	With the help of the state space tree, solve the following instance of the 0/1 Knapsack problem by the branch & bound algorithm. Knapsack Capacity, **M=16** **Items** 1 2 3 4 **Profit** 45 30 45 10 **Weight** 3 5 9 5	[10]	CO5	L3
3 (a)	A firm has to solve the Assignment Problem, given the following Cost Matrix. Use Branch & Bound strategy(State Space Tree) and provide and optimal solution. **Job 1** **Job 2** **Job 3** **Job 4** **Person A** 9 2 7 8 **Person B** 6 4 3 7 **Person C** 5 8 1 8 **Person D** 7 6 9 4	[07]	CO5	L3
(b)	What do you understand by NP-Complete and NP-Hard problems?	[03]	CO1	L1
4	Explain the asymptotic notations for analysis of algorithms. Support your answer with proper graphs and examples.	[10]	CO3	L1
5	Solve the Travelling Salesman Problem using **Branch & Bound** for the following distance matrix for connected weighted graph.	[10]	CO5	L3

___	**3**	**1**	**5**	**8**
3	___	**6**	**7**	**9**
1	**6**	___	**4**	**2**
5	**7**	**4**	___	**3**
8	**9**	**2**	**3**	___

OR

	Explain what you understand by the term 'prefix codes'. State the Huffman's algorithm for designing the optimal prefix code.	[10]	CO2	L1
6	What is an Optimal Binary Search Tree? Explain one with example.	[10]	CO2	L1
7	Discuss the Graph Colouring Problem provide a solution to the problem of your choice.	[10]	CO2	L1