

Name of Student:.....

Roll No:.....

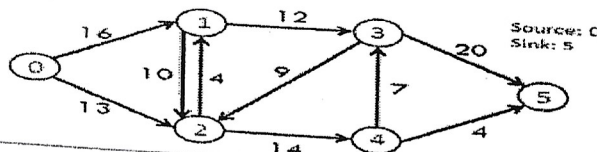


TKM COLLEGE OF ENGINEERING, KOLLAM-5
Department of Computer Applications
III Semester MCA
Internal Assessment (ReTest) March 2022
Course with Code: 20MCA203 Design and Analysis of Algorithms

Time:2Hrs

Maximum Marks: 50

Qn. No.	PART - A Answer all questions	Marks	BL	CO
1	If $f(n)=a_m n^m + a_{m-1} n^{m-1} + \dots + a_1 n + a_0$. Prove that $f(n)=O(n^m)$.	3	L2	1
2	Explain about control abstraction of D&C technique.	3	L2	1
3	Describe the control abstraction of Kruskals algorithm to compute the minimum cost spanning tree.		L1	2
4	State and illustrate the Principle of Optimal Substructure	3		2
5	Explain the notion of decision tree method in lower bound complexity.	3	L1	3
6	Differentiate class P and NP in complexity theory.	3	L1	3
7	Explain residual graph in network flow.	3	L1	4
8	Explain bipartite graph and its matching with suitable diagram.	3	L1	4
9	Discuss about approximation ratio in Approximation algorithm.	3	L1	5
10	Explain polynomial identity testing in Schwartz-Zippel Lemma.	3	L1	5
PART - B				
MODULE-3				
11 a.	Explain N Queens problem and analyse the solution based on algorithm.	5	L2	3
OR				
b.	Illustrate the state space tree and explain Subset Sum problem using backtracking technique for $w=\{2,3,4,6,10\}$ and $d=12$.	5	L2	3
MODULE-4				
12 a.	Show that the Clique problem is NP-Complete.	5	L2	4
OR				
b.	Describe the procedure and find maximum flow through the given network for the figure given below using ford fulkerson algorithm.	5	L2	4



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MODULE-5				
13 a.	a) Describe the 2-approximation algorithm for Vertex Cover problem in approximation algorithm.	5	L2	5
	OR			
	b) Explain randomised quick sort in randomised algorithm.	5	L2	5
MODULE-3&4				
14 a	Prove that any comparison based sorting has a lower bound complexity of $\Omega(n \log n)$.	5	L2	3
	OR			
b)	Show that the Vertex cover problem is NP-Complete.	5	L2	4



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