Seat N	lo.:				Enroln	nent No				
N Subja Subja Time: Instr	A.E. S ect co ect N 10:30 uctio 1. A 2. N 3. 1	GUJARA EMESTER I (ode: 710201N ame: Compu AM to 1:00 P ns: Attempt all que Aake suitable a Figures to the r	F TECI old course (iter Algo M stions. ssumption ight indice	HNOLO e)–EXAMII orithm ns whereve ate full man	GICAI NATION r necessa tks.	L UNIVI (Remedia) ry.	ERSITY) – WINTH Date: (Total N	ER 2015 08/12/2015 1arks: 70		
Q.1	(a)	 Prove or di Solve the f 	isprove: 5 following t	1 ² ó 6n wo recurren	(n ²). Ices using	master met	thod.		02 05	
	(b)	 Analyze b following j Mention at dynamic pr 	$4 + \sqrt{n}$ est case, a problem: s tleast three rogrammin	and $I(n) =$ average cas earch a reco e difference ng method.	e and wo ord in the s between	orst case tin given datab n divide and	ne complez ase. d conquer 1	kity for the nethod and	04 03	
Q.2	(a)) Briefly explain recursion tree method of solving recurrences. Solve the following recurrence using recursion tree method. T(n) = T(ⁿ/₃) + T(²ⁿ/₃) + n) Solve following Making Change Problem using greedy approach and dynamic programming approach. Denominations are d1=1, d2=2 and d3=3. The amount for which change is to be paid is Rs. 4. Do both methods provide the same solution? Justify your answer. 								
	(b)									
	(b)	OR Explain principal of optimality. Elaborate explanation for shortest path problem and longest path problem using suitable example.								
Q.3	(a)	What are the coding? Obtain Character Frequency	differenc n Hauffma a 10	es between n's encoding b 50	i fixed-le g for follo c 15	ngth codin wing data. d 75	g and vari e 25	able-length f 100	07	
	 (b) Define amortized analysis. Compare accounting method and potential method Explain potential method with Stack example. 									
Q.3	(a)	Run algorithm following DAC	a of single G using ve	e-source sh rtex r as the x -1 x	a source. $\frac{1}{\sqrt{\frac{-2}{2}}}$	th in direc z	ted acyclic	graph for	07	
3 2										

- (b) Explain working of Floyd-Warshall algorithm to find out all-pair shortest path. 07
- Q.4 (a) What are the applications of modular arithmetic? How can be groups defined 07 using modular addition and multiplication? Explain in detail.

	(b)	1. What are the benefits of using Knuth Moriss Pratt algorithm over Naive string matching algorithm?									
		2. Explain class P and class NP with example problems.									
		OR									
Q.4	(a)	How many spurious hits does the Rabin-Karp matcher encounter in the text $T = 0$ 3141592653589793 when looking for the pattern P = 26 with working modulo a = 11?									
	(b)	Which are the different polynomial-time reduction strategies? Prove that vertex cover problem is polynomial-time reducible to set cover problem with example.									
Q.5	(a)	Prove or disprove that Traveling Salesman Problem is NP-complete problem.									
	(b)	Explain Boyer Moore pattern matching algorithm in detail.	07								
		OR									
Q.5	(a)	1. What are the differences between greedy method and dynamic programming method?	03								
		2. Can we improve sequential search technique using divide and conquer method? If yes, explain how. If no, give the reasons.									

(b) Prove that the APPROX-TSP-TOUR is a polynomial-time 2-approximation 07 algorithm for the traveling-salesman problem with the triangle inequality.
