

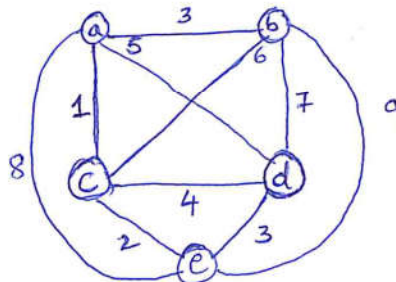
DEC 2019: END SEMESTER ASSESSMENT (ESA) B.TECH.

UE17CS251 – Design and Analysis of Algorithms

Time: 3 Hrs

Answer all questions in the same order

Max Marks: 100

1	a)	Define Algorithm and Explain asymptotic notations	6
	b)	Compare order of growth using limits <ul style="list-style-type: none">$n(n-1)$ and n^2$n!$ and 2^n	6
	c)	Write recursive algorithm to find the number of binary digits in n 's binary representation and set up the relation and find efficiency.	8
2.	a)	Define Brute force and write algorithm for naïve string matching algorithm	5
	b)	Write non recursive binary search function	5
	c)	Solve Apply merge sort to sort the list 10,6,8,5,7,3,4 and write its worst case complexity.	5
	d)	Write Quick sort partition algorithm	5
3.	a)	Describe the variants of decrease and conquer technique with one example	6
	b)	Implement BFS traversal of a given graph	6
	c)	Sort using Heap sort 2,9,7,6,5,8 and mention the worst case time complexity of heap sort. Is heap sort a stable sorting algorithm?	8
4.	a)	Implement a function to sort integers using Distribution Counting	5
	b)	Apply Horspool's string matching algorithm to find the Pattern : BARBER in the Text: JIM SAW ME IN A BARBERSHOP	5
	c)	Solve Knapsack problem having weight 5 and objects of weights 1,3,2,5 and profit 200,240,140,150 using dynamic programming with Memory functions	6
	d)	Describe the properties of B TREE	4
5.	a)	Find the encodings for the alphabets along with their given probabilities using Huffman coding. A=45, b=13, c=12, d=16, e=9, f=5	6
	b)	Find solution for the traveling salesman problem using Branch and Bound technique. 	8
c)	Define the following with an example: i) Class P ii) Class NP iii) NP-Complete.		6