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Seat No.

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S.E. (Computer Engineering) (I Sem.) EXAMINATION, 2018 DATA STRUCTURE & ALGORITHMS

(2015 PATTERN)

Time: Two Hours Maximum Marks: 50

- Attempt Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, *N.B.* :-(i)Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.
 - Draw neat diagrams wherever necessary. (ii)
 - Assume suitable data, if necessary. (iii)
- Define and explain the following terms: 1. (a)
 - Data (i)
 - Data structure (ii)
 - (iii)Algorithm.
 - Give pseudo C/C++ code to reverse the string. (*b*) 13
 - Explain the divide and conquer strategy with suitable example. (c)Or

 Define and explain the following terms:

 (i) Sequential organization

 (ii) Linear data structure

 (iii) Ordered list

 iv) Sparse matrix. [6]

- 2. (a)

P.T.O.

[4]

[3]

	(<i>b</i>)	Explain polynomial representation using an array with suitable
		example. [2]
	(<i>c</i>)	Explain the Asymptotic notation Big O, Omega and Theta with
		suitable example. [6]
3.	(a)	Write a pseudo C/C++ code to insert node into a singly
		linked list. [3]
	(<i>b</i>)	Explain Generalised linked list with suitable example. [3]
	(<i>c</i>)	Explain evaluation of postfix expression using stack with
		suitable example. [6]
		Or O O O O O O O O O O O O O O O O O O
4.	(a)	Give pseudo C/C++ code to implement the following operations
		on linked stack: [4]
		(i) Create
		(ii) Push data.
	(<i>b</i>)	Explain the stepwise conversion using stack for the given infix
		expression to the postfix expression:
		A * B + C * D.
	(<i>c</i>)	Write pseudo C/C++ code for polynomial addition using singly
		linked list. [6]
5 .	(a)	Define the following terms with example: [6]
		(i) Linear queue
		(ii) Circular queue
		(i) Linear queue (ii) Circular queue (iii) Priority queue.
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(<i>b</i>)	Write pseudo C/C++ code to implement priority queue
	operations. [7]
	9.
	Or
(a)	Explain linear queue and circular queue with suitable
(a)	
	example. Give the advantages of circular queue over linear
	queue. [6]
(<i>b</i>)	Write pseudo C/C++ code to implement linked queue. [7]
	Sp. T
(a)	Sort the following numbers using insertion sort:
	55, 85, 45, 11, 34, 05, 89, 99, 67.
	Discuss its time complexity and space complexity. [6]
(<i>b</i>)	Explain sequential search and binary search with appropriate
	example. Comment on their data organization, time complexity
	and space complexity. [7]
	and space complexity.
	Or Or
(a)	Explain Merge sort using the following example:
	18, 13, 12, 22, 15, 24, 10, 16, 19, 14, 30.
	Discuss its time and space complexity. [6]
(<i>b</i>)	Write a pseudo C/C++ code to sort the data using bucket
	sort in ascending order. [7]
	CY 6.

6.

7.

8.