



BRAINWARE UNIVERSITY

Term End Examination 2023 Programme - Dip.CSE-2018/Dip.CSE-2019/Dip.CSE-2020/Dip.CSE-2021 Course Name - Data Structures & Algorithm

Course Code - DCSE203 (Semester II)

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Battani, Kokami 300

Time: 2:30 Hours

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

	Group-A (Multiple Choice Type Question)		1 x 15=15	
1.	Choose the correct alternative from the following:			
(i	 Two main measures for the efficiency of an algorit a) Processor and memory c) Time and space Select which of the following data structures is lin 	d) Data and space		
	a) Trees c) Arrays ldentify the following problems that is NOT solved	d) None d using dynamic programming.	· m	
	a) 0/1 knapsack problem b) Matrix Chair Huddpication problem c) Edit distance problem If push(y) and pop(y) are two functions and both the functions return y then show what will return for pop(pop(push(2)))			
(v)	a) 2 c) 0 c) the second entire for sparse matrix?	b) 1d) -1b) A matrix where only a few entrizero.	es are non-	
(vi)	zero c) A matrix where all the entries are non-zero. Select Which of the following is not the type of o	d) None of the these queue?		
	a) Ordinary queuec) Circular queueProcess of inserting an element in stack is called	d) Priority queue		
(*)	a) Create	b) Push		
	c) Evaluation	d) Pop		

	(vi	ii) The number of colors used by a proper coloring				
Barasat, Kolkata -700125		a) k coloring graph	b) x coloring graph d) n coloring graph			
	c) III coloring graph					
	(IX	a) insert at the end and delete first	b) insert at the beginning and delete hist			
		c) insert at the end and delete last	d) insert at the beginning and delete last			
900	(x)	If the elements "A", "B", "C" and "D" are placed	in a queue and are deleted one at a time,			
ğ	· ·	in what order will they be removed?				
B, 4		a) ABCD	b) DCBA			
198		c) DCAB	d) ABDC			
3	(xi)	Select of the following is/are example(s) of ADT				
		a) stack	b) queue d) all of these			
	c) array (xii) Noticine given pointers to the first and last nodes of a singly linked list, choose which of the					
	VER 219.	following operations are dependent on the leng	th of the linked list?			
;	-70012	a) Delete the first element	 h) Insert a new element as a first element 			
,		c) Delete the last element of the list	d) Add a new element at the end of the list			
	(xiii)	Discover the time complexity to traverse the ele	ments in the linked list?			
		a) O(1)	b) O(n)			
		c) O(log n)	d) O(n2)			
	(xiv)	Select the Circular doubly linked list contains				
		a) 3 NULL links	b) 2 NULL links			
		c) 1 NULL link	d) 0 NULL link			
	,	Full binary tree is-				
) Each node has exactly zero or two children	b) Each node has exactly two childrend) Each node has exactly one or two childre	n		
	C) All the leaves are at the same level	d) Each node has exactly one of two children			
		Gro	oup-B			
				x 5=15		
		(Sherty men en	7,70			
	2 Evnl	ain the overflow condition of a circular queue	e	(3)		
		elop an algorithm to implement linear search.		(3)		
		the importance of space complexity.		(3)		
	5. Write prefix forms of the expression(A+B)*C/D+E^F/G					
	6. Illustrate selection sort on following numbers: 3,78 23,9,45,2,8,36					
			OR	(3)		
	Expla	nin AVL Tree with proper example.		(3)		
	•					
		Gro	oup-C			
(Long Answer Type Questions)			Type Questions)	5 x 6=3		
7	7. Construct a Binary search tree for the following data:64 34 25 12 22 11 90.					
9	. Supr	se the following eight numbers are inserted in order into an empty AVL tree T: 77, 11,				
	99, 5	55, 22, 33, 44, 88. Draw the AVL tree T by de	scribing each step of insertion	, (5)		
1	0. Indic	ate a function that takes the base address of	of two polynomials as arguments and return	n /E\		
_	the h	ase address of the new polynomial which is	the addition of the state of th	n (5)		
	argui	ments. Polynomial are represented as linked	s the addition of two polynomials given as			
	uigui	menta. I orymormal are represented as linked	JZII L			

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	Suppose the following ten numbers are inserted in order into a second step of insertion. 99, 88, 77, 44, 33, 22, 99, 88, 11, 33 Deduce the tree T by describing each step of insertion. OR Sort the following ten numbers using Heap Sort algorithm: 51, 71, 31, 61, 41, 11, 21, 81, 91, 11. Explain all the necessary steps.	(5)
1	. Identify an algorithm to insert the data into a Stack using Linked List . Suppose the following ten numbers are inserted in order into an empty binary search tree T:	(5) (5)