a) O(1)

c) O(n logn)





BRAINWARE UNIVERSITY

Brainware a versity 398, Ramkrishnapur noud, Barasa Kolkata, West Bengal-700125

Term End Examination 2022

Programme – B.Tech.(CSE)-2019/B.Tech.(CSE)-2020/B.Tech.(CSE)-AIML-2021

/B.Tech.(CSE)-DS-2021

Course Name – Data Structure and Algorithms
Course Code - PCC-CS301/ESCM302/ESCD302
(Semester III)

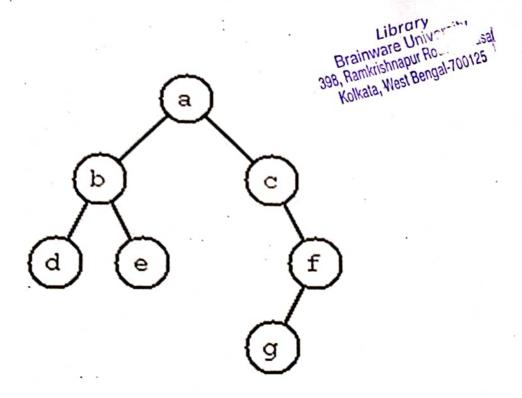
• A.S.A.	
	Time: 2:30 Hours Candidates are required to give their answers in their sfar as practicable.]
OWN WORLD U.	in as practicable.
	roup-A
(Multiple Choi 1. Choose the correct alternative from the fold	ce Type Question) 1 x 15=15 lowing :
(i) Solve - Number of nodes of left and right s sequence 40, 30 42, 5, 7, 23, 9, 19 is	ub-tree of a binary search tree of the given
a) 2,5	b) 1,6
c) 6,1	d) None of these
(ii) What is the postfix form of the following p	refix expression: *-ABC
a) ABC-*	b) AB*C-
c) AB-C*	d) CBA-*
(iii) In array representation of a stack, top=2 m	•
 a) one elements present in the stack c) three elements present in the stack (iv) In linked list each node contains minimum store the data second field is? 	b) two elements present in the stack d) none of these
a) Pointer to character	b) Pointer to integer
c) Pointer to node	d) Pointer to float
(v) What is the time complexity to delete first	•
a) O(log n)	b) O(n2)
c) O(1)	d) O(n)
(vi) Circular doubly linked list contains	a) o()
a) 3 NULL links	b) 2 NULL links
c) 1 NULL link	•
	d) 0 NULL link
(vii) Choose the category of a pre-order traversa	II -
a) Root -> Left Sub Tree -> Right Sub Tree	b) Left Sub Tree -> Root -> Right Sub Tree
c) Root -> Right Sub Tree -> Left Sub Tree	d) Right Sub Tree -> Left Sub Tree ->Root
(viii) Select the correct Time complexity of swapp	oing operation of bubble sort is

b) O(n)

d) O(n2)

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(ix) Select What is the operation of processing ea	Kolkata, W	est Bengal-700
a) Traversal	b) Inserting	
	d) Sorting	
 c) Merging (x) Choose a binary search tree whose left subtree at most 1 unit - 	ee and right subtree differ in height by	
a) AVL tree	b) Red-black tree	
c) Lemma tree	d) None of these	
(xi) Select Which of the following algorithm does		
a) Linear Search	b) Binary Search	
c) quicksort	d) Merge sort	
(xii) The memory address of the first element of a		
a) floor address	b) foundation address	
c) first address	d) base address	
(xiii) If push(y) and pop(y) are two functions and b	oth the functions return y then show	
what will return for pop(pop(push(2)))	•	
a) 2	b) 1	. 1
c) 0	d) -1	
(xiv) Select the technique use for Quick sort is	-, -	
	b) Divide and conquer	
a) Brute Force technique c) Greedy algorithm	d) Dynamic programming	
(xv) Validate the correct statement among the following		
	1.5	
 a) A graph may contain many edges and no vertices. 	A graph must contain at least one	vertex.
 c) A graph may contain no edges and no 	d) None of these	
vertices.	·	
Grou	ın-R	
(Short Answer T	**************************************	3 x 5=15
(Sitorer matter)	ype Questions,	0 0
2. Judge that a Circular queue is needed to overco	me the problem of the linear queue.	(3)
3. Explain an algorithm to insert an element at the		(3)
4. Develop an algorithm to implement linear search		(3)
5. Illustrate radix sort on the following numbers:		(3)
444,133,115,55,707,90,404,160,399,262,818,46		(-)
0		
Explain AVL Tree with proper example.		(3)
6. The inorder & preorder traversal sequence of	f nodes in a binary tree are given be	*
Inorder- EACKFHDBG		
Preorder- FAEKCDHGB		
Create the binary tree. State briefly the logic	used to construct the tree.	
in the second second		



Group-C (Long Answer Type Questions)

5 x 6=30

- 7. Explain the definition of the algorithm and state the basic characteristics of an algorithm (5)
- 8. Describe an algorithm to physically reverse a singly linked list. (5)
- Construct the AVL tree for a calendar where nodes are entered in the following order-MARCH, MAY, NOVEMBER, AUGUST, APRIL, JANUARY, DECEMBER, JULY, FEBRUARY, JUNE, OCTOBER, AND SEPTEMBER.
- 10. Suppose the following six numbers are inserted in order into an empty binary search tree T: 50, 77, 30, 66, 40, 33. Deduce the tree T by describing each step of insertion. (5)
- 11. Appraise quick sort on the following numbers: 44, 33, 11, 55, 77, 90, 40, 60, 99, 22, 88, 66
- 12. Convert the following infix expression into its equivalent postfix expression: A* B / D E (5) + F.

OR

Discover the following postfix expression 5, 6, 2, +, *, 12, 4, /, -. Using Stack. (5)
