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## BT-3/D06

## DATA STRUCTURES PAPER - CSE-203E

Tillic	. O I II S. Waxiii Walks . I U
Note	: Attempt any five questions.
1. a	Define abstract data type and give any three applications of ADTS.
b	. Write an algorithm which translates a POSTFIX
	expression to an INFIX expression.
C	Show with an example how a UNION is implemented
	Also differentiate between a UNION and a STRUCTURE in C. POWER OF KNOWLEDGE 7
2. a	Show with an example how an array is passed as a parameter in C.
b	What are the main toes of PRIORITY QUEUES? Explain each one in detail.
C	Show how to implement three stacks in one array. 5
3. a	What are the advantages and disadvantages or representing a group of items as an array versus a linear linked list?
b	The second of th
	of a linked list? Use one short English sentence for each step.

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c.	Write a program to swap two adjacent eleme	tns by
	adjusting only the pointer (and not the data) using	g:
18	(i) Singly linked lists	
	(ii) Doubly linked lists	8
a.	Explain in detail why dynamic data structure	s are
	needed.	7
b.	What are the three primitive operations that of	an be
	applied to Queues ? Explain briefly.	5
c.	Write an algorithm to reverse the order of items	on a
80	list. Prove that your algorithm works correctly.	8
a.	Explain the following :-	6
00	(i) STRICTLY binary tree	
	(ii) Complete binary tree	
T	(iii) Almost complete binary tree	
b.	The order of nodes of a binary tree in PREORDE	R and
	INORDER Traversal are as under :	
	PREORDER - B C E D F A G H	
IX.	INORDER - A B C D E F G H	8
	Draw the corresponding Binary Tree	5
c.	Two binary trees are similar if they are both em	pty or
-	both non-empty and have similar left and right sub	trees.
d e	Write a function to decide whether two binary tree	es are
	similar.	9
a.	Write on note on :	d 1
TK.	(i) Efficiency of Binary Search tree operations	
	(ii) Balanced trees	5
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b. Write an algorithm to find K <sup>th</sup> element of a lis	t repre-
sented by a tree and also show that the number	of tree
nodes examined in fidning the Kth list elements	is less
than or equal to 1 more than the depth of the tre	e. 7
c. What are the broad categories of non-binary	
Describe any one in detail.	8
7. a. Write a non-recursive depth first traversal algori	
graphs.	10
b Explain Prim's algorithm in detail.	10
8. a. What is the purpose of hashing? Describe a	nv one
method used to handle collisions in hashing.	8
b. Sort the list 3, 1, 4, 1, 5, 9, 2, 6, 5, 3, 5, 8, 9, 7 usi	na any
one of them : and the arms up to the appear of a small	ng uny
(i) Heapsort a salousea of mengeng o areas a	4 .5
KNOWL (ii) Quicksort	1000
in team to again which has senting an equation	12
E Vensunevo	
aspernavbe of one sumb the horizontal area	14
tol matricg/A-only only balls where the Algorithmy for	
Busine a coment tree circulat a	
take along the same and acaten and acaten an electronic	
from Queue we do as implemented using doubly link to	
tein in the state of the state	
Discuss Terres Trees Wasting the the ideanings.	
accepted that explain the compaction	
What is Bleety tree whet are the venous methods to	
mayers a see their their them with exemples	
(3th sem. Electronic + Math/Eco.)	61