Roll No. _____

END SEMESTER EXAMINATION
SEMESTER- III

COURSE CODE: CSE 403
COURSE TITLE: DATA STRUCTURE
SESSION: JULY-DEC 2021

DURATION: 3 (THREE)HRS
MAXIMUM MARKS: 75
PASS MARKS: 35 %

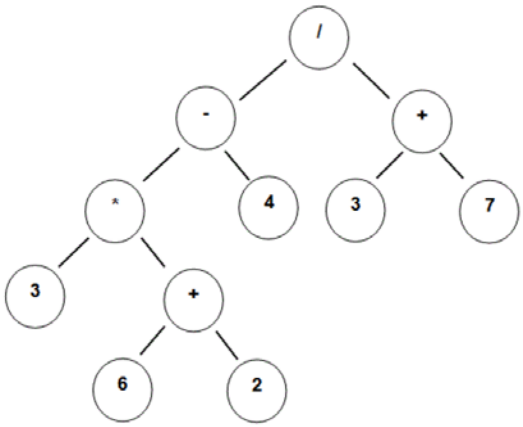
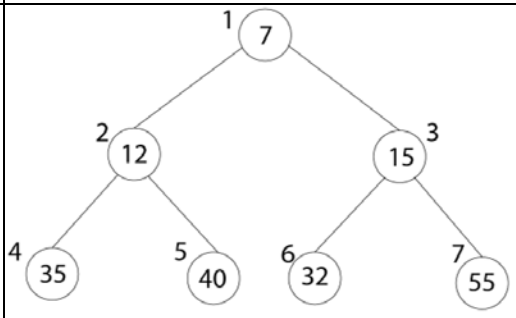
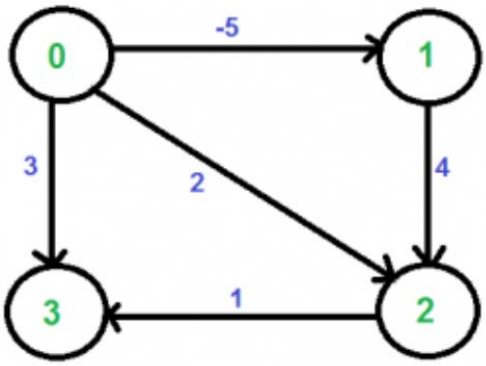
NOTE:
1. *Attempt any **5 (five)** questions.*
2. *Mark for each question is shown against it.*
3. *Assume suitable logical data wherever necessary.*

1.	**(a)**	Define data structure? What are the various operations for processing a data in data structure?	**(1+4)**
	(b)	Write a short note on the different types of data structures.	**(4)**
	(c)	What are the basic terminologies of a data organization?	**(3)**
	(d)	What do you mean by complexity of an algorithm?	**(3)**
2.	**(a)**	Define Array? Show how we represent linear array in a memory.	**(1+3)**
	(b)	Define linear search? Its time complexity and its algorithm.	**(4)**
	(c)	What is stack? What are the various application of stack?	**(1+3)**
	(d)	What are the various basic terminologies for string operations	**(3)**
3.	**(a)**	Difference between the array and queue.	**(3)**
	(b)	Explain the garbage collection conditions on linked list data structure.	**(3)**
	(c)	Explain the insertion operation in the linked list with help of algorithm.	**(5)**
	(d)	Define linked list and traversing operation in linked list with the help of algorithm.	**(4)**
4.	**(a)**	Write an algorithm to traverse in the queue .	(3)
	(b)	Convert the infix form 2*3/(2-1)+5*(4-1) to postfix form using stack.	**(4)**
	(c)	Write a c program for sorting the elements in increasing order using bubble sort.	(5)
	(d)	Show the Algorithm of bubble sort	(3)
5	**(a)**	Define queue? Explain how queue can be implemented.	**(1+3)**
	(b)	Define binary tree. What are the basic terminologies used in tree data structure, enlist them.	**(1+5)**
	(c)	Define recursion? Explain the recursion with the help of c program.	**(1+4)**
6	**(a)**	Suppose I,J,K,L,M,N and O elements are the weights as follows:-	**(5)**

Items	I	J	K	L	M	N	O
weights	11	10	5	3	9	12	2

Create an extended binary tree by Huffman algorithm.

	(b)	Define and write the Huffman algorithm.	**(3)**
	(c)	Discuss the all-different type of representation of graphs in memory	**(7)**

7	**(a)**	 For the given tree, Write the all the three traversal formats: i. Preorder traversal ii. Inorder traversal iii. Postorder traversal	**(6)**
	(b)	 For the above given tree create the max heap(). Explain the steps with all iterations.	**(5)**
	(c)	Explain the different types of binary tree.	**(4)**
8	**(a)**	Using Floyd warshall algorithm, finf the shortest path between every pair of vertices.  	**(8)**
	(b)	What are the difference between the tree and the graph?	**(4)**
	(c)	Explain searching operation in a linked list.	**(3)**

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