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CSIT124 Enrol. No. A2305222034

[ET]

END SEMESTER EXAMINATION : NOVEMBER-DECEMBER, 2023

DATA STRUCTURES USING C

Time : 3 Hrs. *Maximum Marks : 60*

Note: ***Attempt questions from all sections as directed.***

SECTION – A (24 Marks)

Attempt any **four** *questions out of* **five.**
Each question carries **06** *marks.*

1. Explain the various representation of graph with example in detail.

2. Give the features of abstract data type (ADT).

3. What are the steps to convert a general tree into binary tree?

P.T.O.

4. Give algorithm to sort a list using bubble sort.

5. Write an algorithm to traverse a linked list.

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**

Each question carries **10** *marks.*

6. Consider the linear arrays AAA (5:50), BBB (-5:10) and CCC(18).

   (a) Find the number of elements in each array

   (b) Suppose Base(AAA) = 300 and w=4 words per memory cell for AAA. Find the address of AAA[15], AAA[35] and AAA[55]

7. Convert the following infix expression into postfix form

   $(A+B)*(C+D)*E\hat{}F$

8. Explain heap sort. Construct heap sort for the initial key set 42, 23, 74,11, 65, 58, 94, 36, 99, 87.

SECTION – C (16 Marks)

(Compulsory)

9. (a) Consider the following stack of characters, where STACK is allocated N = 8 memory cells (10)

STACK : A, C, D, F,K, _,_,_. (_ means empty allocated cell) Describe the stack as the following operations takes place:

(a) POP(STACK, ITEM)

(b) POP(STACK, ITEM)

(c) POP(STACK, ITEM)

(d) PUSH(STACK, R)

(e) PUSH(STACK, L)

(f) PUSH(STACK, S)

(g) PUSH(STACK, L)

(h) POP(STACK, ITEM)

(b) Evaluate P: 12, 7, 3, -, /, 2, 1, 5, +, *, +,) (6)