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MASTER OF SCIENCE (M.Sc) in COMPUTER APPLICATIONS
EXAMINATION: DECEMBER - 2024
SEMESTER - I
Sub.: Data Structure and Algorithms (MSC-104-22)

Date : 28/12/2024**Total Marks: 60****Time: 10.00 am to 12.30 pm**

Instruction:

1. All questions are compulsory unless and otherwise stated.
 2. Bold figures to the right of every question are the maximum marks for that question.
 3. Candidates are advised to attempt questions in order.
 4. Answers written illegibly are likely to be marked zero.
 5. Use of scientific calculators, Log tables, Mollier Charts is allowed.
 6. Draw neat and labelled diagram wherever necessary.
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Q. 1. Answer the following in 2-3 lines. (Any 5) (10)

1. Define Data structures.
2. What is dangling pointer?
3. What is root of tree?
4. Difference between structure and union.
5. Define sorting.
6. What is pseudo code?
7. List out the applications of a linked list.

Q. 2. Answer the following in short. (Any 4) (20)

1. State the rules to be followed during infix to postfix conversions
2. Convert the following expression from infix to postfix using stack: $A+(B*C-D)$
3. Write a short note on expression tree.
4. Explain the concept of circular queue with example
5. Explain BSF Algorithm
6. Write an algorithm to create binary tree.

Q. 3. Answer the following in detail. (Any 3) (30)

1. Explain the concept of Dynamic memory allocation (DMA)?
2. What is sparse matrix? How it is represented.
3. Illustrate with example different traversal methods of tree.
4. Write a function to count the nodes of doubly linked list
5. Explain the procedure to insert a new node in the (a) Beginning (b) End of the linked list