

TILAK MAHARASHTRA VIDYAPEETH, PUNE
MASTER OF SCIENCE (M.Sc) in COMPUTER APPLICATIONS
EXAMINATION : MAY - 2024
SEMESTER - I
Sub.: Data Structure and Algorithms (MSC-104-22)

Date : 31/05/2024

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. What is the primary advantage of linked list?
2. What is linked list?
3. Which data structures follows LIFO technique?
4. What is linear search?
5. In which areas Data structure applied.?
6. Define graph.
7. What are the applications of trees?

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

1. Write short note on Binary search tree.
2. Convert the following expression into prefix form $(a+b) * (c+d)$
3. What is sparse matrix?
4. Write a function to delete an element from Queue.
5. Explain the relation between stack and recursion.
6. Write short note on array of pointers.

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

1. Explain Insertion sort with algorithm.
 2. What is linked list? Explain the terms header node, empty list, Information field, and null pointer with respect to single linked list.
 3. Write a program sort stack.
 4. What is recursive function? Differentiate between iteration and recursive process.
 5. Explain the procedure to add node at the beginning, at the end in the Doubly linked list
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