

TILAK MAHARASHTRA VIDYAPEETH, PUNE
MASTER OF SCIENCE (M.Sc) in COMPUTER APPLICATIONS
EXAMINATION: DECEMBER – 2023
SEMESTER - I
Sub.: Data Structure and Algorithms (MSC-104-22)

Date : 30/12/2023

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 static and dynamic data structures?
2. What is Graph?
3. What are some applications of Data structures?
4. Write the applications of an array.
5. Differentiate between structure and union.
6. Define structure for nodes in Doubly linked list.
7. Draw a diagram of complete binary tree.

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

1. What are the operations available on stack data structures?
2. Write an insertion algorithm in circular queue.
3. Write a short note on expression tree.
4. Explain Binary search algorithm.
5. Write a program to count nodes of linked list
6. Explain the concept call by reference.

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

1. What do you mean by storage classes? Explain it with scope and lifetime of variables.
 2. What is binary tree? List down steps to create binary tree.
 3. What is recursive function? Differentiate between iteration and recursive process.
 4. Define queue? Explain the term front, rear, overflow and underflow?
 5. What is pointer? When pointers are effective? Write merits and demerits.
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