CB

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MASTER OF COMPUTER APPLICATIONS

EXAMINATION: DECEMBER–2023

SEMESTER - I

Sub: Advanced C Programming and Data Structures (MCA- 101-22)

Date : 28/12/2023 **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.*

Q. 1. **Answer the following in 2 - 3 lines. (Any 5)** **(10)**

1. Define Data Structures.
2. What are leaf nodes?
3. Define the term Algorithm.
4. Define union.
5. What is polish and reverse Polish notation?
6. Write the application Linked list.
7. What is pointer? How it is declared.

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

1. Write an algorithm to convert infix expression to prefix
2. What is stack? State effects of push and pop operation on empty stack.
3. State advantages of doubly linked list.
4. Write a short note on Abstract data type.
5. What is tree? Write an algorithm for creating binary tree.
6. Explain an array, array initialization and advantages of an array.

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

1. What is sparse Matrix? How it is represented
2. What is function? Explain with example – Function prototype, Calling function and function definition.
3. Illustrate with example different traversal methods of tree.
4. Write a function to search an element from integer array.
5. What is recursive function? Differentiate between iteration and recursive process.
