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 : 20/12/2023 **Total Marks : 60** **Time: 2.00 pm To 4.30 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 and Data type.
2. What are the drawbacks of sequential storage?
3. What is Algorithm?
4. What is Enqueue?
5. Write the application of stack.
6. What is data structure?
7. What is matrix?

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

1. Explain the limitations and advantages of an array as a data structure?
2. List the rules to be followed by a queue.
3. Write an Algorithm to convert an infix Expression to postfix expression
4. Define function, Parameters, function prototype with example.
5. What is structure? What is union? Differentiate between structure and union?
6. Write a program to copy the strings using pointer.

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

1. Define tree. Illustrate with example different traversal methods of tree.
2. What is sparse matrix? Write a algorithm to add two sparse matrices.
3. Write a program to search an element using binary search.
4. Write a program to print factorial using recursion.
5. What is static and dynamic memory allocation? Explain with example any two functions of dynamic memory allocation.
