CB

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MASTER OF SCIENCE (M.Sc) in COMPUTER APPLICATIONS

EXAMINATION : JANUARY- 2023

SEMESTER - I

Sub.: Data Structure and Algorithms (MSC – 104-22)

Date : 06/01/2023 **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. Define sorting.
3. Define tree?
4. What is searching?
5. What is binary search tree?
6. List the various operations that can be performed on data structure.
7. What is linear search?

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

1. What are the different binary tree traversal techniques?
2. Write short note on Abstract data type (ADT).
3. Explain types of queue and discuss advantages of circular queue over linear queue?
4. What is stack? What are the operations that can be performed on stack?
5. What is expression tree?
6. What are enqueue and dequeue operations?

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

1. Write the functions for Dynamic memory allocation?
2. Convert the infix (a+b)*(c+d)/f into postfix & prefix expression
3. Write a program to show functionality binary search.
4. State the rules to be followed during infix to postfix conversions
5. What is recursion? Write a program to print factorial using recursive process.
