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I Semester M.C.A. Degree Examination, June/July - 2023

COMPUTER SCIENCE**Data Structures****(CBCS Scheme Y2k20)****Paper : IMCA6****Time : 3 Hours****Maximum Marks : 70****Instructions to Candidates:****Part A:- Answer any Five questions****Part B:- Answer any Four questions****PART - A****I. Answer any Five questions. Each question carries Six marks. (5×6=30)**

1. Define data structures. Discuss the classification of data structures.
2. Explain any four string handling Functions.
3. Write a program to find GCD of three numbers using recursion.
4. Define Linked list. Explain its types.
5. Evaluate the postfix Expression using stack.
8 3 4 + * 2 / 3 5 * -
6. Write a short note on Topological sorting.
7. Write an algorithm for selection sort with an Example.
8. Explain different types of Hash function with an example.

PART - B**II. Answer any Four questions. Each question carries Ten marks.**

9. a) Explain Asymptotic Notation (5)
b) Explain string Matching algorithm with example. (5)
10. a) Write an algorithm for push and pop operation of a stack. (5)
b) Convert the infix expression into postfix expression using stack.
((A+B) - C * (D/E)) + F (5)

[P.T.O.]



11. a) Write an algorithm to insert an element to a circular queue. (5)
- b) Given the following traversal, draw a binary tree: (5)
- i) In order: 4 2 5 1 6 7 3 8
Post order: 4 5 2 6 7 8 3 1
- ii) Preorder: A B D E G C F H
Inorder: D B G E A H F C
12. Construct AVL tree for the following data: (10)
21, 26, 30, 9, 4, 14, 28, 18.
13. a) Explain Memory representation of Graph with example. (5)
- b) Discuss about Priority queue. (5)
14. Write down the steps for quick sort and show the tracing of the following list. (10)
5, 3, 8, 1, 4, 6, 2, 7.
