62451

Reg. No. | | | | | | | | | |

I Semester M.C.A. Degree Examination June/July - 2024
COMPUTER SCIENCE
The Art of Programming
(CBCS Scheme Y2K20)

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

Answer any **Five** questions from Part A and any **Four** questions from Part B.

PART - A

Answer any **FIVE** questions. Each question carries **6** marks. **(5×6=30)**

1. Define Algorithm and discuss the importance of asymptotic notations in the representaion of algorithms.
2. Write an algorithm to reverse the digits of the number 786.
3. Explain Loop Control Structures with examples.
4. Explain formatted and unformatted input and output functions with a suitable program.
5. Write an algorithm to remove duplicate elements from an ordered array without using temporary array.
6. Write a C program to find the K^{th} smallest element using Array Partitioning.
7. Write a C program to search an element using Hash Search.
8. Write an algorithm to search and replace a pattern in Text and illustrate using suitable example.

PART - B

Answer any **FOUR** questions. Each question carries **10** marks. **(4×10=40)**

9. Write an algorithm to find an element using Linear Search and find its best case, worst case and Average Case complexity.
10. a) Write an algorithm for converting a decimal number to binary. **(5)**
    b) State with example any five string functions in C. **(5)**

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11. Discuss in detail 5 Decision making Control Statements. Write a C program to calculate factorial of a given number using while loop.

12. Explain how structure members can be accessed using pointers with a suitable example and write the C program to define, Assign and access the members of structure.

13. Write an algorithm to merge two sorted arrays into a single sorted array using simple merge method. Illustrate with an example.

14. Write an algorithm to sort the numbers using insertion sort. Sort the following list {4,1,3,9,0,2,6,5,7} using the algorithm.