B.Sc./4th Sem (H)/COMS/23(CBCS)

# 2023

## 4th Semester Examination

## COMPUTER SCIENCE (Honours)



### Paper : C 8-T

### (Design and Analysis of Algorithms)

[CBCS]

Full Marks : 40 Time : Two Hours

*The figures in the margin indicate full marks.*
*Candidates are required to give their answers in their own words as far as practicable.*

### Group - A

Answer any ***five*** questions of the following : 2×5=10

1. Write the features of an algorithm.
2. What are the application areas of a graph?
3. What is the necessity of time and space complexity analysis of an algorithm?
4. Write down the differences between sorting and searching.

P.T.O.

5. What are the applications of KMP (Knuth Morris Partt) algorithm?

6. Define the BST.

7. Write the basic concept of divide and conquer algorithm technique.

8. What are the time complexity of best, worst, average case of Binary Search algorithm?

## Group - B

Answer any ***four*** of the following : 5×4=20

9. Explain the differences between linear search and binary search technique with example.

10. Write an algorithm of Depth First Search.

11. Explain the Radix sorting technique with an example.

12. Illustrate the tracing of bubble sort algorithm for the following

    Set of numbers : 96, 25, 41, 54, 63, 39, 78, 16.

13. Explain any one Dynamic Programming technique with suitable example.

14. Write an algorithm for quick sort to sorting a list.

## Group - C

Answer any ***one*** of the following : 10×1=10

15. (i) Write an algorithm for Breadth First Search (BFS) and explain with a suitable example.





(ii) Explain masters theorem for algorithm analysis. 4+2+2+2

16. (i) Write a prim's algorithm to find the minimum cost spanning tree.

(ii) Analysis the time complexity of Quick Sort algorithm. 5+5

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