STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(Effective from the academic year 2019-2020)

M.Sc. Degree Examination – NOV 2021

19MT/PE/AL15

Analysis of Algorithms

Course: Post Graduate Elective Time: 3 Hours
Max. Marks: 100

SECTION – A

ANSWER ALL THE QUESTIONS: (2×4 = 8)

1. Explain divide and conquer algorithms.
2. What is the average case and worse case time for Insertion sort algorithm.

SECTION – B

ANSWER ANY <u>TWO</u> QUESTIONS: (2×12 = 24)

3. If $f(n)= (n^2-n)/2$ and $g(n)=6n$, determine whether $f(n)=O(g(n))$ or $g(n)=O(f(n))$.
4 a) Define Automaton.
   b) Write the Knuth –Morris-Pratt Algorithm. (3+9)
5. Explain NP complete problems and discuss the complexity of a Coloring Algorithm.

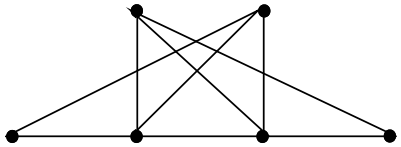
SECTION – C

ANSWER ANY <u>TWO</u> QUESTIONS: (2×34 = 68)

6. Write the Binary search Algorithm and search for the number 72 in the following list: { 3, 5, 9, 13, 14, 19, 22, 35, 40, 43, 51, 56, 59, 61, 63, 67,72, 75}. Also show the average case analysis for the algorithm.

7. a) Write the heap sort algorithm and discuss the case analysis of the algorithm.
   b) Explain Job scheduling problem in detail. (24+10)

8. a) Explain BFS and DFS.
   b) Write the Kruskal algorithm and find the Minimum spanning tree for the following graph:



(14+20)