Roll No. $\square$ Total No. of Pages: 02
Total No. of Questions : 09
M.Sc.(Computer Science) (2015 \& Onwards) (Sem.-4) DESIGN \& ANALYSIS OF ALGORITHMS

Subject Code : MSC-401
M.Code : 72419

Time : 3 Hrs.
Max. Marks : 60

## INSTRUCTIONS TO CANDIDATES :

1. SECTIONS-A, B, C \& D contains TWO questions each, carrying TEN marks each and students have to attempt any ONE question from each SECTION.
2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.
3. Use of non-programmable scientific calculator is allowed.

## SECTION-A

1) Discuss Asymptotic Notations with time space trade off.
2) Write an algorithm for Quick Sort with suitable example.

## SECTION-B

3) Explain the need of spanning tress and also explain its different types.
4) Discuss All Pairs shortest paths algorithm in detail.

## SECTION-C

5) Discuss search techniques used for Graphs.
6) Explain how backtracking is helpful in 8-queens problem

## SECTION-D

7) Elaborate the need of fast Fourier Transformation.
8) Write a short note on NP-Hard Graph Problems.

## SECTION-E

9) Write briefly :
a) Explain Binary Search.
b) Discuss Graph Coloring.
c) Explain Tree representation using Array.
d) What do you mean by Modular Arithmetic?
e) Explain linear search.
f) What do you mean by divide and conquer?
g) Explain Hamiltonian cycles using example.
h) Discuss Big-O Notation.
i) Explain NP hard Problems.
j) Explain different types of Graphs.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

