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Roll No.

Total No. of Pages : 02

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MCA (Sem.-2)
DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code : PGCA-1920

M.Code : 79616

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write briefly :
 - a) DFS
 - b) Dynamic Programming
 - c) Non-Recursive algorithms
 - d) Branch and Bound
 - e) Exhaustive Search
 - f) NP-Complete problem
 - g) Shortest path Algorithms
 - h) Selection Sort
 - i) Hamiltonian circuit problem
 - j) Orders of growth.

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SECTION-B

2. Define time complexity and space complexity. Compare the performance of different algorithms for same problem using any suitable example.
3. Define asymptotic notation and discuss various kinds of asymptotic notations in detail.
4. What is greedy approach? What is the difference between dynamic programming and greedy algorithms? List various greedy approaches.
5. What is Backtracking? Explain n-Queens problem.

SECTION-C

6. Describe how merge sort works and analyse its running time for the sequence 6 5 3 1 8 7 2 4.
7. What is an ideal sorting algorithm and explain how bubble sort works with help of algorithm?
8. Explain Dijkstra's algorithm. Explain its significance and applicability in real life.
9. Explain the concept of NP, P, NP-hard and NP-complete problems. Discuss the relationship between these terms with help of suitable diagram.

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.