Code No: RT32054 **R13** SET - 1

**III B. Tech II Semester Supplementary Examinations, November - 2017**

# DESIGN AND ANALYSIS OF ALGORITHMS

**(Common to Computer Science Engineering & Information Technology)**

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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## PART –A

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| 1 | a) | Using step count method, analyze the time complexity when 2 m x n matrix added. | [3M] |
| | b) | Sort the following set of elements using merge sort 12,24,8,71,4,23,6,89,56 | [4M] |
| | c) | What is meant by all pairs shortest path problem? | [3M] |
| | d) | Write the difference between greedy method and dynamic programming. | [4M] |
| | e) | What are the factors that influence the efficiency of the backtracking algorithm? | [4M] |
| | f) | Define 8 queens problem. | [4M] |

## PART –B

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|---|---|---|---|
| 2 | a) | Write about big oh notation. | [4M] |
| | b) | Write an algorithm for linear search and analyze the algorithm for its time complexity. | [8M] |
| | c) | What is pseudo-code? Explain with an example. | [4M] |
| 3 | a) | Give the general procedure of divide and conquer method. | [3M] |
| | b) | Write about quick sort method with example. | [8M] |
| | c) | Explain in detail merge sort. Illustrate the algorithm with a numeric example. Provide complete analysis of the same. | [5M] |
| 4 | a) | Write about single source shortest path problem. | [8M] |
| | b) | What is Minimum cost spanning tree? Explain an algorithm for generating minimum cost spanning tree and list some applications of it. | [8M] |
| 5 | a) | Write about 0/1 knapsack problem. | [8M] |
| | b) | Explain the methodology of Dynamic programming. List the applications of Dynamic programming. | [8M] |
| 6 | a) | Write in detail about Hamiltonian cycles. Give example to it. | [8M] |
| | b) | Explain the Graph – coloring problem. And draw the state space tree for m= 3colors n=4 vertices graph. Discuss the time and space complexity. | [8M] |
| 7 | a) | Solve the Travelling Salesman problem using branch and bound algorithms. | [8M] |
| | b) | What is LC – Search? Discuss LC – Search algorithm. | [8M] |

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