

**III B. Tech II Semester Supplementary Examinations, November/December - 2016**  
**DESIGN AND ANALYSIS OF ALGORITHMS**

(Common to CSE and IT)

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**

- |   |    |  |      |
|---|----|--|------|
| 1 | a) | What are the characteristics of an algorithm?                | [3M] |
|   | b) | Define Divide & Conquer Strategy.                            | [3M] |
|   | c) | Explain about single source shortest path problem.           | [4M] |
|   | d) | Differentiate between greedy method and dynamic programming. | [4M] |
|   | e) | Define graph coloring  | [4M] |
|   | f) | Explain about Branch and Bound method.                       | [4M] |

**PART -B**

- |   |    |  |      |
|---|----|--|------|
| 2 | a) | Compare time complexity with space complexity?   | [8M] |
|   | b) | Write the pseudo code for expressing algorithms.   | [8M] |
| 3 | a) | Write and explain recursive binary search algorithm.   | [8M] |
|   | b) | Derive the time complexity of merge sort.  | [8M] |
| 4 | a) | Write with an example of Prim's algorithm.   | [8M] |
|   | b) | Write a greedy algorithm for sequencing unit time jobs with dead lines and profits.  | [8M] |
| 5 | a) | Explain Optimal Binary Search tree.  | [8M] |
|   | b) | Solve the following instance of 0/1 Knapsack problem using Dynamic programming<br>$n = 3; (W_1, W_2, W_3) = (3, 5, 7); (P_1, P_2, P_3) = (3, 7, 12); M = 4.$ | [8M] |
| 6 | a) | Discuss Sum of subset problem.   | [8M] |
|   | b) | Discuss about n-queen problem.   | [8M] |
| 7 | a) | Explain FIFO Branch and Bound solution.  | [8M] |
|   | b) | Explain 0/1 Knapsack problem with respect to branch and bound method.  | [8M] |

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