

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**

PART -A

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|---|---|------|
| 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

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|---|---|------|
| 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
$n = 3; (W_1, W_2, W_3) = (3, 5, 7); (P_1, P_2, P_3) = (3, 7, 12); M = 4.$ | [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] |
