

Total No. of Questions : 12]

P1453

B.E. computer sem-I

May-June-2012 SEAT No.:

[Total No. of Pages : 3

[4164] - 695

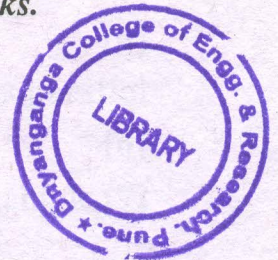
B.E. (Computer Engineering)
DESIGN AND ANALYSIS OF ALGORITHMS
(2008 Pattern) (Sem. - I)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) Answer 3 questions from Section - I and 3 questions from Section - II.
- 2) Answers to the two sections should be written in separate books.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right indicate full marks.



SECTION - I

- Q1) a) Define asymptotic notations. Explain their significance in analyzing algorithms. [5]
- b) Write the recurrence relation for quick sort. Compare its time complexity with brute force sorts. [3]
- c) Explain general strategy of Greedy Method with the help of its control abstraction for the subset paradigm. Write an algorithm which uses this strategy for solving the Knapsack problem. [10]

OR

- Q2) a) Write a note on Mathematical Induction and how it can be used to prove that an algorithm is correct. [5]
- b) What is divide and conquer strategy? Write an algorithm for Merge Sort. State its time complexity. [6]
- c) Explain the Greedy Kruskal's minimum spanning tree. Compare this with Greedy Prim's method. [7]
- Q3) a) A problem of allocating n units of resources to r projects is given. The net profit $N(i, j)$ is obtained when j , $0 \leq j \leq n$, units of the resource are allocated to project i . For a maximum total net profit the resources must be optimally distributed to the r projects. Formulate this problem as an $r + 1$ stage graph problem. [6]

P.T.O.

