

[5460] - 586

T.E. (Computer) (Semester - II)

Design and Analysis of Algorithm

(2015 Pattern)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer all questions.
- 2) Figures to the right indicate full marks.
- 3) Draw neat diagram wherever necessary.
- 4) Make suitable assumptions wherever necessary.

Q1) a) Compare between definiteness and effectiveness of an algorithm with example. [7]

b) What is the application of proof techniques? Explain any one technique with example. [7]

c) Solve following multiplication using Divide and Conquer strategy $2135 * 4014$. [6]

OR

Q2) a) Discuss the advantages & disadvantages of recursion. [7]

b) Prove by induction that $S_n = 1 + 3 + 5 + 7 + \dots + 2n - 1 = n^2$ [7]

c) Comparison of Greedy approach and Dynamic programming. [6]

Q3) a) Explain best case, worst case & average case complexity of an Algorithm with one example. [8]

b) Explain deterministic and non - deterministic algorithm with example. [8]

OR

Q4) a) Explain asymptotic notations Big - O, Theta, Omega, small - o, small - omega with example of each. [10]

b) Whether Hamiltonian cycle problem is NP Hard problem or not? Justify. [6]

P.T.O.

Q5) a) What is amortized analysis? Explain amortized analysis of splay tree operations. [9]

b) Explain Randomized algorithm for Quick Sort. [8]

OR

Q6) a) Explain amortized analysis for Binomial Heap & Fibonacci Heap. [8]

b) What is Approximate algorithm? Explain Approximate algorithm for Vertex Cover. [9]

Q7) a) Write & explain Rabin - Karp string matching algorithm. [10]

b) Explain Distributed Breadth first search algorithm. [7]

OR

Q8) a) Explain multithreaded Merge sort algorithm. [8]

b) Write Naïve string matching algorithm. What is the time complexity of algorithm? Explain complexity of algorithm with example. [9]

