

[5353] - 586

TE. (Computer Engineering)

DESIGN AND ANALYSIS OF ALGORITHMS

(2015 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q4, Q.5 Q.6, Q.7 or Q8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn whenever necessary.
- 4) Make suitable assumptions whenever necessary.

- Q1) a) Explain the concept of Principle of Mathematical Induction and prove the correctness of an algorithm to find factorial of a number. [6]
- b) How does Fractional greedy algorithm solves the following knapsack problem with capacity 20, $P = (25, 24, 15)$ and $W = (18, 15, 10)$. [6]
- c) Explain the need of Divide and conquer strategy. Enlist few applications which can be solved by this strategy. Write a control abstraction for divide and conquer strategy. [8]

OR

- Q2) a) Compare and contrast between iterative and recursive process with an example. [6]
- b) Differentiate between functions and procedures with example. [6]
- c) Write short notes on (Any Two): [8]
- i) Evolutionary Computing
 - ii) Stimulated Annealing
 - iii) Artificial Neural Network

- Q3) a) Explain Asymptotic notations with example. [8]

P.T.O.

- b) Write a short note on NP completeness of algorithm and NP Hard. [8]

OR

Q4) a) What is SAT AND 3-SAT problem? Prove that 3-SAT problem is NP complete. [8]

b) Explain Polynomial and non-polynomial problems. Explain its Computational complexity. [8]

Q5) a) State and explain Fibonacci Heaps in detail. Enlist its applications. [8]

b) Explain Tractable and non-tractable problems with example. [8]

OR

Q6) a) What is Embedded System? Explain embedded sorting algorithm. [8]

b) Explain amortized analysis. Find the amortized cost with respect to stack operations. [8]

Q7) a) Write and Explain Multithreaded Merge Sort Algorithm. [9]

b) Define performance measure of multithreaded algorithms. Write a multithreaded algorithm for Fibonacci Series and explain performance measure of Fibonacci (6) execution with suitable diagram. [9]

OR

Q8) a) What is Distributed algorithm? Explain distributed Breadth First Search algorithm with example. [9]

b) Compare and contrast String matching algorithms. Explain any one algorithm with example. [9]

