

D 51391

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Name:

Reg. No.

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2008

CS 04 704—DESIGN AND ANALYSIS OF ALGORITHM

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Section I

1. (a) Show that for any real constants a and b , where $b > 0$, $(n + a)^b = \Theta(n^b)$.
- (b) Is $2^{n+1} = O(2^n)$? Justify your answer.
- (c) State master's theorem.
- (d) State travelling salesman problem.
- (e) Explain the features of Monte-Carlo algorithms with using one example.
- (f) State (0-1) knapsack problem.
- (g) Give an example of Co-NP problem.
- (h) State and prove Fermat theorem.

(8 × 5 = 40 marks)

Section II

2. (a) (i) Explain Quick Sort and derive the time complexity (average case) of the algorithm. (9 marks)
- (ii) Explain Huffman coding. (6 marks)
- Or*
- (b) (i) Explain Hashing and collision resolution mechanism in hashing (9 marks)
- (ii) Compare the following sorting algorithms : quick sort, merge sort heap sort. (6 marks)
3. (a) Explain branch and bound method and how this method differ from dynamic programming. (15 marks)
- Or*
- (b) Give the classification of problems and state cook's theorem. (15 marks)

Turn over

4. (a) (i) Explain pseudo random member generation methods. (8 marks)
(ii) Explain any primality testing algorithm. (7 marks)

Or

- (b) (i) Explain interactive proof system. (8 marks)
(ii) Explain a method to solve 8-Queen Problem. (7 marks)
5. (a) Explain strassen's algorithm. (15 marks)

Or

- (b) Explain Dixon's integer factorization algorithm. (15 marks)

(4 × 15 = 60 marks)