Roll No.

Total No. of Questions: 09

Total No. of Pages: 02

B.Tech.(CSE) (2011 Onwards) (Sem.-5) DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code: BTCS-503 Paper ID : [A2099]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students

SECTION-A

Write briefly: 1.

- a. What is the time complexity of linear search
- b. Define algorithm.
- c. What is Fast Fourier Transform (FFT)
- d. Explain divide and conquer technique.
- e. Give the recurrence relation for the time complexity of merge sort algorithm.
- Differentiate between exponential versus polynomial running time.
- State the principle of optimality used in dynamic programming.
- h. How is the accuracy of approximation algorithm measured?
- Algorithm A performs $10n^2$ basic operations, and algorithm B performs 300 logn basic operations. For what value of n does algorithm B start to show its better
- What do you mean by NP-complete?

SECTION-B

- 2. Explain the classes P and NP.
- Explain Strassen's algorithm for matrix multiplication with an example. 3.
- Give a suitable example and explain Breadth-First search and Depth-First search 4. algorithms.
- What are asymptotic notations? Describe with the help of examples commonly used 5. asymptotic notations.
- How the dynamic algorithms differ from greedy algorithm? Explain. 6.

SECTION-C

- Explain the algorithm of merge sort. Compute the time complexity of merge sort. Also 7. sort the list 415, 213, 700, 515, 712, 715 using merge sort.
- Explain string matching. Explain Knuth-Morris-Pratt algorithm with an example. 8.
- Write a short note on the following: 9. MMM. SCHOla