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Science &
Total No. of Pages : 2
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PGIIS-N 1030 A-2K13

M.Sc. IInd Semester (CBCS) Degree Examination

Computer Science

(Design and Analysis of Algorithms)

Paper - HCT - 2.1

(New)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates.

Section A is compulsory. Answer any five questions from section B.

Section - A

1. Answer the following:

(10×2=20)

- What is an algorithm?
- Give the classification of data structure.
- How can you define efficiency of an algorithm?
- What is importance of asymptotic notation while Designing an algorithm?
- List any four drawbacks of recursive algorithms.
- Write the general algorithm for divide and conquer technique.
- How binary search is efficient than linear search?
- Distinguish between Dynamic programming and Greedy technique.
- Write any four Applications of fast fourier Transformation.
- Compare NP and NP complete problems.

Section - B

- What is time complexity of an algorithm? Discuss best and worst case complexity of an algorithm.
 - Write the memory representation of graphs using arrays and linked list.

(6+6)

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(1)

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3. a) What are the standard asymptotic notations used for designing an algorithms. Represent them graphically.
b) Write the steps involved in designing non recursive algorithms. (6+6)
4. a) What is Brute Force technique. How it is different from Divide and Conquer method. Discuss with an example.
b) Compute the time complexity of an merge-sort algorithm. (6+6)
5. a) Write recursive algorithms for various binary tree transversal.
b) Derive the time complexity of strasseis matrix multiplication algorithm. (6+6)
6. a) What is Decrease conquer technique? Explain with an example.
b) How topological sorting differs from presorting? Give example for each. (6+6)
7. a) What is dynamic programming? Discuss 0/1 knapsack problem using Dynamic programming.
b) Write Primes algorithm. (6+6)
8. a) What are P, NP and NP complete problems?
b) Write FFT algorithm and explain how it varies from discrete Fourier Transform (DFT). (6+6)