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BICS-014

B.Tech. – VIEP – COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

00436

June, 2016

BICS-014 : DESIGN AND ANALYSIS OF ALGORITHM

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks.*

1. (a) What is the difference between BFS and DFS ? *3*

(b) What is the difference between binary search and Fibonacci search ? *3*

(c) Write Kruskal's algorithm for minimum spanning tree. *4*

2. (a) Why is the worst case analysis of an algorithm more important than the average case analysis ? *4*

(b) Explain various asymptotic methods used to represent the rate of growth of running time of algorithms. *6*

3. Write down the "Dixon integer factorization algorithm" stepwise. *10*

4. Write a backtracking program for solving the knapsack optimization problem. Explain elaborately recursive backtracking algorithm. *10*

5. What is dynamic programming ? How is it different from greedy approach ? Explain its characteristics with examples. *10*

6. Describe an algorithm with an example to compute the binomial coefficient and derive its efficiency. *10*

7. Write an algorithm to search an item in a linear list. If there are 'n' nodes in the list, what is the running time of your algorithm ? *10*

8. (a) Prove that the Clique problem is NP complete. *5*

   (b) Explain Rabin-Karp string matching technique with a suitable example. *5*

9. (a) Sort the given values using Quick sort algorithm : *5*

   65, 70, 75, 80, 85, 60, 55, 50, 45

   (b) What is the Matrix Chain Multiplication Problem ? *5*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Travelling Salesperson Problem

(b) Input Enhancement in String Matching

(c) Decision Trees
