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**B. Tech. 6th Semester Computer Science & Engineering**  
**(F. Scheme) Examination,**  
**May-2012**

**ANALYSIS & DESIGN OF ALGORITHM**

**Paper-CSE-306-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100.*

**Note :** *Attempt five questions, selecting one question from each section and question number one is compulsory.*

1. Write short notes on any five :

- (a) Asymptotic notations
- (b) Difference in Greedy and Dynamic approaches
- (c) NP Hard and NP complete problems
- (d) General Backtracking method
- (e) Hamiltonian Cycles with example
- (f) Recursive Relations. 20

**Section-A**

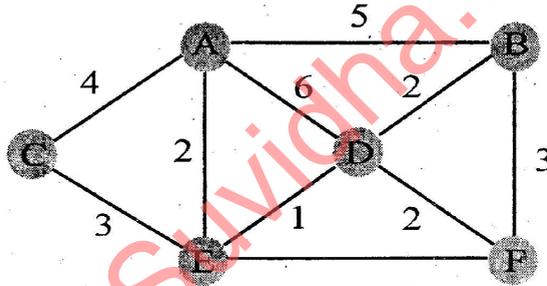
2. Explain the following :

- (a) Union and find operations in terms of Set and Disjoint set.
- (b) Which sorting algorithm is most efficient ?  
Explain various pros and cons. 20

3. (a) Explain quick sort algorithm  
 (b) Explain Strassen's matrix multiplication. 20

### Section-B

4. (a) Generate the minimum spanning tree of the following connected graph using Kruskal's algorithm. 10



- (b) Explain single source shortest path problem along with the algorithm, example and its complexity. 10
5. Explain the problem of solving optional binary search trees using dynamic programming. 20

### Section-C

6. Suggest the solutions to the following problems using backtracking :
- (a) 8-queen  
 (b) Graph-Coloring. 20

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7. (a) Differentiate between backtracking and branch and bound. 10
- (b) Explain LC branch and bound with example. 10

**Section-D**

8. (a) Show that Clique decision problem is NP Hard. 10
- (b) Discuss Node cover decision problem. 10
9. State and prove Cook's theorem. 20