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Question Paper Code: 41081

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

Fourth Semester

Information Technology

01UIT402 - ANALYSIS AND DESIGN OF ALGORITHMS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is meant by linear search?
2. What do you mean by an algorithm?
3. Differentiate time complexity from space complexity.
4. Write general plan for analyzing non-recursive algorithms.
5. What is the quick sort?
6. Define Brute force algorithm.
7. Differentiate greedy method and dynamic programming.
8. Define Warshall's algorithm.
9. Define sum of subset problem.
10. Define NP Hard and NP Completeness.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) What are the sequence of steps in designing and analyzing the algorithm? (10)
(ii) What is Worst - Case, Best - Case and Average - Case Efficiency? (6)

Or

- (b) What are asymptotic notations? Explain in detail. (16)

12. (a) What is the mathematical analysis of recursive algorithms? Explain about the tower of Hanoi problem. (16)

Or

- (b) Derive the recurrence equation for Fibonacci series. Perform complexity analysis for the same. (16)

13. (a) Explain divide - and - conquer method with merge sort algorithm. Give an example. (16)

Or

- (b) Give a suitable example and explain the depth first search algorithm. (16)

14. (a) (i) Define Heap. Explain the properties of Heap. (8)
(ii) With a simple example, explain heap sort algorithm. (8)

Or

- (b) Explain the Prim's algorithm and Kruskal's algorithm with suitable example to obtain minimum spanning tree. (16)

15. (a) (i) How does backtracking work on the N Queens problem with an example? (8)
(ii) What is Hamiltonian circuit problem? Explain with an example using backtracking. (8)

Or

- (b) How is dynamic programming applied to solve the traveling salesman problem? Explain in detail with an example. (16)