Reg. No. : | | | | | | | | | | |

Question Paper Code: 34802

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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. State subset sum 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) Explain all asymptotic notations used in algorithm analysis. (16)

12. (a) (i) Write a recursive algorithm to find sum of the first n cubes and obtain its time complexity. (10)

(ii) Suggest a general plan for analyzing the efficiency of recursive algorithms. (6)

Or

(b) Write a non-recursive algorithm to find whether the elements in a array are unique. Also analyze its efficiency. (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) Explain any five swing components that can be used in layout with suitable example program. (16)

Or

(b) Define the three variations of transform and conquer algorithms. Construct an AVL tree for the list 5, 6, 8, 3, 2, 4, 7 by successive insertions. State four rotation types used in the construction of the AVL tree and explain the same. (16)

15. (a) Explain backtracking concept and apply same to n-Queen's problem. (16)

Or

(b) Solve the given knapsack problem using greedy technique, n = 3, m = 20, $(p1, p2, p3)$ = (25, 24, 15), $(w1, w2, w3)$ = (18, 15, 10) and analyze algorithm time complexity. (16)

———————