Reg. No. :

Question Paper Code: 34802

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. List the general plan for analyzing the time efficiency of non – recursive algorithms.

4. What are the two principal variations of algorithm visualization?

5. What is divide and conquer technique?

6. Define Brute force algorithm.

7. List the important properties of heaps.

8. What is a Huffman code and tree?.

9. State subset sum problem.

10. Define state – space tree.

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) What are the differences between DFS and BFS? Solve topological sorting problem using DFS algorithm with an example. (16)

Or

(b) Write in detail about multi threaded programming with suitable example. (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)

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