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Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (CSE) (2018 Batch) (Sem.–4)

# DESIGN & ANALYSIS OF ALGORITHMS

Subject Code : BTCS-403-18

M.Code : 77629

Time : 3 Hrs. Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

## SECTION-A

**Answer briefly :**

1. "*Asympotic notation Ω is transitive*". Justify.
2. Define P and NP class problem.
3. Give recurrence relation in general for computing complexity of divide and conquer algorithm.
4. Define live node and dead node.
5. Solve the recurrence equation T(n)=9 T(n/3)+n.
6. What is flow network?
7. What is time and space complexity?
8. Define dynamic programming approach.
9. Write any algorithm to find shortest path.
10. What is Cook's theorem?

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## SECTION-B

11. Explain the term Algorithm with its characterstics.

12. What is Knapsack problem? Justify that "*All optimal solutions will fill the knapsack exactly*".

13. Explain the general method of Branch and Bound.

14. Give a set S=<1, 4, 5, 6, 7, 3> and W=12. Obtain the sum of subset using backtracking approach.

15. Define flow network and write an iterative Ford-Fulkerson's method for solving Max- Flow problem.

## SECTION-C

16. Explain Depth First Search and Breadth First Search method with example.

17. Explain Greedy method with suitable example.

18. Find the minimum spanning tree for the graph given below :

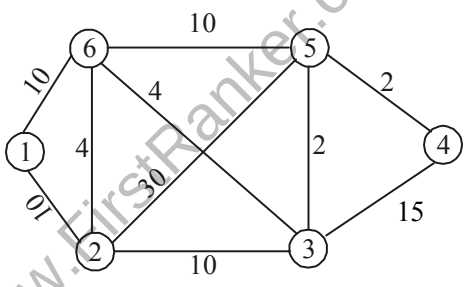



**FIG.1**

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**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**



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