

Roll No.

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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. “Asymptotic 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 $T(n) = 9T(n/3) + n$.
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?

SECTION-B

11. Explain the term Algorithm with its characteristics.
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 :

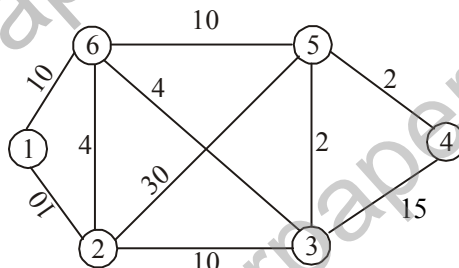


FIG.1