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Total No. of Pages : 02

Total No. of Questions : 18

## B.Tech. (IT) (2018 Batch) (Sem.-4) DESIGN & ANALYSIS OF ALGORITHMS Subject Code : BTIT-403-18 M.Code : 77540

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. How to measure an algorithm's running time?
- 2. What do you mean by "worst case efficiency of an algorithm"?
- 3. Differentiate between graph and tree.
- 4. What is minimal spanning tree?
- 5. Give an example of dynamic programming approach.
- 6. What are the graph traversal techniques?
- 7. State approximation technique.
- 8. Give an example of dynamic programming approach.
- 9. Differentiate between time efficiency and space efficiency.
- 10. What is flow network?

#### **SECTION-B**

- 11. Write a short note on greedy strategy to solve a problem.
- Solve the following problem by using least cost branch and bound method : Knapsack instance n = 4, p(1:4) = {1,1,12,18} and Weight w (1:4) = (2,4,6,9) & max capacity m =15
- 13. What is the relationship among P, NP and NP complete problems? Show with the help of a diagram.



- 14. Traverse all the vertices of above figure using breadth first search.
- 15. Find the adjacency list and adjacency matrix of below figure.



### **SECTION-C**

- 16. Explain the advantages of using dynamic programming. Introduce travelling salesman problem. Explain the technique to solve travelling salesman problem using this technique.
- 17. Why do we perform topological sorts only on directed acyclic graph? Explain
- 18. Discuss Heuristics and its characteristic.

# 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.