Code : 15CS53T

Register Number | | | | | | | |

V Semester Diploma Examination, Nov./Dec. 2017

DESIGN AND ANALYSIS OF ALGORITHMS

Time : 3 Hours | | Max. Marks : 100

Note : (1) Answer any **six** questions from Part – A. Each carries **5** marks.
(2) Answer any **seven** full questions from Part – B. Each carries **10** marks.

PART – A

1. Define Rooted tree and Ordered tree. 5

2. Define graph, vertex, edge, path and length of a path with examples for each. 5

3. Write an algorithm for sequential search. 5

4. Write a recursive algorithm for computing the factorial function for an arbitrary non-negative integer. 5

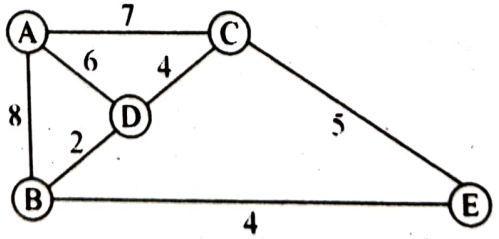
5. Define Brute force and explain it with an example. 5

6. Write an algorithm for binary search. 5

7. Explain Divide & Conquer technique with a neat diagram. 5

8. Explain Topological sorting with an example. 5

9. Apply Prim's algorithm for the graph shown below : 5



|Turn over

PART – B

10. Write a note on sorting and searching problem types.

11. Explain basic asymptotic efficiency classes. **10**

12. Explain Big-oh, Big-theta & Big-omega notation along with its graph. **10**

13. Write Merge sort algorithm and explain with following example : **10**
    10, 5, 25, 3, 55, 20

14. Explain an algorithm for selection sort with an example. **10**

15. Write an algorithm for Insertion sort and explain it with following example : **10**
    20, 60, 10, 40, 30, 5, 50

16. Write Dijkstra algorithm and explain. **10**

17. Explain the steps involved in designing and analyzing of an algorithm. **10**

18. Explain Knapsack problem with an example. **10**

19. Write an algorithm for Breadth First Search, and give the BFS sequence for the following graph : **10**