

Reg. No. _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER LATERAL ENTRY MCA DEGREE EXAMINATION, DEC 2016

RLMCA207- DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3 Hours

Maximum. Marks: 60

PART A

Answer All Questions

Each question carries 3 marks

1. Solve $T(n) = 9T(n/3) + n$ using Master's theorem.
2. Explain divide and conquer method
3. Explain greedy strategy.
4. What is a minimum cost spanning tree?
5. What is travelling salesperson problem? List any two methods that can be used to solve this Problem.
6. Explain the backtracking method and its control abstraction
7. How does branch and bound algorithm work? Explain.
8. Compare tractable and intractable problems.

PART B

Answer any one question from each module. Each question carries 6 marks

MODULE 1

9. Explain the space and time complexity with an example

OR

10. What is Recurrence relation and explain the methods of solving recurrence relation with example.

MODULE II

11. Write an algorithm for finding maximum and minimum using divide and conquer strategy.

OR

12. Describe Quick sort algorithm using divide and conquer strategy.

MODULE III

13. Explain fractional knapsack problem using divide and conquer strategy.

OR

14. Describe the Kruskal's algorithm for finding the minimum cost spanning tree .

MODULE IV

15. Explain All Pairs Shortest Path problem with an example.

OR

16. Explain Travelling Salesman problem with an example.

MODULE V

17. Let $w[1:6]=(5,10,12,13,15,18)$ and $M=30$, find all possible subsets of w which sum to M .

Draw the portion of the state space tree which is generated.

OR

18. Explain N^2-1 Puzzle Problem.

MODULE VI

19. Compare NP-Hard and NP- Complete classes.

OR

20. Explain vertex cover problem with example.