

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIRST/THIRD SEMESTER MCA DEGREE EXAMINATION, JULY 2018**

**Course Code: RLMCA207**

**Course Name: DESIGN AND ANALYSIS OF ALGORITHMS**

Max. Marks: 60

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 3 marks*

Marks

- |   |  |     |
|---|--|-----|
| 1 | What is meant by the time complexity of an algorithm? Explain with an example.       | (3) |
| 2 | Explain Strassen's method for matrix multiplication.                                 | (3) |
| 3 | Explain the control abstraction for greedy strategy.                                 | (3) |
| 4 | Compare and contrast between divide and conquer and dynamic programming              | (3) |
| 5 | Differentiate between depth first and breadth first tree in branch and bound method. | (3) |
| 6 | What are bounding functions?   | (3) |
| 7 | What is control abstraction for backtracking?  | (3) |
| 8 | Compare P and NP classes of algorithms.  | (3) |

**PART B**

*Answer six questions, one full question from each module and carries 6 marks*

**Module I**

- |   |  |     |
|---|--|-----|
| 9 | With suitable examples, explain various methods of solving recurrence equations. | (6) |
|---|--|-----|

**OR**

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|----|--|-----|
| 10 | Explain Asymptotic notations and their properties with a suitable example. | (6) |
|----|--|-----|

**Module II**

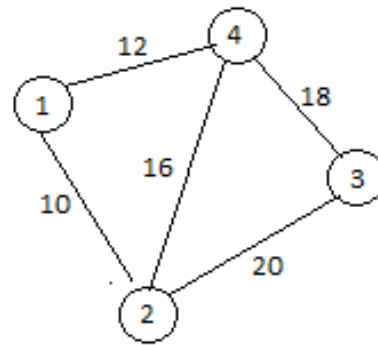
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|----|--|-----|
| 11 | Write the algorithm for merge sort and sort the following elements 50,30,80,5,90 using merge sort. | (6) |
|----|--|-----|

**OR**

- |    |  |     |
|----|--|-----|
| 12 | Write the algorithm for Quick Sort and sort the elements 50,30,80,5,90 using quick sort. | (6) |
|----|--|-----|

**Module III**

- |    |   |     |
|----|---|-----|
| 13 | Obtain the minimum cost spanning tree of the below graph using Kruskal's algorithm. | (6) |
|----|---|-----|



**OR**

- 14 Explain the job sequencing problem with a suitable example. (6)

**Module IV**

- 15 Explain all pair shortest path algorithm with an example (6)

**OR**

- 16 Explain travelling sales person problem with an example. (6)

**Module V**

- 17 Explain sum of subsets problem with an example. (6)

**OR**

- 18 Explain  $N^2-1$  problem with an example. (6)

**Module VI**

- 19 Compare SAT and 3-SAT problem. (6)

**OR**

- 20 Explain vertex cover problem with relevant examples. (6)

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