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Total No. of Printed Pages: [01]

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**MCA (Semester – 3<sup>rd</sup>)**  
**DESIGN AND ANALYSIS OF ALGORITHMS**  
**Subject Code: MCAPS1-302**  
**Paper ID: [20270115]**

**Time: 03 Hours**

**Maximum Marks: 60**

**Instruction for candidates:**

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

**Section – A**

**(4 marks each)**

- Q1. What is the importance of Asymtotic Notation?
- Q2. What is shortest path finding problem?
- Q3. What is meant by lower bound on sorting?
- Q4.** What is Brute force approach?

**Section – B**

**(8 marks each)**

- Q5. Give an algorithm that follows Divide-and-conquer.
- Q6. Explain how will you use Prim's algorithm.
- Q7. Use bubble sort on the array: {16, 2, 4, 1, 15}.
- Q8.** Is Strassen's algorithm better?

**Section – C**

**(10 marks each)**

- Q9. What is DFS? How does DFS work?
- Q10. What do you mean by NP-complete? Is Knapsack NP-complete? Justify.
- Q11. How will you merge {12, 18, 23, 29} and {16, 30, 52, 66}?