

# Mid Exam Outline

(CS-272 Design and Analysis of Algorithms)

- These topics are covered from slides and book.
- Slides and Book will be the main source for exam preparation.
- Topics also available in the book are highlighted with the page number of the book.
- There will be question from the book too.

1. Model of Computation (Page 26)
2. 2D Maxima Algorithm
  - a. Analysis of 2D Maxima
  - b. Runtime Analysis
  - c. 2D Maxima: Sweep Line Algorithm
3. Asymptotic Notations (Page 54)

## **[Divide and Conquer Strategy]**

4. Merge Sort Algorithm (Page 34 and 76)
  - a. Analysis of Merge Sort
  - b. Solving Recurrence Relation
5. Median Selection Problem
  - a. Partitioning algorithm
  - b. Analysis of Median Selection
6. Binary Heaps (Page 161)
7. Heap Sort Algorithm (Page 170)
  - a. Analysis of Heap Sort
8. Quick Sort Algorithm (Page 183)
  - a. Analysis of Quick Sort
9. Lower Bounds for Sorting (Page 205)

## **[Linear Time Sorting Strategy]**

10. Counting Sort (Page 208)
11. Bucket Sort (Page 215)
12. Radix Sort (Page 211)

## **[Dynamic Programming Strategy]**

13. Fibonacci Sequence (Page 69)
14. Edit Distance Algorithm