# GT-SYLLABUS FOR FINAL EXAM

## CH#01 Topics

- Directed Graphs
- Graph Combinations (join, union & sum)

## CH # 02 Topics

- Brute Force Algorithm, Nearest Neighbor Algorithm & Repetitive Nearest Neighbor Algorithm
- Shortest Path, Dijkstra's Algorithm
- Walk Using Matrices
- Distance, Diameter, Radius & Eccentricity

## CH # 03 Topics

- Minimum Spanning Tree (including Kruskal and Prim's Algorithm)
- Tree Enumeration

## CH # 05 Topics

- Matching in Bipartite Graphs
- Hall's Marriage Theorem, Augmented Path Algorithm & Vertex Cover
- König-Egervary Theorem
- Matching In General Graphs
- Tutte's Theorem, Edmonds Blossom Algorithm
- Stable matching, Gale-Shapley Algorithm
- K-Factor & K-Factorization

## CH # 06 Topics

- Four Color Theorem, Vertex Coloring
- Chromatic Number, Brook's Theorem,
- Equitable Coloring, General result for coloring
- Perfect Graphs, Edge Coloring
- Chromatic Index, Vizing Theorem, Ramsey Number
- Line Graph, First-Fit Algorithm
- On-Line Coloring, List Coloring
- Weighted Coloring, K-choosable

## CH # 07 Topics

- Planar Graph, Maximally Planar
- Euler Formula, Kuratwski's Theorem
- Cycle Chord method, Edge Crossing
- Crossing Number, Thickness

**Practice Problems:**

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|---|---|
| EX # 1.8: | 1.22 (part a) |
| EX # 2.4: | 2.6, 2.8, 2.15, 2.27, 2.28 |
| EX # 3.5 | 3.1 – 3.6, 3.13, 3.14 |
| EX # 5.5 | 5.1 – 5.11, 5.14, 5.18, 5.19 |
| EX # 6.5 | 6.1 – 6.9, 6.12, 6.13, 6.14, 6.19 |
| EX # 7.4 | 7.1 – 7.6, 7.8, 7.18, 7.21. |