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**Department of Research & Development
Mid - Term Examinations - SEPTEMBER 2024**

Odd Semester: Ph.D. Course Work	Date: 27/09/2024
Course Code: MAT806	Time: 10:00am – 11:30am
Course Name: Advanced Graph Theory	Max Marks: 50
Department: Mathematics	Weightage: 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 5 marks.		4Qx5M=20M
1	Write an algorithm for shortest spanning tree and hands explain degree constrained shortest spanning tree.	5 Marks
2	Define cut edge with an example and prove that an edge e of G is cut edge of G if and only if e is contained in no cycle of G .	5 Marks
3	Define independent set and dominating set with an example and prove that	5 Marks
4	Define matching with an example and prove that a matching M in G is a maximum matching if and only if G contains no M - augmenting path.	5 Marks

Part B

Answer ALL Questions. Each question carries 15 marks.		2QX15M=30M
5	a) Define Ramsey graph and clique with an example. b) Briefly elaborate the applications of spanning tree	15 Marks
6	Describe Kuhn-Munkres algorithm steps and flowchart with an example.	15 Marks