MA835   **DOMINATION THEORY IN GRAPHS**   **4-0-0-4**

Introduction– Graph theory Terminology and concepts. Dominating queens, Definition of Domination dominating sets in graphs, sets of representatives, computer communication networks-(*r, d*) configurations – Radio stations – Social network theory – Land surveying – Kernels. Mathematical History of domination in graphs. Bounds on the Domination Number:

Domination, Independence and irredundance: Hereditary and super hereditary properties – Independent sets – dominating sets – irredundant sets – domination chain: integer sequence and domination sequence, edge independence, domination, and irredundance – mixed independence, domination and irredundance – Fractional domination and irredundance

Changing and unchanging domination: relationships among classes. Conditions on dominating set: Total open dominating sets, independent dominating set, connected dominating set, dominating cliques, paired dominating sets, dominating cycles.

Varieties of dominations: Multiple domination, parity restriction, locating domination, distance domination, strong and weak domination, global and fractal domination, domination in directed graphs. Multiset andmulti-property parameters: Prioritized multiproperty problems and sequential problems, domatic number.

Sums and products of parameters: Nordhaus-Gaddum type results, domination and chromatic number. Dominating functions: Minus and signed domination, Y–dominating parameters, Complementarity.

Frameworks for domination: Hyper graphs, Matrices of 0's and 1's, Fundamental dominating sets, conditions on dominating sets.

TEXT BOOKS / REFERENCES:

1. Teresa W. Hynes, Stephen. T. Hedetniemi and Peter. J. Slater, "Fundamentals of Domination in Graphs", Marcel Dekker INC, New York, 1998.
2. Douglas. B.West, "Graph Theory" Second Edition, Pearson Education, 2001.
3. Frank Harary, "Graph Theory" Narosa Publishing House, 2001.
4. Alan Gibbons, "Algorithmic Graph Theory", Cambridge University Press, 1985.