Abstract of the Thesis

The thesis entitled “Interval Valued and Thresholds based L-Fuzzy Ideals of Nearrings” relates algebraic structures namely rings and nearrings to graph theory, lattice theory, fuzzy set theory and rough set theory. In this thesis, the upper and lower bounds for the number of automorphisms on a finite lattice are obtained. Different relations between t-norms, t-conorms using automorphisms and negations are discussed. Definitions of drastic t-norm, drastic t-conorm on a lattice are applied to get different implication operators. The thesis presents a unified approach to define interval valued L-fuzzy ideals of nearrings by incorporating interval valued t-norms and t-conorms. A highlight of the thesis is that the interval valued t-norms and interval valued t-conorms under consideration are not necessarily idempotent and the lattice need not be distributive. A characterization of interval valued L-fuzzy ideals and their prime forms are given in terms of level sets. Prime graphs of a nearing are studied and the relation between nearrinhomomorphism and graph homomorphism is provided. Rough set approximations of interval valued L-fuzzy ideal using set valued homomorphisms and congruence relations are derived.