Abstract for the thesis titled
"ON DECOMPOSITION OF SEMINEARRINGS IN TERMS OF NEAR-RINGS"

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As the title suggests, the focus of the thesis is on decompositions of different classes of seminearrings comprising various characterization theorems. The study of decomposition of additively regular seminearrings has been initiated by Sardar and Mukherjee. One nice aspect of studying additively regular seminearrings is to obtain semigroup theoretic analogues. Sardar and Mukherjee obtained some decomposition theorems which are analogues of "A semigroup is completely regular if and only if it is a semilattice of completely simple semigroups" and "A semigroup is Clifford if and only if it is a semilattice of groups" in the setting of seminearrings.

In this thesis, as a continuation of the above mentioned study, (i) the seminearrings decomposable as strong bi-semilattice (distributive lattice) of near-rings have been characterized which is the analogue of "A semigroup is Clifford if and only if it is strong semilattice of groups", (ii) the seminearrings decomposable as union of near-rings have been characterized which is the analogue of "A semigroup is completely regular if and only if it is a union of groups", (iii) the seminearrings decomposable as union of various types of regular near-rings have been characterized, in the class of additively completely regular seminearrings.

The decomposition theorems established in (i) and (ii) have their counterparts in semirings. But the main difference between the study of decompositions in the setting of seminearrings and that in the semiring setting is that left completely regular, right completely regular concepts coincide in semirings. In this context one natural question arises - what class of seminearrings can be obtained if the main axioms leading to left, right completely regular seminearrings are made to coincide? The thesis is concluded with a study related with possible answer to this question.

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