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COMMON BEST PROXIMITY POINTS FOR GENERALIZED PROXIMAL $C-$CONTRACTION MAPPINGS

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Abstract. In this paper, we introduce the notion of $(\phi{-}\psi{-}\alpha{-}\eta)$-proximal $C-$ contraction pair via a triangular $\alpha-$ admissible with respect to η for a pair of mappings. We discuss the existence and the uniqueness of a common best proximity point of such pair of maps. We provide examples to illustrate the validity of our results..

Keywords. Best Proximity Point, common best proximity point, $(\psi-\phi)$-generalized proximal contraction, lower semi continuous function.

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1 Introduction

It is very natural that some mappings, especially non-self-mappings defined on a complete metric space (X, d), do not necessarily possess a fixed point, that is $d(x, fx) > 0$ for all $x \in X$. In such situations, it is reasonable to search for the existence (and uniqueness) of a point $x^* \in X$ such that $d(x^*, fx^*)$ is an approximation of an $x \in X$ such that $d(x, fx) = 0$. In other words, one speculates to determine an approximate solution x^* that is optimal in the sense that the distance between x^* and fx^* is minimum. Here, the point $x^* \in X$ is called a best proximity point. This research subject has attracted attention of a number of authors; for example, see [[1, 3, 4, 7]].

In 2016, parvaneh et. al [15] introduced a new proximal $C-$ contractive mapping and established common best proximity point theorems in metric spaces.

In this paper, we generalize and improve certain results of Parvaneh et. al. [15] to obtain some new common best proximity point theorems. Notice also that in the best proximity point theory, we usually consider a non-self-mapping.

For the sake of completeness, we recall some basic definitions and fundamental results on best proximity in the literature.