

ABSTRACT

The purpose of this thesis is to introduce the notion of monotone multi-valued generalized (α, β) -nonexpansive mappings and explore the iterative approximation of the fixed points for the mapping in an ordered $CAT(0)$ space. In particular, we employ the S-iteration algorithm in $CAT(0)$ space to prove some convergence results. Moreover, some examples and useful results related to the proposed mapping are provided. Numerical experiments are also provided to illustrate and compare the convergence of the iteration scheme.