ON GENERALIZED VECTOR MIXED VARIATIONAL-LIKE INEQUALITIES WITH COMPLETE SEMICONTINUITY

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Abstract. The purpose of this paper is to study the solvability for a class of generalized vector mixed variational-like inequalities (for short, GVMVLI) in Banach spaces. We first introduce the concepts of locally complete semicontinuity and globally complete semicontinuity for vector multifunctions. Utilizing Brouwer's fixed point theorem, we derive the solvability for this class of GVMVLIs with locally complete semicontinuity for vector multifunctions. On the other hand, by using Ky Fan's lemma we also prove the solvability for this class of GVMVLIs with globally complete semicontinuity for vector multifunctions. The results presented in this paper are the extension and improvement of some earlier and recent results in the literature.

Keywords. Generalized vector mixed variational-like inequality; Brouwer's fixed point theorem; Ky Fan's lemma; Locally complete semicontinuity; Globally complete semicontinuity.

AMS (MOS) subject classification: 49J40, 47J20, 90C29.

1 Introduction and Preliminaries

The theory of vector variational inequalities, started in 1980 by Giannessi [9], has become an emerging direction for the research which has the applications in many areas, like, vector optimization, economics, transportation equilibrium, etc. The reader is refereed to the references, for examples, [5, 6, 7, 10, 11, 12, 13, 15, 17, 18, 19, 20, 21] and references therein. The vector variational inequality for multfunctions is called generalized vector