Vector Optimization involving Type I and related Functions on Differentiable Manifolds

S. K. MISHRA*and G. GIORGI

July 15, 2006

Abstract - In this paper, we have defined type I, pseudo-type I, quasi-type I, pseudo-quasi-type I and quasi-pseudo-type I functions on differentiable manifolds and Riemannian manifolds, and developed a vector programming on manifold. A vector program (VP) on a manifold is a vector problem of Pareto minimum generated by vector functions defined on manifold. Karush-Kuhn-Tucker type sufficient optimality conditions of efficiency (Pareto Optimization) for (VP) are established. The notion of Pareto saddle point for the vector Lagrangian associated to (VP) is defined and a theorem of Pareto saddle point for (VP) program is also given. This theorem generalizes the well-known theorem of saddle point of Kuhn and Tucker for scalar programs in nonlinear programming.

Key words and phrases : type I functions, generalized convexity, manifolds, vector optimization.

Mathematics Subject Classification (2000) **:** 26B25, 58A05, 58B20, 90C29, 90C46.