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Title of Thesis: Geometry of Submanifolds

ABSTRACT

In the theory of submanifolds the study of characterization of submanifolds and relationships between main extrinsic invariant and intrinsic invariant of submanifolds have a great significance. In the light of these observations mainly we have focused on these problems.

The thesis comprises five chapters out of which Chapter I is introductory in nature and consists of some basic definitions and results from geometry of submanifolds of Riemannian manifolds, slant submanifolds of complex manifolds, slant submanifolds of almost contact manifolds and preliminaries of B. Y. Chen's inequality.

Chapter II is devoted to the study of intrinsic characterization of slant submanifold of a Kenmotsu manifold in terms of the induced metric and we have shown that a slant submanifold of a Kenmotsu manifold is a Kenmotsu manifold. Also, we have shown that if M be a slant submanifold of a Kenmotsu manifold \overline{M} such that the structure vector

field ξ is tangent to M . Then curvature vector field associated to the metric induced by \bar{M} on M is given by, $R(X, Y)\xi = -\{\eta(Y)X - \eta(X)Y\}$ moreover, $R(\xi, X)\xi = X - \eta(X)\xi$.

In chapter III we study characterization of a slant submanifold of a Kenmotsu manifold with the help of Killing structure tensor field. Moreover, we have also obtained some examples of slant submanifolds of Kenmotsu manifolds in general case.

Chapter IV is devoted to the study of existence and uniqueness theorems for slant immersions in Kenmotsu space forms. In this chapter we first prove existence and uniqueness theorems for slant immersions in Kenmotsu space forms and then study about its applications and examples.

In chapter V we obtain B. Y. Chen's inequalities for bi-slant submanifolds in Kenmotsu space forms. Moreover, we give examples of bi-slant submanifolds of Kenmotsu manifolds.