

## PREFACE

The generalized Integral transformations have been of ever increasing interest to mathematicians working in the several branches. For the last 175 years the literature of the theory of integral transformations in mathematics can be traced.

The theory of Generalized functions was used explicitly by S. L. Sobolev (1936) in his study of the uniqueness of solutions of the Cauchy problem for linear hyperbolic equations. Laurentz Schwartz's gives firm foundation to the construction of the theory of generalized functions (1950-51), for which he got the field medal.

The present dissertation is the outcome of the work carried out by me in the field of “ Generalized Laplace Transformation” at the Department of Mathematics, Shivaji University, Kolhapur.

This dissertation consists of three chapters, each chapter divided into some sections.

The first chapter is the brief survey of Integral Transforms, Laplace Transforms and generalized Laplace transformations. This chapter also contains the historical background and few relevant basic concepts from standard text.

In the second chapter, we see the generalized Laplace transformation, and simplify some classical results, lemmas and theorems of generalized Laplace transformation introduced by J. M. C. Joshi and P. C. Joshi [8].

The third chapter is devoted to the distributional generalized Laplace transformation. In this chapter, we have studied the suitable testing function space  $GL_a$ , which contains the kernel of generalized Laplace transformation. We also studied the dual space  $GL'_a$  and the

countable union space  $GL(w)$  of  $GL_a$  . The Inversion formula and Uniqueness theorem for the generalized Laplace transformation have been derived in this chapter.

A triple numbering system is used for all theorems, lemmas and formulae, the first two numbers indicates the sections in which these appear. For example: Lemma 3.2.1, Theorem 3.2.1 and (3.2.1) are the first Lemma, first Theorem and first formula respectively, appearing in the section 3.2.

References are given at the end and arranged in the alphabetical order. In the text, they are referred to, by putting within rectangular brackets the serial number of the reference whenever necessary, the pages of the reference are also given; i.e. [ 2, P.130 ] means the page 130 of the second reference.

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( Subhash I. Unhale )