

TITLE OF THESIS : A STUDY OF INEQUALITIES AND ZEROS OF
POLYNOMIALS

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ABSTRACT : The Thesis entitled “**A STUDY OF INEQUALITIES AND ZEROS OF POLYNOMIALS**”, consists of four chapters. In Chapter I, firstly we consider the class of composite polynomials and obtain generalizations of results due to A. Aziz, P. Turan and W. M. Shah. Next in the same chapter, we obtain the results for Lacunary type of polynomials,

$$p(z) = a_0 + \sum_{j=\mu}^n a_j z^j, \quad 1 \leq \mu \leq n,$$
 which gives the better bound than the bound obtained by

K.K. Dewan. This chapter consists of eleven results and many corollaries which provides generalization as well as improvement of earlier well known results.

In second chapter, we obtain certain results concerning the inequalities for the Polar Derivative of Polynomials. Firstly, we consider the class of polynomials having all its zeros in $|z| \leq k, k \geq 1$, and obtain the results which extends the results of A. Aziz and N. A. Rather to polar derivatives. It also provides generalization as well as improvement of some earlier known results. In the last of this chapter, we obtain the result for the class of self – reciprocal polynomials.

In Chapter III, we deal with the integral mean estimates for the polynomials with restricted zeros. In this chapter, some theorems leads to a standard development of interesting generalizations of well known polynomial inequalities. In the last of this chapter, we consider the class of polynomials having all its zeros in $|z| \leq k, k \geq 1$, with s- fold zeros at origin.

In the fourth chapter, we concern with the integral mean estimates for the polar derivative of polynomial inequalities proved in Chapter I, II and III. Firstly, we prove an improvement as well as generalization of a result due to A. Aziz and N.A. Rather in the sense that maximum of $|p(z)|$ on $|z|=1$ is replaced by a factor involving the integral mean of $p(z)$ on $|z|=1$. We close this chapter, by using Holder’s inequality, to establish a generalization as well as an improvement of a result due to Dewan, Mir and Yadav.