

Name of the Scholar- Shuzaat Ali Khan

Notification No: F.NO. COE/Ph.D /519/2022

Name of the Supervisor- Dr. Taqseer Khan

Date of Award : 23/08/2022

Name of the Department- Department of Mathematics (J.M.I)

Topic of Research-On Approximation by Positive Linear Operators and Applications

Abstract: In this thesis work, a number of operators have been constructed and their approximation properties are studied. Approximating properties of Stancu variant of Lupas operators and hybrid linear positive operators by combining Beta and Baskakov basis functions are discussed. Some inverse results for these operators with the help of Fubini's theorem are obtained using Korovkin approximation theorem. Bivariate summation-integral type hybrid operators are explored for their approximation behaviour. Generalized q -Szász-Mirakjan operators are introduced and their approximation properties are studied. Based on the Voronovskaja's theorem, quantitative estimates for these operators. A complex (p,q) Lorentz-schurer operator for $q > p > 1$ are constructed and the approximation properties on a compact disc are established. Based on Voronovskaja's theorem and exact orders, quantitative estimates by the (p,q) Lorentz-Schurer operator attached to analytic functions in the compact disk are investigated. Approximation behaviour of our operators are studied using the tools of modulus of continuity, Peetre's K -functional, second-order modulus of smoothness, Lipschitz class and Lipschitz maximal function, weighted modulus of continuity.