PREFACE

Many Complex valued functions are not univalent, q-valent, starlike, convex or close-to-convex in the unit disc even though one or more of these properties may hold in a subdisc of the unit disc. The purpose of this dissertation is to investigate certain classes of holomorphic q-valent functions and determine the largest subdisc for which one or more of these properties hold.

In Chapter 1 we have taken into account all the definitions and statement of the known results needed for research.

In Chapter 2 we generalise some results of Dutton for q-valent starlike functions of order α; also for q-valent starlike functions of order α with second missing coefficient. Results are generalised for the functions having the Taylor series of the form

$$f(z) = z^q + az^{n+q-1} + \sum_{k=q}^{\infty} a_{n+k} z^{n+k}$$

which are holomorphic and q-valent for $|z|<1$. The region of close-to-convexity of the integrals are determined, the integrals involved are of the type

$$F(z) = \int_0^z (p(t))^{\beta/n} \left(\frac{f(t)}{t}\right)^{\delta} dt,$$ where $p(t)$ is a polynomial of degree n and all the zeros of which lie outside or on the unit disc, $f \epsilon S^*_{q,\alpha}$. The investigation for carrying out the span of the index parameter δ is also taken into account.The sharpness have been listed wherever possible.