J. of Ramanujan Society of Mathematics and Mathematical Sciences
Vol. 9, No. 1 (2021), pp. 11-28

ISSN (Online): 2582-5461

ISSN (Print): 2319-1023

ON SOME GROWTH PROPERTIES OF COMPOSITE ENTIRE FUNCTIONS ON THE BASIS OF THEIR GENERALIZED RELATIVE ORDER (α, β)

Tanmay Biswas and Chinmay Biswas*

Rajbari, Rabindrapally, R. N. Tagore Road,
P.O. Krishnagar, Nadia - 741101, West Bengal, INDIA

E-mail : tanmaybiswas_math@rediffmail.com

*Department of Mathematics,
Nabadwip Vidyasagar College,
Nabadwip, Nadia - 741302, West Bengal, INDIA

E-mail : chinmay.shib@gmail.com

(**Received:** *Sep. 22, 2021* **Accepted:** *Nov. 18, 2021* **Published:** *Dec. 30, 2021)*

Abstract: In this paper we wish to investigate some interesting results associated with the comparative growth properties of composite entire functions using generalized relative order (α, β) and generalized relative lower order (α, β), where α and β are continuous non-negative functions defined on $(-\infty, +\infty)$.

Keywords and Phrases: Entire function, growth, composition, generalized relative order (α, β), generalized relative lower order (α, β).

2020 Mathematics Subject Classification: 30D35, 30D30, 30D20.

1. Introduction, Definitions and Notations

Let $\mathbb{C}$ be the set of all finite complex numbers and f be an entire function defined on $\mathbb{C}$. The maximum modulus function $M_f(r)$ and the maximum term $\mu_f(r)$ of $f = \sum_{n=0}^{\infty} a_n z^n$ on $|z| = r$ are defined as $M_f = \max_{|z|=r} |f(z)|$ and $\mu_f(r) = \max_{n \geq 0}(|a_n| r^n)$ respectively. Since $M_f(r)$ is strictly increasing and continuous, therefore there exists its inverse function $M_f^{-1} : (|f(0)|, \infty) \to (0, \infty)$ with $\lim_{s \to \infty} M_f^{-1}(s) = \infty$. We