South East Asian J. of Mathematics and Mathematical Sciences
Vol. 17, No. 3 (2021), pp. 209-214

ISSN (Online): 2582-0850

ISSN (Print): 0972-7752

A COMMON FIXED POINT THEOREM FOR COMPATIBLE MAPS IN COMPLEX VALUED METRIC SPACES

Sanjay Kumar Tiwari and Himanshu Kumar Pandey

University Department of Mathematics,
Magadh University, Bodhgaya, Gaya - 824234, Bihar, INDIA

E-mail : tiwari.dr.sanjay@gmail.com, kumarpandeyhimanshu@gmail.com

(**Received:** *Oct. 20, 2020* **Accepted:** *Aug. 23, 2021* **Published:** *Dec. 30, 2021)*

Abstract: In this article, we prove a common fixed point theorem for compatible map in complex valued metric spaces without using the notion of continuity for two pairs of map. Our result generalizes and extends the results of Karapinar [5] and Noorwali [6].

Keywords and Phrases: Contractive map, interpolation, common fixed point, compatible mapping, complex valued metric space, partial ordered set.

2020 Mathematics Subject Classification: 47H10, 54H25.

1. Introduction

In 2011, Azam, Fisher and Khan [1] introduced the notion of complex valued metric space, which is a generalization of the classical metric space and established sufficient conditions for the existence of a common fixed points of a pair of mapping satisfying a contractive condition. The study of existence of common fixed point developed from commutativety to compatibility and similarly weakly commutativety to weakly compatibility. Also we can say non-commutativety of mapping grown from non-compatibility by some property.

A complex number $z \in \mathbb{C}$ is an ordered pair of real numbers, whose first co-ordinate is called $Re(z)$ and second co-ordinate is called $Im(z)$.

In 1968, Kannan [3, 4] introduced a contraction mapping which is non-continuous and gave a fixed point theorem: If X is a complete metric space and $T : X \to X$ is a mapping satisfying

$$d(Tx, Ty) \leq \alpha \left[d(x, Tx) + d(y, Ty) \right], \quad \forall x, y \in X \text{ and } \alpha \in [0, 1).$$