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A NEW APPROACH ON COUPLED FIXED POINT THEORY IN JS-METRIC SPACES

TANUSRI SENAPATI* AND LAKSHMI KANTA DEY**

*Department of Mathematics, National Institute of Technology Durgapur West Bengal, India E-mail: senapati.tanusri@gmail.com

**Department of Mathematics, National Institute of Technology Durgapur West Bengal, India E-mail: lakshmikdey@yahoo.co.in

Abstract. In this article, we study coupled fixed point theorems in newly appeared JS-metric spaces. It is important to note that the class of JS-metric spaces includes standard metric spaces, dislocated metric spaces, b'-metric spaces, modular spaces etc. The purpose of this paper is to present several coupled fixed point results in a more general way. Moreover, the techniques used in our proofs are indeed different from the comparable existing literature. Finally, we present non-trivial examples to validate our main results.

Key Words and Phrases: Metric space, partially ordered set, coupled fixed point. 2010 Mathematics Subject Classification: 47H10, 54E50.

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References

- V. Berinde, Generalized coupled fixed point theorems for mixed monotone mappings in partially ordered metric spaces, Nonlinear Anal., 74(18)(2011), 7347-7355.
- [2] T.G. Bhaskar, V. Lakshmikantham, Fixed point theorems in partially ordered metric spaces and applications, Nonlinear Anal., 65(2006), 1379-1393.
- [3] M.F. Bota, A. Petruşel, G. Petruşel, B. Samet, Coupled fixed point theorems for single-valued operators in b-metric spaces, Fixed Point Theory Appl., 2015(2015), no. 231.
- [4] H.S. Ding, L. Li, Coupled fixed point theorems in partially ordered cone metric spaces, Filomat, 25(2011), no. 2, 137-149.
- [5] D. Guo, V. Lakshmikantham, Coupled fixed points of nonlinear operators with applications, Nonlinear Anal., 11(5)(1987), 623-632.
- [6] H. Isik, D. Turkoglu, Coupled fixed point theorems for new contractive mixed monotone mappings and applications to integral equations, Filomat, 28(6)(2014), 1253-1264.

- [7] H. Isik, S. Radenović, A new version of coupled fixed point results in ordered metric spaces with applications, U.P.B. Sci. Bull., Series A, **79**(2017), no. 2, 131-138.
- [8] M. Jleli, B. Samet, A generalized metric space and related fixed point theorems, Fixed Point Theory Appl., 2015(2015), no. 61.
- [9] V. Lakshmikantham, L.B. Cirić, Coupled fixed point theorems for nonlinear contractions in partially ordered metric spaces, Nonlinear Anal., 70(12)(2009), 4341-4349.
- [10] A. Petruşel, G. Petruşel, B. Samet, J.C. Yao, Coupled fixed point theorems for symmetric contractions in b-metric spaces with applications to operator equation systems, Fixed Point Theory, 17(2)(2016), 459-476.
- [11] S. Radenović, Remarks on some coupled coincidence point results in partially ordered metric spaces, Arab J. Math. Sci., 20(1)(2014), 29-39.
- [12] S. Radenović, Coupled fixed point theorems for monotone mappings in partially ordered metric spaces, Kragujevac J. Math., 38(2)(2014), 249-257.
- [13] T. Senapati, L.K. Dey, D. Dolićanin-Dekić, Extension of Ćirić and Wardowski type fixed point theorems in D-generalized metric spaces, Fixed Point Theory Appl., 2016(2016), no. 33.

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