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The study of a general theory of factorizations leads to the definition of a τ_n -factorization or τ_n -product, given by Anderson and Frazier, in 2006. They defined the concepts of τ_n -irreducible elements, τ_n -prime elements, and some properties of τ_n -factorizations. Later in 2007, Hamon characterized the τ_n -atomicity of \mathbb{Z} , which only holds for $n = 0, 1, 2, 3, 4, 5, 6, 8, 10$ and 12 . In 2008, Ortiz defined the greatest common τ_n -divisor, unfortunately it does not always exist for an integer $n > 1$. Nowadays, Ortiz has developed formulas to calculate a new type of ordered greatest common τ_n -divisor and some arithmetic τ_p -functions, where p is a positive prime integer. Even though the τ_n -gcd does not always exist, the ordered τ_n -gcd is conjectured to always exist for any natural number n . (Received September 26, 2012)