1163-00-959   **Sowmya Muniswamy*** (`sowmyam@rvce.edu.in`) and **Aghalaya S Vatsala**. *Mixed Generalized Iterative Method for Nonlinear Caputo Fractional Differential Equations with initial conditions with Applications.*

Qualitative and quantitative study of differential equations with initial and boundary conditions plays an important role in applications, since the dynamic equations arise from modeling problems in science and engineering. Here we develop a methodology to find the solution of nonlinear Caputo fractional differential equations by generalized iterative methods, when the non-linear function is the sum of convex, concave, increasing and decreasing functions, using coupled lower and upper solution. We use generalized iterative methods such as generalized monotone method and/ or generalized quasilinearization method coupled with lower and upper solutions or coupled lower and upper solutions. To start with we will use the natural lower and upper solution to start with, since they are relatively easy to compute. We will use these natural lower and upper solutions to compute the coupled lower and upper solutions. Further, using these coupled lower and upper solution, we will construct monotone sequences on the desired interval, which converge uniformly and monotonically to coupled minimal and maximal solutions. These minimal and maximal solutions will converge to a unique solution if the nonlinear term satisfies the Lipshitz condition. (Received September 14, 2020)