Summary: In this paper, perturbed Galerkin method is proposed to find numerical solution of an integro-differential equations using fourth kind shifted Chebyshev polynomials as basis functions which transform the integro-differential equation into a system of linear equations. The systems of linear equations are then solved to obtain the approximate solution. Examples to justify the effectiveness and accuracy of the method are presented and their numerical results are compared with Galerkin’s method, Taylor’s series method, and Tau’s method which provide validation for the proposed approach. The errors obtained justify the effectiveness and accuracy of the method.

MSC:

65Rxx Numerical methods for integral equations, integral transforms
45Jxx Integro-ordinary differential equations
45Bxx Fredholm integro equations

References:


Szegő, G., Orthogonal Polynomials (1975), AMS Colloq. Publ. · Zbl 61.0386.03


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.