On generalization of Taylor's series, Riemann zeta functions and Lidstone polynomials

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Lidstone series is a generalization of Taylor's series. It approximates to a given function in the neighborhood of two points (instead of one). This series includes the polynomials later called Lidstone polynomials. We provide their explicit representations, give their relations with Riemann zeta functions, Bernoulli polynomials, generating function and obtain best possible error estimates in Lidstone interpolation. Since our results of Hermite-Bernoulli polynomials can be connected to Riemann zeta functions, Bernoulli polynomials, Hermite number, Bernoulli-Hermite numbers and (p,q)-hypergeometric-Bernoulli polynomials, we can apply above connection of Lidstone polynomial and Bernoulli polynomials to obtain new results and connections of Hermite-Bernoulli polynomials and Lidstone polynomials.