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Frequency analysis of daily rainfall data of Udaipur district

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■ **ABSTRACT :** Rainfall is a prime input for various engineering design such as hydraulic structures, water conservation structures, bridges and culverts, canals, storm water sewer and road drainage system. The detailed statistical analysis of each region is essential to estimate the relevant input value for design and analysis of engineering structures and also for crop planning. The present study comprises statistical analysis *i.e.* frequency analysis of daily maximum rainfall data of Udaipur district. The daily rainfall data for a period of 56 years is collected to evaluate designed value of rainfall using probability distribution models. The different probability distributions *viz.*, Gamble's extreme value type I, Logpearson type III, Lognormal, Normal, Exponential, Pearson type III and Gamma distribution were used to evaluate maximum daily rainfall. Kolmogorov-Smirnov and Chi-square tests were used to examine the goodness of fit of the probability distributions. Results showed that Lognormal and Gumbel distributions, found to be having least critical values for both the tests, hence consider as the best fit distribution for given sample rainfall data. Also maximum daily expected value of rainfall for various return periods were evaluated using all distribution model under consideration.

■ **KEY WORDS :** Chi-square test, Kolmogorov-smirnov test, Probability distribution model

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