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ANALYSIS AND MODELLING OF THE SEIR EPIDEMIC MODEL UNDER TREATMENT RATE USING HOMOGENEOUS TRANSMISSION FUNCTION

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Abstract: This paper is a study of the SEIR mathematical epidemic model using homogeneous transmission function. We worked over the rate of treatment on infected and susceptible individuals to boost the recovery among them. The endemic equilibrium and disease free equilibrium are calculated with certain conditions for their existence. Stability of these points are tested based on available treatment situation. Analytical results are illustrated using numerical values.

Keywords and Phrases: Epidemic model, Routh - Herwitz criterion, Lyapunov function, Dulac's criterion, Stability.

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1. Introduction

The history and present situation of human being is full of fear due to several diseases. A lot of infectious diseases have threatened the human beings. Human kind understands the importance of dynamical study of diseases to know and to stop them through various appropriate controlling actions.

Mathematical models are always helpful in dynamic study of any disease. They are