

# **CERTIFICATE**

It is certified that **Mr. SUMIT RAJ BHATI**, Roll No 2K11/STE/16, student of M.TECH., Structural Engineering, Department of Civil And Environmental Engineering, Delhi Technological University (Formerly Delhi College of Engineering), has submitted the dissertation entitled “**RESPONSE OF MULTISTORIED BUILDING USING SEMI-ACTIVE MAGNETO RHEOLOGICAL (MR) DAMPER BY NEURAL NETWORK**” under our guidance towards partial fulfillment of the requirements for the award of the degree of Master of Technology (Structural Engineering).

This dissertation is a bonafide record of project work carried out by him under my guidance and supervision. His work is found to be good.

I wish him success in all his endeavors.

**New Delhi**  
**JULY, 2013**

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## ABSTRACT

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Earthquakes are considered to be the most devastating catastrophic activity. Earthquakes, as of themselves, do not cause the damages of life and property, but they affect the structures, thereby causing serious threat to life and property in the structure. The recent development in the field of structural control has enabled us to predict, as well as control the response of a structure under seismic loading, in a simplified and effective manner. The application of Artificial Neural Networks (ANN) in the field of Structural Control has further simplified the problem of prediction of responses and other control parameters. The semi-active control has emerged as a very attractive proposition of structural control in last one decade. Researchers have been investigating various semi-active devices through experimental and analytical studies. In this study the effectiveness of Magneto Rheological (MR) damper, which is one of the most effective semi-active control device has been studied. Then, an Artificial Neural Network (ANN) has been developed to predict the response of the structure considering the parameters of two different ground motions and the parameters of the structure.

This report investigates the feasibility of structural control systems in combination with the artificial neural networks (ANN) techniques. The objective of this study is to know the basics of neural network and in further studies compare the results of Uncontrolled and controlled (MR Dampers) by using artificial neural networks. ANN has the ability to learn and simplify from examples without knowledge of rules. In the field of “structural engineering” problems research in to artificial neural networks is growing rapidly.

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