STATIC ANALYSIS

OF

AN ISOTROPIC SQUARE PLATE SUBJECTED TO

OUT OF PLANE LOADING

A dissertation
presented to
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In Partial Fulfilment
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Master of Technology

By
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JULY-2013

CERTIFICATE

The undersigned have examined the dissertation entitled

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OF

AN ISOTROPIC SQUARE PLATE SUBJECTED TO

OUT OF PLANE LOADING

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Dr. A.K. Gupta

DECLARATION

I Certify that

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b. The work has not been submitted to any other Institute for any degree or diploma.
c. I have followed the guidelines provided by the University in preparing the thesis.
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e. Whenever I have used materials (data, theoretical analysis, figures, and text) from other sources, I have given due credit to them by citing them in the text of the thesis and giving their details in the references.

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ABSTRACT

This project report aims to the static analysis of an isotropic square plate with different boundary conditions and various types of load applications. For the analysis a four noded isoparametric element has been considered. Numerical analysis (finite element analysis, FEA) has been carried out by developing programming in mathematical software MATLAB. Later, for the same structure, analysis has been carried out using finite element analysis software ANSYS. Finally, comparison has been done between the results obtained from FEA numerical analysis, and ANSYS results with classical method - exact solutions. Numerical results showed that, the results obtained by finite element analysis using MATLAB and ANSYS are in close agreement with the results obtained from exact solutions using Galerkin method from Kirchhoff classical plate theory. During this analysis, the optimal thickness of the plate has been obtained when the plate is subjected to different loading and boundary conditions.