MATHEMATICAL MODELING OF EARTHQUAKE INDUCED VIBRATIONS
AND ITS EFFECTS ON MULTISTORY BUILDINGS

ASMA BINTI MAHMUD

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To my beloved father and mother,

Mahmud and Rosnah

And

My truly supporter,

Azhar
ACKNOWLEDGEMENT

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

A strong earthquake will cause sudden fatality, great economic loss and panic to community. A mathematical model of forced vibrations on multistory buildings is used as a tool to study the mechanism of vibration that caused by an earthquake. The model is used to calculate the natural frequencies, $\omega$ and period, $P$ of the building vibrations. Furthermore, the vibration on each floor and the maximal amplitude of the building vibrations also being analyzed. This research only concentrates on three floors building and five floors building. Matrix method is used to get analytical solution of the earthquake model and the graphs of calculated frequencies against period and vibrations of the floors against time are plotted via Maple 12 package. Based on that graphs, the related discussions are being made.