Executive Summary

The thesis entitled "Mathematical Study of Motion and Control of Low Earth Orbit Satellites Under the Effect of Earth's Zonal Harmonics and Atmospheric Drag " is divided into two parts. In the first part, we have discussed the general introduction, historical background and mathematical preliminaries related to orbital dynamics & mathematical control theory. Research work is discussed in the second part.

Chapter 1 discusses the general introduction and historical background of celestial mechanics, Artificial satellites, Control theory and Motivation to conduct the research followed by the Layout of the thesis.

Chapter 2 discusses preliminaries related to the mathematical modelling of two-body problem, various perturbing forces acting on the motion of the artificial satellite and orbital elements.

Chapter 3 discussed the preliminaries related to Morden control theory of linear as well as nonlinear systems.

Chapter 4 discussed the controllability analysis of the motion of artificial satellites under the effect of the oblateness of the earth.

Chapter 5 discussed the trajectory controllability of the satellite under the effect of the oblateness of the earth.

The bibliography is provided after Chapter:5.