



Department of Mechanical Engineering
Indian Institute of Technology (Banaras Hindu University),
Varanasi-221005

CANDIDATE'S DECLARATION

I, **Mazin Mahmood Yahya**, certify that the work embodied in this Ph. D. thesis is my own bonafide work carried out by me under the supervision of **Dr. Nilanjan Mallik** and Co-supervision of **Dr. I. Chakrabarty** for a period of 5 years from *July, 2011* to *June, 2016* at *Department of Mechanical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi*. The matter embodied in this Ph. D. thesis has not been submitted for the award of any other degree/diploma.

I declare that I have faithfully acknowledged, given credit to and referred to the research workers whenever their works have been cited in the text and the body of the thesis. I further certify that I have not willfully lifted up some other's work, para, text, data, results, etc. reported in the journals, books, magazines, reports, dissertations, thesis, etc., or available at web-sites and included them in this Ph. D. thesis and cited as my own work.

Date

Place: Varanasi

Mazin Mahmood Yahya

Department of Mechanical Engineering

Indian Institute of Technology

Enrolment No. 330498