

DECLARATION BY THE CANDIDATE

I, *RASHMI REHKA SAHOO*, certify that the work embodied in this thesis is my own bona fide work and carried out by me under the supervision of *Prof. P. GHOSH (Supervisor) and Dr. J. SARKAR (Co- Supervisor)* from *DECEMBER 2013 to APRIL 2017*, at the *MECHANICAL ENGINEERING DEPARTMENT, INDIAN INSTITUTE OF TECHNOLOGY (BHU), VARANASI*. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not willfully copied any other's work, paragraphs, text, data, results, *etc.*, reported in journals, books, magazines, reports dissertations, theses, *etc.*, or available at websites and have not included them in this thesis and have not cited as my own work.

Date:

Place: Varanasi

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CERTIFICATE BY THE SUPERVISOR(S)

It is certified that the above statement made by the student is correct to the best of my/our knowledge.

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