

DECLARATION BY THE CANDIDATE

I, Balraj Singh, certify that the work embodied in this thesis is my own bonafide work and carried out by me under the supervision of Prof. S. Jit from "22/07/2013" to "09/08/2017", at the Department of Electronics Engineering, 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 credit to the research workers wherever their works have been cited in my work in the text and the body of the thesis. I further declare that I have not willfully lifted up some other's work, paragraphs, text, data, results, *etc.*, reported in journals, books, magazines, reports, dissertations, theses, *etc.*, or available at web-sites and have not included them in this Ph.D thesis and have not cited as my own work.

Date:

Signature of the Student

Place:

Balraj Singh

CERTIFICATE BY THE SUPERVISOR

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

(Prof. S. Jit)

Supervisor

Department of Electronics Engineering

IIT (BHU), Varanasi

Signature of Head of Department

"SEAL OF THE DEPARTMENT"