

## **STATEMENT OF PURPOSE**

From B.Sc. under “Ramakrishna Mission Vivekananda Centenary College, Rahara” I had special paper Differential Equations (DEs) And Integral Transformations. I was amazed with the beautiful solving techniques to solve the DEs problems. While studying M.Sc. in “IIT (ISM) Dhanbad” there was a special topic Ordinary and Partial Differential Equations becomes too much interesting under the supervision of Prof. Ramanababu Kaligatla, Prof. Ranjit Kumar Upadhyay and Prof. Mritunjay Kumar Singh. My M.Sc. project-dissertation completed in the year of 2019 entitled “Analytical Investigation and Operational Rule for Double Laplace Transform” under the guidance of Prof. Akhilesh Prasad.

From the childhood to growing age my aim is how to relate Mathematics in real life problems. For this eagerness, I am trying to find the relation between Mathematics and Environment (Nature). It is believed that groundwater is more risk free in compare to the surface water. But these days groundwater contamination is growing continuously in the developing countries due to the indiscriminate discharge of waste water from the various industries. A large part of the drinking water in the world comes from groundwater. The contamination of groundwater systems is still a major issue in the assessment of hazards and risks to public health. In daily life, the importance of water is realized only when one can face the scarcity of water. The challenge for any country is to have sustainable water security.

The transport mechanism of contaminated groundwater has been a problematic issue for many decades, mainly due to the bad impact of the contaminants on the quality of the groundwater system. Mathematical modelling is one of the powerful tools to project the existing problems and its appropriate solutions. Although many transport problems must be solved numerically, analytical solutions are still pursued by many scientists because they can provide better physical insight into problems. As we all know analytical solution of the problem provide closed form solution which gives more realistic result rather than numerical solution which provide approximate solution confining the percentage of error. An analytical solution for solute transport along unsteady groundwater flow in a saturated, homogeneous and finite aquifer. A Cauchy-type boundary condition is considered at intermediate portion of the aquifer system. A uniform concentration is considered as an initial background concentration. Laplace Transform Technique (LTT) is used to obtain the analytical solution. It strike my mind that, mathematical modelling can find a new way to prevent groundwater pollution. I realize that real world objects behaviour can also be analysed by mathematical point of view.

I want to pursue PhD degree in IIT Kharagpur along with University Of Manchester because I feel like there is still so much I have yet to learn and hope that the knowledge I gain will enable me to solve challenging mathematical problems and extend my studies to postdoctoral research. I sincerely believe that you will consider my application and give me an admission.