

# CERTIFICATE

It is certified that the work contained in the thesis titled "STUDY OF SOME PROBLEMS ON DYNAMICAL SYSTEMS AND FRACTIONAL CALCULUS" by GHANSHYAM PRASAD has been carried out under my/our supervision and that this work has not been submitted elsewhere for a degree.

It is further certified that the student has fulfilled all the requirements of Comprehensive examination, Candidacy and Progress Reports for the award of Ph.D. Degree.

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## UNDERTAKING FROM THE CANDIDATE

I, **Ghanshyam Prasad**, research scholar under the supervision of Prof. Tanmoy Som, and Prof. Subir Das, Department of Mathematical Sciences Indian Institute of Technology (Banaras Hindu University), Varanasi, give undertaking that the entitled "STUDY OF SOME PROBLEMS ON DYNAMICAL SYSTEMS AND FRACTIONAL CALCULUS" submitted by me for the degree of Doctor of Philosophy is a record of first-hand research work done by me during the period of study.

I do further undertake the responsibility for mistakes, error of facts and misinterpretations, if any, in the thesis which is of course entirely of my own.

Date:

**(Ghanshyam Prasad)**

Place: Varanasi

## **CERTIFICATE BY THE SUPERVISOR**

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

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## **COURSE WORK/ COMPREHENSION EXAMINATION COMPLETION CERTIFICATE**

This is to certify that **Mr Ghanshyam Prasad**, a bonafide research scholar of the department, has successfully completed the Ph.D. course work and comprehensive examination requirement which is a part of his Ph.D. programme.

Date:

Place: Varanasi

(Head of the Department)

## **PRE-SUBMISSION SEMINAR COMPLETION CERTIFICATE**

This is to certify that **Mr. Ghanshyam Prasad**, a bonafide research scholar in the Department of Mathematical Sciences, IIT (BHU), Varanasi, under supervision of Prof. Tanmoy Som has successfully defended his Ph.D. thesis entitled "STUDY OF SOME PROBLEMS ON DYNAMICAL SYSTEMS AND FRACTIONAL CALCULUS" in the pre-submission seminar held on June 5, 2017 which is a part of his Ph.D. programme.

Date:

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Name of the Student: **Ghanshyam Prasad**

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