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December 2017

UNDERTAKING BY THE CANDIDATE

I, **Pradipta Kumar Jena**, certify that the work embodied in the present thesis is my own work carried out by me under the supervision of **Professor R. K. Mandal, Dr. K. Siva Kumar and Dr. A. K. Singh** for a period of six years and eleven months from **January 2011** to **December 2017** at the Department of Metallurgical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi. The matter embodied in the thesis has not been submitted for the award of any other degree or diploma.

(Pradipta Kumar Jena)

CERTIFICATE FROM THE SUPERVISORS

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COURSE / COMPREHENSIVE EXAMINATION / PRE - SUBMISSION SEMINAR COMPLETION CERTIFICATE

This is to certify that **Sri Pradipta Kumar Jena**, a bonafide research scholar of this department, has satisfactorily completed the course work, comprehensive examination and pre-submission seminar requirements which are a part of his Ph.D programme.

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Title of the Thesis: **Ballistic Studies on Aluminium 7017 Alloy**

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