



## CERTIFICATE

This is to certify that the thesis entitled “**An Investigation on the Performance of a Direct Injection Diesel Engine using Esterified Oils (Biodiesels) as Fuel**” being submitted by **Mr. H. K. Amarnath** to **THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA**, Vadodara in the Faculty of Technology and Engineering for the award of the degree of “Doctor of Philosophy” in Mechanical Engineering, is a record of bonafide research work carried out by him. **Mr. H. K. Amarnath** has worked under my supervision and guidance and has fulfilled all the requirements for the submissions of this thesis, which according to our knowledge has reached requisite standard. The results contained in this thesis have not been submitted, in part or full, to any other degree or diploma at any institute or university.

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## THESIS APPROVAL SHEET

Thesis entitled “An Investigation on the Performance of a Direct Injection Diesel Engine using Esterified Oils (Biodiesels) as Fuel” by Mr. H. K. Amarnath is approved for the degree of DOCTOR OF PHILOSOPHY in Mechanical Engineering.

  
27.12.12

Internal Examiner

  
27/12/2012

External Examiner