

CERTIFICATE OF THE SUPERVISOR

This is to certify that the work entitled “**COLLECTIVE EXCITATIONS AND MANY PARTICLE ASPECTS OF GRAPHENE**” is a piece of research work done by *Ms. Mishra Kavita NarayanDutt* under my guidance and the supervision for the degree of Doctor of Philosophy at **Physics department, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India**. The candidate has put in an attendance of more than 200 days with me.

To the best of my knowledge and belief, the thesis:

- (i) embodies the work of the candidate herself,
- (ii) has been duly completed,
- (iii) fulfills the requirements of the ordinance relating to the Ph.D. degree of the University
and
- (iv) is up to the standard both in respect of contents and language for being referred to the examiner.

(Signature of the Supervisor)

Prof. A. C. Sharma
Dean
Faculty of Science