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Programme **Ph.D.**

Subject **Chemistry**

I, **Manjinder Kour**, certify that the work embodied in this Ph.D. thesis, entitled “**Experimental and Theoretical Investigation of the Reactions of Some Amines with Unsaturated Carbonyl Compounds**” is my own bonafide work carried out by me under the supervision of **Dr. Raakhi Gupta**, Professor, The IIS University, Jaipur and co-supervision of **Prof. R. K. Bansal**, Professor, The IIS University, Jaipur, for a period of **3 years and 6 months** from **March, 2014** to **October, 2017** at Department of Chemistry, The IIS University, Jaipur. The matter embodied in this Ph.D thesis has not been submitted for the award of any other degree/diploma.

I declare that I have faithfully acknowledged, given credit to and referred to the authors/research workers wherever their works have been cited in the text and the body of the thesis. I further certify that I have not willfully lifted up some other's work, para, text, data, results, figures etc. reported in the journals, books, magazines, reports, dissertations, theses, etc., or available at web-sites and included them in this Ph.D thesis and cited as my own work.

**Date: 13/01/2016**

**Place: Jaipur**

**Manjinder Kour**

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This is to certify that the above statement made by the Research scholar is correct to the best of our knowledge. Certified that a check for plagiarism has been made on the software available in the University and the contents of thesis have been found free from plagiarism within permissible limits.

**Supervisor**  
**Dr. Raakhi Gupta**  
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**Co-supervisor**  
**Prof. R.K. Bansal**  
Professor  
The IIS University, Jaipur

**Head, Department of Chemistry**



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[See Clause XIII.1 and XIII.2 (e) (iii)]

Programme **Ph.D.**

Subject **Chemistry**

This is to certify that **Ms. Manjinder Kour** is a bonafide research scholar of this **Department of Chemistry**, registered for the Ph.D. degree vide University letter No. **IISU/Ph.D./CHY/R.S. 216/2014/1319** dated 03-03-2014 under the supervision of **Dr. Raakhi Gupta** and co-supervision of **Prof. R. K. Bansal**, of Department of Chemistry, The IIS University, Jaipur. She has satisfactorily completed all the requirements for the submission of thesis for the award of Ph.D. degree as per provisions of The IIS University Ph.D. Bye-laws and the UGC (Minimum standards and procedure for award of Ph.D. Degree), Regulations, 2009. She has successfully completed the course work and well-defended the Research Proposal Seminar and the Pre-submission seminar presented by her before the DRC/RPMC or the committee constituted for the purpose with at least one external expert present in the meeting of the committee. She has also published **seven** research paper(s) in refereed journals of repute, approved by the DRC.

**Dr. Varsha Goyal**  
**Head, Department of Chemistry**  
**The IIS University, Jaipur**

**Date: 14/10/2017**

**Place: Jaipur**



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Subject **Chemistry**

This is to certify that the thesis entitled "**Experimental and Theoretical Investigation of the Reactions of Some Amines with  $\alpha$   $\beta$ -Unsaturated Carbonyl Compounds**", submitted by **Ms. Manjinder Kour** under our supervision for the award of Ph.D. degree in the faculty of Science, The IIS University, Jaipur is an original piece of research work.

Literary presentation is satisfactory and thesis is in a form suitable for publication. The research work also evinces the capacity of the Research Scholar for critical examination and independent judgment.

We also certify that the Research Scholar has successfully completed the course work, Pre-Submission Seminar, and other requirements for submission of thesis including the publication of two research papers in a refereed journal of repute in the subject. The Research Scholar has also fulfilled the residency requirements as per Clause VIII.3 of Ph.D. By-Laws of the University.

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Subject **Chemistry**

**Title of the Thesis** : **Experimental and Theoretical Investigation of the Reactions of Some Amines with  $\alpha$   $\beta$ -Unsaturated Carbonyl Compounds**

**Name of the Research Scholar** : **Ms. Manjinder Kour**

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**Date: 14/10/2017  
Place: Jaipur**

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