# Certificate of Examination

This is to certify that the dissertation titled “**A Stage-structured Individual-based Model for Ecological and Evolutionary Dynamics of *Drosophila melanogaster*****Populations Adapted for Larval Crowding**” submitted by Mr. Sayyed Imran Rashid (Reg. No. MS15139) for the partial fulfilment of BS-MS dual degree program me of the Institute, has been examined by the thesis committee duly appointed by the Institute. The committee finds the work done by the candidate satisfactory and recommends that the report be accepted.

Dr. Manjari Jain Dr. Rhitoban Ray Dr. N. G. Prasad Prof. Sutirth Dey

Choudhury (Supervisor) (Co-supervisor)

Dated: May 2, 2020

# Declaration

The work presented in this dissertation has been carried out by me under the guidance of Dr. N. G. Prasad at the Indian Institute of Science Education and Research Mohali and Prof. Sutirth Dey at the Indian Institute of Science Education and Research Pune.

This work has not been submitted in part or in full for a degree, a diploma, or a fellowship to any other university or institute. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due acknowledgement of collaborative research and discussions. This thesis is a bonafide record of original work done by me and all sources listed within have been detailed in the bibliography.

Sayyed Imran Rashid

(MS15139)

Dated: May 2, 2020

In my capacity as the supervisor of the candidate’s project work, I certify that the above statements by the candidate are true to the best of my knowledge.

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| Dr. N. G. Prasad  (Supervisor) | Prof. Sutirth Dey  (Co-supervisor) |