

**BIRLA INSTITUTE OF TECHNOLOGY AND  
SCIENCE, PILANI**

**CERTIFICATE**

This is to certify that the thesis titled **“Elucidating the Antibacterial Mechanism of Silver Species against Gram-Negative Bacteria”** submitted by **Vikram Pareek**, ID No. **2015PHXF0001P** for award of Ph.D. of the Institute embodies original work done by him/her under my supervision.

**Signature of the Supervisor:**

**Name in capital letters: JITENDRA PANWAR**

**Designation: PROFESSOR**

**Date:**