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### **CERTIFICATE BY THE SUPERVISOR**

This is to certify that the thesis entitled “**Development of Toxic Gas Sensors Using 2D Materials: A First Principles Study**” being submitted to The Maharaja Sayajirao University of Baroda, Vadodara by **Mistry Heli Jatin** for the award of **Doctoral degree** in **Physics** is a report of original research work and has been carried out by the candidate under my guidance and supervision.

I further certify that the work has not been submitted either partly or fully to any other University/Institution for the award of any degree.

**Place: Vadodara**  
**Date: 08-08-2024**

**Dr. Keyur N. Vyas**  
**(Ph.D. Supervisor)**