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CERTIFICATE

This is to certify that the thesis entitled “**Absorption and Emission characteristics of Dy³⁺, Sm³⁺, Eu³⁺, Tb³⁺ and Er³⁺ ions doped Zinc Alumino Bismuth Borate**” that is being submitted by **Smt. Swapna Koneru (Regd. No: 10322002)**, Woman Scientist (DST/WOS-A) (File No: SR/WOS-A/PS-35/2011), Department of Physics, in partial fulfilment for the award of **Ph.D degree in Physics** to the K L University is a record of bonafied work carried out by her under my guidance and supervision. The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

(Prof. A. Srinivasa Rao)

Research Supervisor