VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

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A project report on

"CHARACTERIZATION OF BISMUTH AND TIN BASED ALLOY FOR THERMAL INTERFACIAL MATERIAL APPLICATION"

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

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CERTIFICATE

Certified that the project work entitled "**CHARACTERIZATION OF BISMUTH AND TIN BASED ALLOY FOR THERMAL INTERFACIAL MATERIAL APPLICATION**" is a bonafide work carried out by

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ABSTRACT

The demand for efficient thermal management in electronic devices has spurred significant interest in novel materials for thermal interfacial applications. Bismuth and tin based alloys offer promising characteristics such as low melting points, high thermal conductivity, and compatibility with various substrates, making them attractive candidates for thermal interface materials (TIMs). This study focuses on the comprehensive characterization of bismuth and tin based alloys, including their thermal properties, microstructure, phase transitions, and mechanical behaviour. Various alloy compositions are investigated to optimize thermal performance while maintaining mechanical integrity. Experimental techniques such as different Microstructure X-ray diffraction (XRD) are employed to elucidate the thermal and structural properties of the alloys. The findings contribute to the understanding of bismuth and tin based alloys as viable candidates for advanced thermal management solutions in electronic devices.