SCR Triggering Using UJT - Mini Project Report

1. Title Page

SCR Triggering Using UJT

Mini Project – II

Department of Electrical Engineering

Government College of Engineering, Kolhapur

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2. Certificate

(Department approved certificate text placeholder)

3. Acknowledgment

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4. Abstract

This project focuses on triggering a Silicon Controlled Rectifier (SCR) using a Uni Junction Transistor (UJT). The UJT relaxation oscillator generates gate pulses which control the firing angle of the SCR. The project demonstrates the practical application of power electronics triggering circuits and highlights stable SCR conduction under controlled firing conditions.

5. UJT Definition and Diagram

Definition: A UJT (Uni-Junction Transistor) is a three-terminal semiconductor device with negative resistance characteristics used for triggering and pulse generation.

Diagram:

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B1

6. SCR Definition and Diagram

Definition: An SCR (Silicon Controlled Rectifier) is a PNPN semiconductor device that acts as a controlled switch. It conducts only when a gate signal is applied.

Diagram:

Anode

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Gate

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Cathode

7. Methodology & Project Stages

- Requirement Analysis

- Circuit Design with UJT Relaxation Oscillator

- Implementation and Gate Triggering

- Testing, Observation, and Analysis

8. Conclusion

The project successfully demonstrates UJT-based triggering of an SCR with stable firing control.

9. Future Scope

- Microcontroller-based firing circuits

- Digital firing angle control

- Automated power regulation systems