Variable Regulated Power Supply

Submitted to:

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Designing and developing a Variable Regulated Power Supply was a significant milestone in my engineering journey. This project provided me with hands-on experience in analog circuit design, voltage regulation, and power electronics while reinforcing my theoretical understanding of electrical components.

The objective was to build a power supply that could deliver a stable and adjustable output voltage suitable for powering various electronic devices. The circuit incorporated a transformer, rectifier, voltage regulator (LM317), capacitors, and heat dissipation mechanisms to ensure efficiency and reliability.

Technical Outcomes:

- **Voltage Regulation Mastery:** Implemented an adjustable voltage output ranging from 0V to 36V with 1Amp, ensuring precise control for different applications.
- **Component Integration:** Gained proficiency in working with linear voltage regulators, rectifiers, and capacitors to design a functional and stable power supply.
- **Circuit Analysis & Simulation:** Used Multisim & Proteus for circuit design and simulation before hardware implementation.
- **PCB Design & Assembly:** Designed and tested the PCB layout, improving my skills in circuit prototyping and troubleshooting.
- **Load Testing & Efficiency Optimization:** Analyzed the system under various load conditions, optimizing performance and thermal management.

This project strengthened my problem-solving skills, circuit debugging expertise, and practical understanding of power electronics, which are crucial for developing efficient power solutions in modern engineering applications.