CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The electrification of the Electronics and Power Laboratories has significantly enhanced the quality of engineering education by addressing key infrastructural needs. Notable im provements include the provision of stable power supply for laboratory experiments and equipment, increased safety through proper grounding, installation of protection devices, and adherence to standard electrical installation practices. Furthermore, the integration o f backup systems such as inverters and uninterruptible power supplies (UPS) has ensure d uninterrupted learning sessions. The use of modern lighting and optimized power distri bution has also contributed to improved energy efficiency. Overall, the implementation s uccessfully met all design objectives and passed required performance and safety tests. This project can serve as a model for similar technical and vocational institutions aimin g to upgrade their laboratory infrastructure across the region.

5.2 Recommendations

Based on the findings and experience gathered during this project, the following recomm endations are made:

1. Periodic Maintenance: Routine inspection and maintenance should be carried out at r egular intervals to ensure the continuous and efficient operation of the system. Compon ents such as circuit breakers, inverters, batteries, and wiring should be checked for wear and performance degradation.

2. Upgrade to Renewable Energy: To further reduce dependency on the national grid, th e system can be upgraded with solar photovoltaic (PV) panels. This will provide a sustai nable and cost-effective source of energy, especially in regions prone to frequent power o utages.

3. Expansion of Laboratory Power Points: Additional power outlets and control switches can be installed in future upgrades to accommodate new equipment and increased stud ent usage.

4. Safety Training for Staff and Students: All users of the laboratory should be trained o n the basics of electrical safety, proper use of laboratory equipment, and emergency proc edures.

5. Integration of Smart Monitoring: Smart energy meters and IoT-enabled devices can b e introduced for real-time monitoring of power usage, fault detection, and automated loa d management.