

**DESIGN OF POWER LIGHT EMITTING DIODE (LED)
EMERGENCY LIGHTING SYSTEM INCORPORATING
PERIPHERAL INTERFACE CONTROLLER (PIC)**

Thesis presented in partial fulfillment for the award of the

Bachelor in Electrical Engineering (Hons)

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ABSTRACT

This paper presents the project design and fabricates an emergency lighting system to backup when the other forms lighting is off due to the occurrence of temporary power outage. By using power LED as bulb rather than conventional lighting such as fluorescent, it helps to extend the duration of light output while maintaining the brightness of the lightning as its luminous intensity per watt are higher than fluorescent. The power adaptor supplying 14 Volt output is used to recharge the battery. The battery is needed to power up the LED and the circuit of the emergency lighting system when there is a power outage. PIC microcontroller with MPLAB programming software is used as system control of the circuit. The device operates in three different modes which is standby mode, charging mode and operation mode. The information of the project is obtained from internet, journals and books. The calculations of the parameters also had been performed in order to program the emergency lighting system.

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CHAPTER I

INTRODUCTION

1.1 Overview

LEDs have gone through a revolution in lighting. They allow us to do things with light that were previously impossible. LEDs offer many advantages over traditional lighting sources [1]. This revolutionizes the optoelectronics market, enabling engineers to use LEDs for general lighting applications as well as medical, indoor lighting and automotive applications [2].

In the present century, the power diodes have been used as new lighting sources and have started to compete with the conventional low-power lighting devices such as incandescent, fluorescent or halogen lamps due to the improvement of their characteristics [3].

Modern high-brightness LEDs for street lighting require a flexible and intelligent power supply that must meet several requirements [4]. Unlike the fluorescent, power LEDs can be switched on and off almost instantaneous (in less than 100 ns) at operating temperatures as low as -40°C , with an extended life span of up to 100000 hours. Thus, they offer dramatically higher energy efficiency [5].