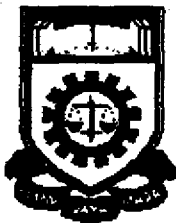


# **DESIGN ELECTRONIC BALLAST DUE TO OVERVOLTAGE PROTECTION**

This thesis is presented in partial fulfilment for the award of the  
Bachelor in Electrical Engineering (Hons) of  
INSTITUT TEKNOLOGI MARA



**MOHD.NOH BIN SARIP**  
**Faculty of Electrical Engineering**  
**Institut Teknologi MARA**  
**40450 Shah Alam, Malaysia**  
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**Mohd.Noh Sarip**  
**Institut Teknologi MARA**  
**Shah Alam**  
**Selangor Darul Ehsan**

## **ABSTRACT**

This project explores the simulation of an overvoltage protection circuit (less than 6kV) for the electronic ballast of a fluorescent lamp. The effective Metal Oxide Varistor (MOV) is suitable for use in maintaining the normal voltage supply 220V~240V before any damage can be done to the circuit components.

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## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 GENERAL

Electronic ballast generally operates within a frequency range of 20 to 100kHz. High frequency electronic ballasts instead of line frequency electromagnetic ones are increasingly used to drive fluorescent lamp improving the light quality. With well-designed circuits, electronic ballasts are advantageous in terms of:

- i) Improved circuit efficiency.
- ii) Small size and reduction in weight.
- iii) Control flexibility.
- iv) Absence of flicker.
- v) Reduction and elimination of supply current harmonics.
- vi) Provision of unity power factor.
- vii) Longer lamp life due to improved starting and operating conditions.

However, as compared with electromagnetic ballasts, the semiconductor components of electronic ballasts are more sensitive to overvoltage, overcurrent and overheating. Therefore, electronic ballast should be carefully designed to be capable of withstanding