VELOCITY DEPENDENT FORCES-THE DAMPING OSCILLATOR & RESONANCE

NURAIZAH BINTI SAHALAN

BACHELOR OF SCIENCE (Hons.) PHYSICS
FACULTY OF APPLIED SCIENCE
UNIVERSITI TEKNOLOGI MARA

MAY 2007

ACKNOWLEDGEMENT

In the name Of Allah ,The Beneficent and the Merciful ,I would to thank Allah for giving me the health and strength to conduct the study in my selected topic thus enable to prepare this report.

I am deeply appreciated to Mr. Masnawi Bin Mustaffa who has supervised this work and guided me throughout the study from the beginning and for his continuous support in giving ideas to complete this study.

In addition, I wish to express my gratitude to the head of Program of Bachelor Of Science (Hons) Physics, Dr Muhd Zu Azahan,and the thesis coordinator Assc.Prof Dr.Sulaiman Sha'ari for their encouragement and support .

I would like to dedicate this thesis to my mother, Puan Sawiaton bt.Md Gusti for being my foundation. I also like to thank my husband,En.Nor Fakarul Azril and my son,Khaizuran Azri whose very understanding with my job and helped me with their support in order to complete this thesis.

I would like to express my sincere thanks to my friends for their advices, become source of information toward accomplishment of this thesis. Last but not least, my special appreciation to all party who involve directly or indirectly.

Thank you.

TABLE OF CONTENT

	Page
ACKNOWLEDGEMENT	iii
TABLE OF CONTENT	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x

CHAPTER

1. INTRODUCTION

1.1	Background	1
1.2	Problem Statements	2
1.3	Objective of The Study	3
1.4	Scope of Work	3

2. LITERATURE REVIEW

2.1	Introduction	4
2.2	Mass Damper Spring	5
2.3	Differential Equation(Damping)	6
2.4	Differential Equation(Resonance)	7
2.5	System's Behaviors	10

ABSTRACT

VELOCITY DEPENDENT FORCES-DAMPING OSCILATOR & RESONANCE

This study was carried out to study and investigate the behavior of characteristics of damping oscillator consisting of mass and a spring. To find out about this clearly, a computer simulation with Liberty Basic software was used. By using the Liberty Basic software, different form of simulation can be recognizing. This study was categorized into two parts which is damping oscillation without resonance and damping oscillation with resonance (also known as Damped Driven Oscillation). The source codes create a source code for both categories (damped and driven damped oscillation) was constructed by using Liberty Basic Software in order to get the simulation and also to shows the phase diagram for both category. The results were then compared with the analytical data.

CHAPTER ONE

INTRODUCTION

1.1 Background

In general, modelling can be defined in many ways. It is the investigation of hypothetical or abstract situations. It also can be defined as simulating in a simplified and numerical way of a real world situation. Besides, modelling is a representation of some part or aspect of an object or system which can be based in reality or imagination and also use to design, develop, explore and evaluate models of real or imaginary situations. In other way, computer modelling is more abstract and usually mathematical. Computer modelling entails making a description of the behaviors of some aspect of a real world object or process. It is about building a blueprint or shaping the architecture of a system. More formally we can say it is "creating an analogue to a real object". Inevitably this means some kind of simplification of the real thing. Computer simulation is the discipline of designing a model of an actual or theoretical physical system, executing the model on a digital computer, and analyzing the execution output. Simulation embodies the principle of