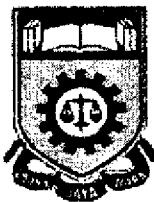


**A LOW COST PORTABLE PHONATION
DURATION METER WITH TACTILE FEEDBACK AND
LOUDNESS LEVEL CONTROL FOR BLINDS.**

**Thesis presented in partial fulfillment for the award of the
Bachelor of Electrical Engineering (Honours) of
INSTITUT TEKNOLOGI MARA**



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ABSTRACT

Phonation duration is an important diagnostic tool for patient having stuttering and voice disorders. Blinds are unable to read the display of a phonation duration meter commonly used by sighted people. The device suggested in this paper would provide tactile indicators (vibrating type) of phonation time in Braille, using six dots.

In a similar way six vibrating tactile indicators have been used to inform the user about the loudness level of the sound produced by him during the process of measurement. Four different loudness levels (viz. Extra high, high, medium and low) have been incorporated. The device will automatically stop counting the phonation time if the loudness of the voice falls below the level set by the user at any instant during the measurement period and finally will store the measured values. This device is a low cost, portable and can also be used for the purpose of speech therapy.

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CHAPTER 1

INTRODUCTION

1. Introduction

Phonation is a process to produce sound by releasing air puff through glottal opening and closing, as a result of the interaction between muscular and aerodynamic forces. Vocal intensity (loudness) is proportional to infraglottal air pressure. The vocal intensity is also related vocal to fold length. In this device vocal intensity is taken as the signal to be processed.

Measurement of maximum phonation time is an important index for the patient having stuttering and voice disorders [1]. The phonation duration for vowel is more important than those of consonants as vowel play the major role in connected speech. The normal range of phonation duration lies in the range of 13 to 15 seconds.

Phonation duration is also dependent on the loudness of the speech produced by the patient or subject. The phonation time reduces as the loudness increases. Thus, the measurement of phonation time at different loudness level is very important.