

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“Jnana Sangama” Belagavi – 590018



Mini Project Report on

**“Audio Equalizer / Tone Control Circuit with Bass, Treble and
MID Frequency Control using Op-Amp”**

Submitted in partial fulfillment of the requirements for the award of degree

**BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING**

Submitted By

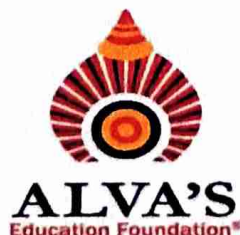
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Under the Guidance of

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CERTIFICATE

This is to certify that the following students,

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has submitted Project synopsis on "Audio Equalizer / Tone Control Circuit with Bass, Treble and MID Frequency Control using Op-Amp" for VI Semester B.E. in Electronics & Communication Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.


Mini Project Guide

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ABSTRACT

This project presents the development and implementation of an audio equalizer, a digital signal processing tool designed to adjust the balance between frequency components of an audio signal. The primary objective of this project is to enhance the audio experience by providing users with the ability to modify specific frequency bands, thus improving sound quality and catering to individual listening preferences.

The project encompasses the design and implementation of a multi-band equalizer using both software and hardware components. The software implementation involves the development of a user-friendly interface that allows real-time manipulation of audio signals across different frequency bands. The hardware component includes the integration of an audio processing unit capable of executing the equalization algorithms efficiently.

Key features of the developed equalizer include adjustable gain controls for multiple frequency bands, real-time audio processing, and a visual representation of the audio spectrum. The project leverages digital signal processing techniques such as Fast Fourier Transform (FFT) for frequency analysis and Finite Impulse Response (FIR) filters for precise control over frequency bands.

Comprehensive testing was conducted to evaluate the performance and accuracy of the equalizer. The results demonstrate significant improvements in audio quality, with the equalizer effectively enhancing desired frequencies and attenuating unwanted noise.

This project not only showcases the practical application of digital signal processing in audio engineering but also provides a valuable tool for audio enthusiasts and professionals seeking to customize their listening experience. Future work may include the enhancement of the equalizer's functionality with additional features such as automatic equalization based on audio content and integration with various audio playback devices.