

# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belagavi – 590018



## A Project Report on “IC TESTER USING MATLAB”

Submitted in partial fulfilment of the requirement for the award of degree of

### BACHELOR OF ENGINEERING IN ELECTRICAL AND ELECTRONICS ENGINEERING

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### DEPT. OF ELECTRICAL AND ELECTRONICS ENGINEERING RAJARAJESWARI COLLEGE OF ENGINEERING

[Accredited by NBA & NAAC, Affiliated to VTU, Belagavi, Approved by AICTE, New Delhi]

#14, Ramohalli Cross, Mysore Road, Kumbalagodu, Bengaluru-74

2023-2024



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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING



### CERTIFICATE

This is to certify that the project work entitled - **“IC TESTER USING MATLAB”** is a bonafide work carried out by **BHUMIKA K. RAMESH [1RR21EE004], VISHAL G [1RR21EE013], VIVEK N [1RR21EE014] and JYOTI [1RR22EE408]** of Rajarajeswari college of Engineering in partial fulfilment for the award of **Bachelor of Engineering in ‘Electrical and Electronics Engineering’** of the **Visvesvaraya Technological university**, Belagavi during the year 2023- 2024. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report & deposited in the department library. The project report has been approved as it satisfies the academic requirement for the said degree.

Signature of the Guide

**Prof. Kiruthika K**

Signature of the HOD

**Dr. P Ebby Darney**

Signature of the Principal

**Dr. Balakrishna R**

Name of Examiners

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2. \_\_\_\_\_

Signature with Date

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## DECLARATION

I, **BHUMIKA K. RAMESH [1RR21EE004], VISHAL G [1RR21EE013], VIVEK N [1RR21EE014] and JYOTI [1RR22EE408]** student of fourth semester B.E, in the Department of Electrical and Electronics Engineering, **Rajarajeswari College of Engineering**, Bangalore, declare that the project work entitled **“IC TESTER USING MATLAB”** has been done under the guidance of **Prof. KIRUTHIKA K** and submitted in the partial fulfillment of the course requirements for the award of the degree of **Bachelor of Engineering in Electrical and Electronics Engineering of Visvesvaraya Technological University, Belagavi** during the academic year 2023-2024.

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## ABSTRACT

*Digital IC tester is a microcontroller based circuitry that tests whether the IC is in good working condition or bad condition. In industries, testing of the product is a major and expensive and time consuming process. Before making the whole system work, testing is mandatorily performed to avoid errors and undesired results. Similarly, in educational institutions, while performing practical it is necessary to check the ICs whether it is good or bad before performing experiments. Many a small faults at IC level makes system perform inaccurately and produce wrong outputs. The proposed system gives a cheap, small, portable and easy to handle IC tester that tests the ICs belonging to basic gate circuitry such as mux, demux, encoder, basic gates.*

*A novel method for the high-speed test and characterization of digital integrated circuit prototypes has been developed. It utilizes a specially developed off-chip processor and supporting circuitry that is to be included on the prototype chip to facilitate the test and characterization process. The processor administers the user-defined test, receives and stores the test results. The test procedure and data is downloaded to the processor's memory through a standard interface. The supporting circuitry receives the test data serially from the processor, apply it to the selected circuit within the IC, collect and reformat the test results and send it to the processor.*

*It also includes a high-frequency configurable clock generator to be used for performance characterization of the prototyped circuits. This allows the interface between the processor and the prototype chip to be fixed with any circuits being prototyped and tested. This unique hybrid solution, enables testing at full speed with minimal cost compared to the current method of using high speed test equipments. The proposed method was validated with a complete prototype using FPGAs. A complete layout of the on chip support circuitry with 4 circuit prototypes had a total area of  $\sim 0.01 \text{ mm}^2$  using Lfoundry's 150 nm technology.*

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