*A Project Report on*

## IMPLEMENTATION OF 4-BIT RCA USING QUANTUM DOT CELLULAR AUTOMATA AND MENTOR GRAPHICS

*Submitted in partial fulfillment of the requirement for the award of degree of*

### BACHELOR OF TECHNOLOGY

**in**

### ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted by

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### ADITYA COLLEGE OF ENGINEERING & TECHNOLOGY

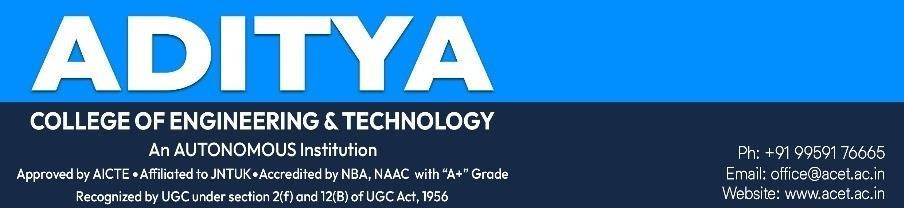
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***Aditya Nagar, ADB Road, Surampalem-533 437***

***(2023-2024)***



### Department of Electronics and Communication Engineering



**CERTIFICATE**

This is to certify that the project report entitled “**Implementation of 4-Bit RCA using Quantum Dot Cellular Automata and Mentor Graphics”** is being submitted by **D. Harsha (20P31A04J4), P. Harshitha (20P31A04J5), V. Dhanupya (20P31A04O1),** **M. Sharan Teja (20P31A04L5)** has been carried out in the partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology** in **Electronics and Communication Engineering**, **Aditya College of Engineering & Technology**, Surampalem, affiliated to **JNTUK, Kakinada** is a record of bonafide work carried out by them under my guidance and supervision during the academic period 2023-2024.

**Project Guide Head of the Department**

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**Associate Professor Professor & HOD**

**Dept. of ECE Dept. of ECE**

**EXTERNAL EXAMINER**

## DECLARATION

We are here by declaring that the entire project work embodied in this dissertation entitled “**Implementation of 4-Bit RCA using Quantum Dot Cellular Automata and Mentor Graphics**” has been independently carried out by us. A superior knowledge, no part of this work has submitted for any degree in any institution, university and organization previously.

**Yours sincerely,**

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## ACKNOWLEDGEMENT

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We would like to sincerely thank our Head of the department **Dr. R V V Krishna,**

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We would like to thank **all the faculty members** and the **non-teaching staff** of the Department of Electronics and Communication Engineering for the indirect support for helping us in completion of this project work.

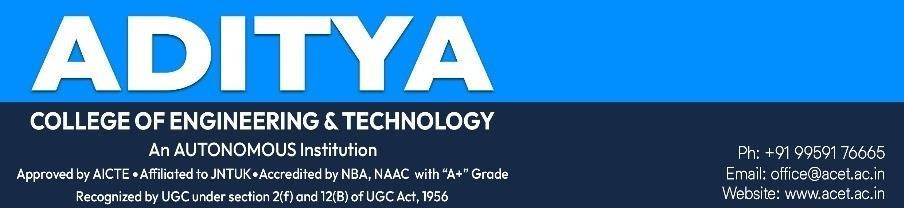
Finally, we would like to thank all our **friends** and **family members** for their continuous help and encouragement.

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**INSTITUTE VISION AND MISSION**

## VISION:

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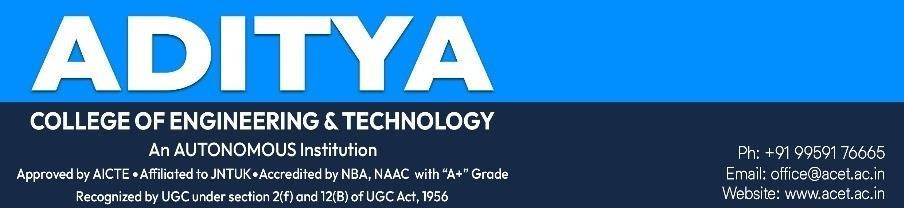
* International standards
* Applied research
* Creative Ability
* Value based instruction and to emerge as a premiere institute

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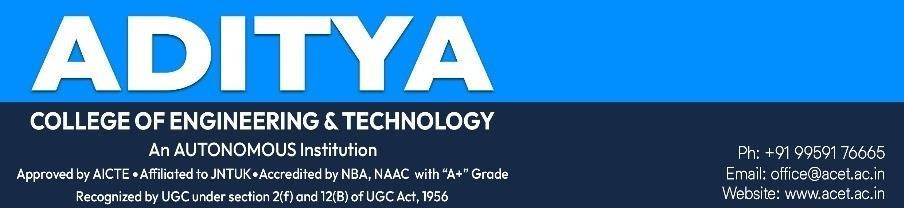
**DEPARTMENT VISION AND MISSION**

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* + To establish skill and learning centric infrastructure in thrust areas
  + To develop Robotics and IOT based infrastructure Laboratories
  + To organize events through industry institute collaborations and promote innovation
  + To disseminate knowledge through quality teaching learning process.





## PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

**Program Name:** Bachelor of Technology (B. Tech) in Electronics and Communication Engineering.

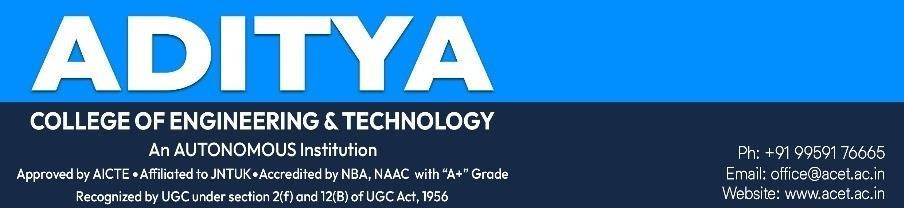
**PEO1:** Graduates shall evolve into skilled professionals capable of handling interdisciplinary work atmosphere and excel in problem solving.

**PEO2:** Graduates shall inculcate the urge to progress in the chosen field of Electronics & Communication through higher education and research.

**PEO3:** Graduates shall ingrain professional values through Ethics based teaching learning process.

**PEO4:** Graduates shall exhibit leader ship skills and advance towards Entrepreneurship, Innovation and lifelong learning.





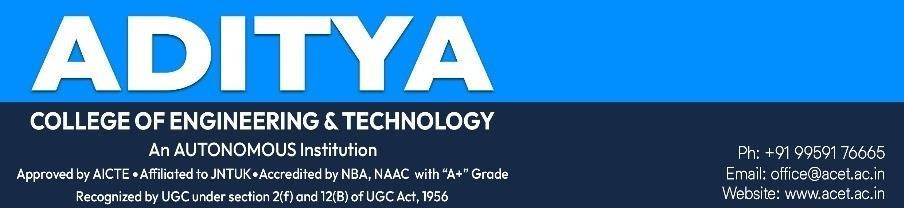
## PROGRAM SPECIFIC OUTCOMES (PSOs)

**Program Name:** Bachelor of Technology (B.Tech) in Electronics & Communication Engineering

**PSO1:** Industry ready in the arena of electronics & communication, VLSI, Robotics, Embedded Systems, IOT and allied fields.

**PSO2:** Acquire the required ability and knowledge to design, test, verify and develop innovative electronics projects through theoretical and laboratory practice.





## PROGRAM OUTCOMES (POs)

PO1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

PO2. **Problem Analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct Investigations of Complex Problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern Tool Usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.

PO11. **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. **Life-Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## CONTENT

**LIST OF FIGURES** 01

**ABSTRACT** 04

|  |  |
| --- | --- |
| **CHAPTER 1: INTRODUCTION** | 05 |
| * 1. VLSI   2. CMOS Technology   3. Mentor Graphics      1. Mentor Graphics Procedure | 05  05  08  08 |
| **CHAPTER 2: LITERATURE SURVEY** | 11 |
| **CHAPTER 3: QCA AND IT’S WORKING** | 18 |
| * 1. QCA Cells and it’s polarization   2. QCA Designer Tool   3. QCA Wire   4. Clocking in QCA   5. Basic QCA Gates | 18  20  21  23  24 |
| * + 1. Majority Voter Gate     2. Inverter | 24  25 |
| **CHAPTER 4: EXISTING METHOD**   * 1. Existing Technique   **CHAPTER 5: PROJECT IMPLEMENTATION**   * 1. AND gate   2. OR Gate   3. NOT Gate   4. NAND Gate   5. NOR Gate   6. XOR Gate   7. XNOR Gate   8. Proposed Technique      1. Full Adder      2. Ripple Carry Adder | 26  26  29  29  30  31  32  33  34  35  36  37  40 |

|  |  |
| --- | --- |
| **CHAPTER 6: RESULT**  **CHAPTER 7: CONCLUSION**  **CHAPTER 8: REFERENCES** | 44  47  48 |
|  |  |