

#### 23MC411- PROJECT WORK

submitted by

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in partial fulfillment for the award of the degree

of

**Postgraduate** 

in Master of Computer Applications

**Rathinam Technical Campus** 

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**MAY-2025** 

## ANNA UNIVERSITY, CHENNAI

## **BONAFIDE CERTIFICATE**

Certified that this project report "SMART METER WITH GATEWAY COMMUNICATION" is the bonafide work of "JAWAHAR R (23205024)" who carried out the project work under my supervision during the Academic Year 2024 – 2025.

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| Submitted for End Semester Examinati | on held on                      |

Examiner – 2

Examiner – 1

**DECLARATION** 

I, JAWAHAR R hereby declare that the project report titled "SMART

METER WITH GATEWAY COMMUNICATION" done by me under the guidance

of Mrs. Muthulakshmi, at Rathinam Technical Campus is submitted in partial

fulfilment of the requirements for the award of Master of Computer Applications.

Certified further that to the best of my knowledge the work reported herein does not

form part of any other project report or dissertation on the basis of which a degree or

award was conferred on an earlier occasion on this or any other candidate.

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#### **ABSTRACT**

The Smart Energy Meter Gateway is an innovative IoT solution designed to enable real-time monitoring, analysis, and optimization of energy usage in industrial settings. It serves as a central hub, connecting voltage and current sensors to an STM32F446RE microcontroller, which processes the energy data and transmits it to the rugged A5D2X board via USART communication. The rugged board then displays the data locally on an LCD screen while also transmitting it to the cloud for remote monitoring and analytics. This seamless integration allows industries to track power consumption in real time, improving visibility and control over energy usage.

Built with scalability and reliability in mind, the system supports a range of industrial applications such as manufacturing, energy management, and smart grid implementation. Its ability to generate real-time alerts enables proactive responses to abnormal power usage, reducing downtime and supporting predictive maintenance efforts. By combining IoT connectivity, cloud integration, and efficient data processing, the Smart Energy Meter Gateway helps industries make data-driven decisions, boost operational efficiency, and move toward more sustainable and intelligent energy management practices.

#### **ACKNOWLEDGEMENT**

Apart from the efforts of us, the success of this project depends largely on the encouragement and guidelines of many others. We take this opportunity to praise the **almighty** and express our gratitude to the **people** who have been instrumental in the successful completion of our project

We wish to acknowledge with thanks for the excellent encouragement given by the management of our college and we thank **Dr. B.Nagaraj, M.E., Ph.D., PDF** (Italy), CBO for providing us with a plethora of facilities in the campus to complete our project successfully.

We wish to express our hearty thanks to **Dr. K.Geetha, M.E., Ph.D., Principal** of our college, for her constant motivation regarding our internship towards project.

We extend my heartfelt gratitude to **Dr.A.B.Arockia Christopher**, **M.E.**, **Ph.D.**, **Professor & HoD– MCA** for his tremendous support and assistance in the completion of our project.

It is our primary duty to thank our **Project guide**, **Ms. Muthu Lakshmi**, **MCA.**, **Assistant Professor**, **MCA** who is the backbone of all our project activities, It's her enthusiasm and patience that guided us through the right path.

Finally, we extend our heartfelt thanks to the **parents**, **friends**, **and faculty members** for their constant support throughout this project. The guidance and support received from all the members who contributed to the success of the project.

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#### LIST OF ABBREVATIONS

**IOT** Internet Of Things

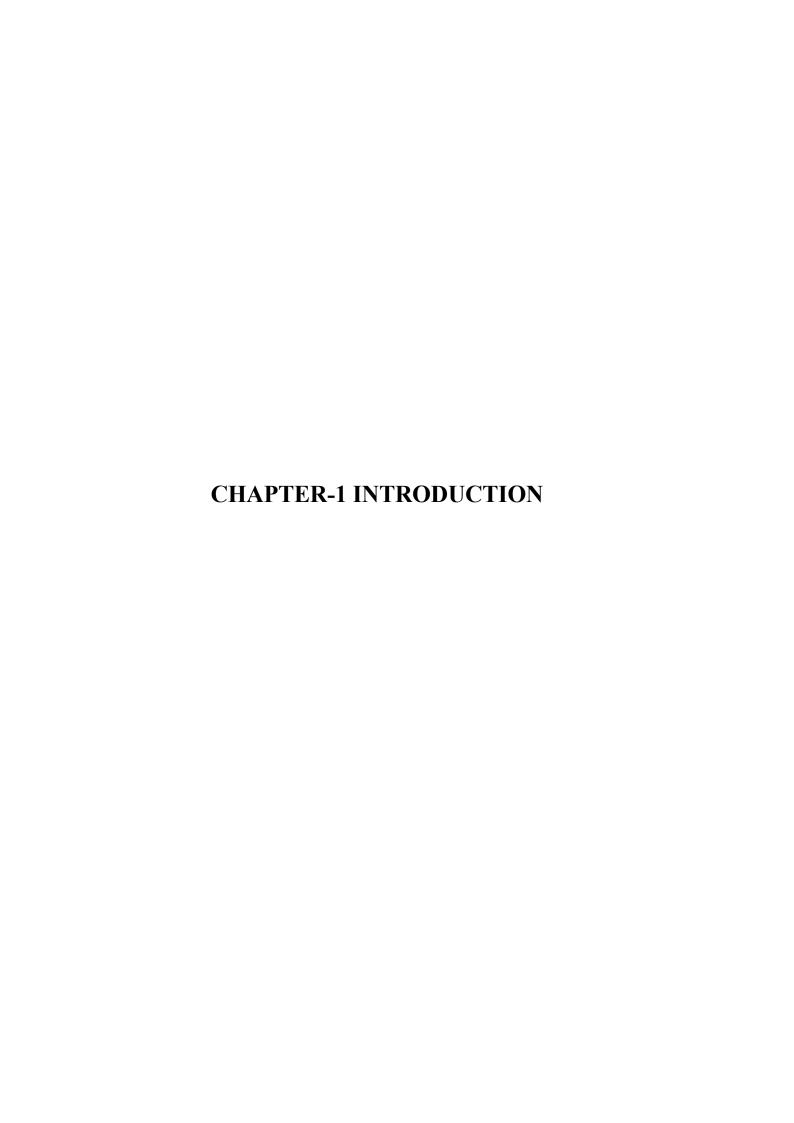
**MQTT** Message Queuing Telemetry Transport

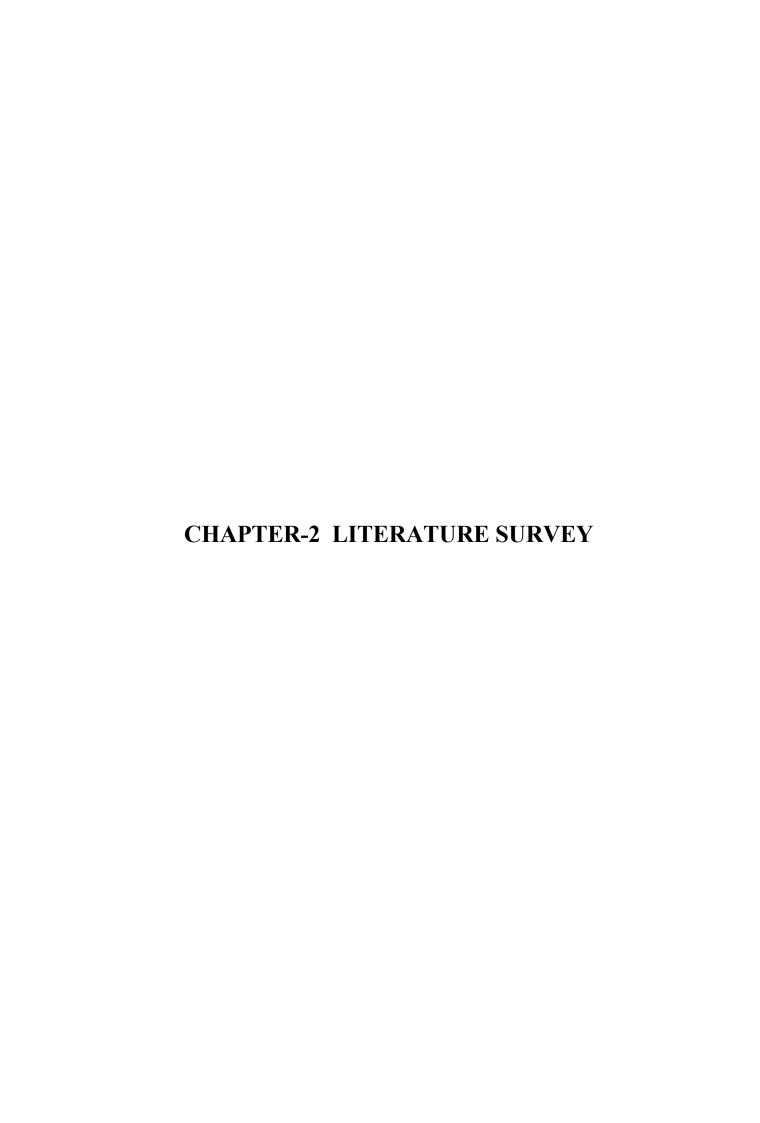
**LCD** Liquid Crystal Display

Inter-Integrated Circuit

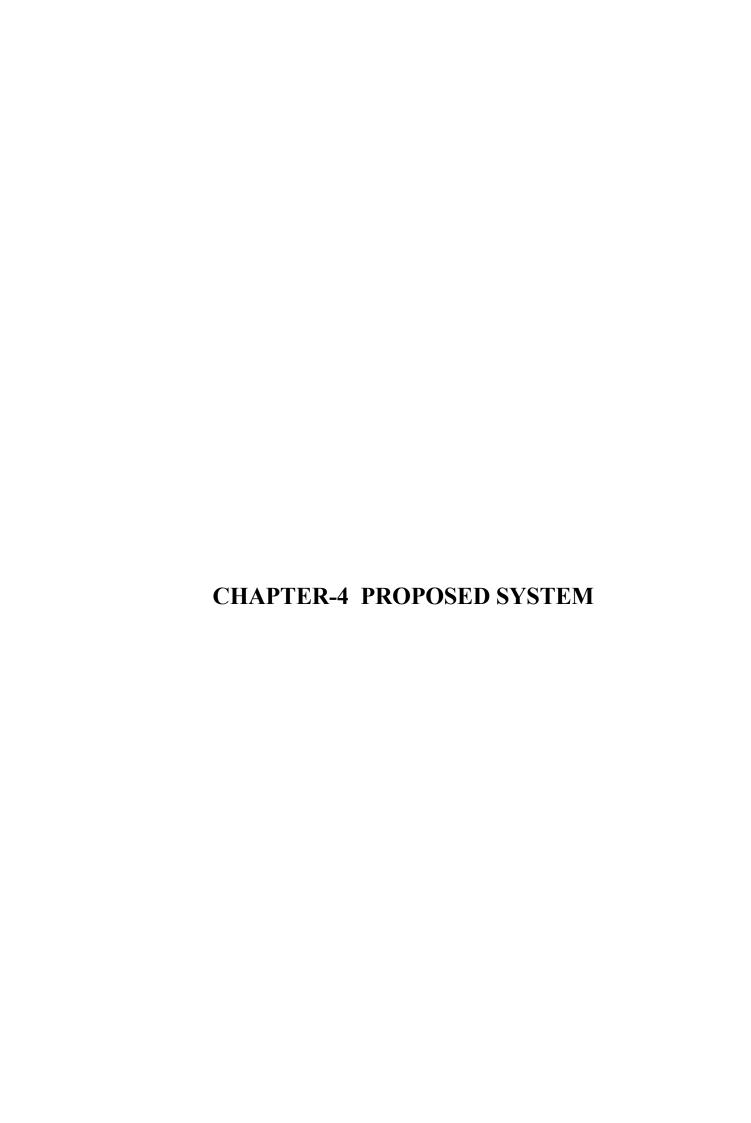
**GPIO** General-Purpose Input/Output

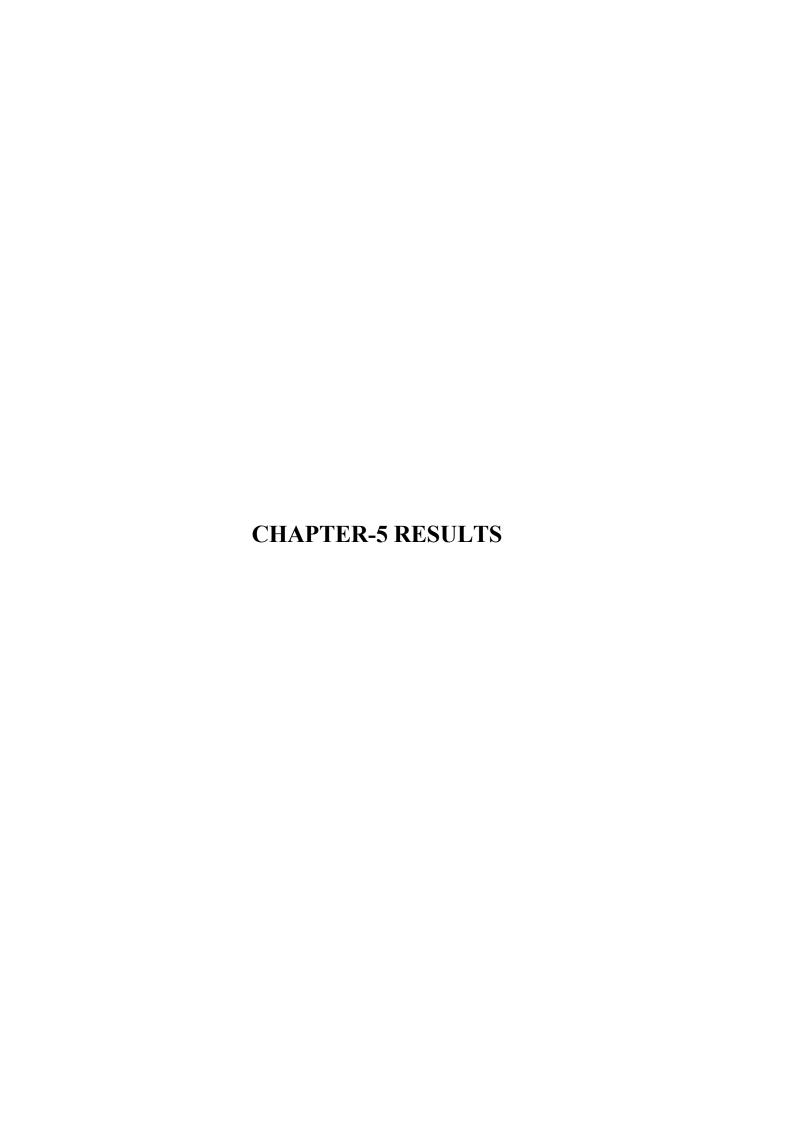
**USART** Universal Synchronous/Asynchronous Receiver-Transmitter











# CHAPTER-6 CONCLUSION AND FUTURE ENHANCEMENTS

