WIRED AND WIRELESS SENSOR FOR ENERGY EFFICIENT STREET LIGHT

A PROJECT REPORT

Submitted by

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In partial fulfilment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

T.J.S. ENGINEERING COLLEGE, PERUVOYAL, CHENNAI

ANNA UNIVERSITY: CHENNAI 600 025

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BONAFIDE CERTIFICATE

Certified that this project report "WIRED AND WIRELESS SENSOR FOR ENERGY EFFICIENT STREET LIGHT" is the bonafide work of the following students

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who carried out the project work under my supervision.

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INTERNAL EXAMINER

22/6/22

EXTERNAL EXAMINER

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ABSTRACT

The aim of the project is to save power by controlling the street light automatically. The street light is split or divided into two pair's odd pair and even pair load. When it is dark the street lights odd pair and even pair will lights. The even pair load will be controlled by Real Time Clock (RTC). It interfaces with the Second Microcontroller controlled with an off/on timer by using a 7segment display. During mid-night time the flow of vehicles will be less. When there is a flow of vehicles the even pair light will be normally dim. There will be two at89s52 microcontroller are interfaces in this project. The first microcontroller is interface with the driver IC, opto-coupler, even a pair of lights. By changing the firing angle of the voltage will be dropped to dim the even pair light. This project will save power.

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EC8391 CONTROL SYSTEMS ENGINEERING **L T P C**
3 0 0 3

OBJECTIVES:

- To introduce the components and their representation of control systems
- To learn various methods for analyzing the time response, frequency response and stability of the systems
- To learn the various approach for the state variable analysis.

UNIT I SYSTEMS COMPONENTS AND THEIR REPRESENTATION **9**

Control System: Terminology and Basic Structure-Feed forward and Feedback control theory Electrical and Mechanical Transfer Function Models-Block diagram Models-Signal flow graphs models-DC and AC servo Systems-Synchronous -Multivariable control system

UNIT II TIME RESPONSE ANALYSIS **9**

Transient response-steady state response-Measures of performance of the standard first order and second order system-effect on an additional zero and an additional pole-steady error constant and system- type number-PID control-Analytical design for PD, PI,PID control systems

UNIT III FREQUENCY RESPONSE AND SYSTEM ANALYSIS **9**

Closed loop frequency response-Performance specification in frequency domain-Frequency response of standard second order system- Bode Plot - Polar Plot- Nyquist plots-Design of compensators using Bode plots-Cascade lead compensation-Cascade lag compensation-Cascade lag-lead compensation

UNIT IV CONCEPTS OF STABILITY ANALYSIS **9**

Concept of stability-Bounded - Input Bounded - Output stability-Routh stability criterion-Relative stability-Root locus concept-Guidelines for sketching root locus-Nyquist stability criterion.

UNIT V CONTROL SYSTEM ANALYSIS USING STATE VARIABLE METHODS **9**

State variable representation-Conversion of state variable models to transfer functions-Conversion of transfer functions to state variable models-Solution of state equations-Concepts of Controllability and Observability-Stability of linear systems-Equivalence between transfer function and state variable representations-State variable analysis of digital control system-Digital control design using state feedback.

TOTAL:45 PERIODS

OUTCOMES: Upon completion of the course, the student should be able to:

- Identify the various control system components and their representations.
- Analyze the various time domain parameters.
- Analysis the various frequency response plots and its system.
- Apply the concepts of various system stability criterions.
- Design various transfer functions of digital control system using state variable models.

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