KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

Electrical and Electronics Engineering

(Accredited by NBA, New Delhi)

Department of Electrical and Electronics Engineering

E-Shots

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY
BORN TO SERVE
VIRUDHUNAGAR
TOTAL QUALITY EDUCATION

EEE @ KCET

E-Shots

28th Edition
2025-2026 EVEN

KAMARAJ®
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONTENT

- Vision & Mission
- PEOs and PSOs
- Student Contributions
- Events Organized
- Student Achievements

Vision

To make the Department of Electrical and Electronics Engineering of this Institution the unique of its kind in the field of Research and Development activities in this part of the world.

Mission

Department of Electrical and Electronics Engineering is committed to impart highly innovative and technical knowledge in the field of Electrical and Electronics Engineering to the urban and unreachable rural student folks through Total Quality Education.

Program Educational Objectives (PEO)

PEO 1 : Technical Knowledge : To provide basic knowledge in Physics, Chemistry, Mathematics and necessary foundation in various concepts of Electrical and Electronics Engineering.

PEO 2 : Problem Solving :To impart training to enable the students to envisage the real time problems related to the field of Electrical and Electronics Engineering and allied areas faced by the Industries so as to model, analyze and provide appropriate solutions.

PEO 3 : Personality Development : To provide an academic environment for the students to develop team spirit, leadership qualities, communication skills and soft skills.

PEO 4 : Life Long Learning : To motivate students to prepare for competitive examinations enabling them to pursue higher studies, thereby, promoting Research and Development activities

Program Specific Outcomes (PSO)

PSO1 : Ability to design and solve problems in the field of Electrical & Electronics Engineering by applying the knowledge acquired from Circuit & Field theory, Control theory, Electric Power Systems, Analog Electronics & other allied topics.

PSO2 : Ability to understand the recent technological developments in Electrical & Electronics Engineering and develop products/software to cater the societal & Industrial needs.

FIRE FIGHTING ROBOT USING ARDUINO

Introduction

Fire accidents can cause serious damage to human life and property. Entering a fire-affected area to extinguish a fire can also put firefighters at risk. To reduce this risk, an automatic fire fighting robot can be developed using an Arduino Microcontroller. The DIY Fire Fighting Robot is an autonomous robot that detects the presence of fire using infrared (IR) flame sensors, moves towards fire, and activates a water pump to extinguish it. The Arduino controller processes the signals received from the sensors. Based on the sensor signals, it controls the motors and water pump. This system demonstrates how robotics and embedded systems can be used for fire detection and fire fighting applications.

Working

The robot uses IR flame sensors to detect the presence and approximate direction of a flame. The sensors provide signals to the Arduino based on the detected flame radiation. The Arduino continuously monitors the sensor outputs. When a flame is detected, the Arduino determines the direction of the fire and controls the motor driver accordingly. The robot moves towards the fire. After reaching a suitable distance from the flame, the Arduino activates the water pump. The pump supplies water from the tank through a nozzle towards the fire. A servo motor can be used to rotate the nozzle and cover a wider area. Once the fire is no longer detected, the Arduino stops the water pump and continues searching for a fire.

E Shots
28th Edition
DEPARTMENT OF EEE

Prototype

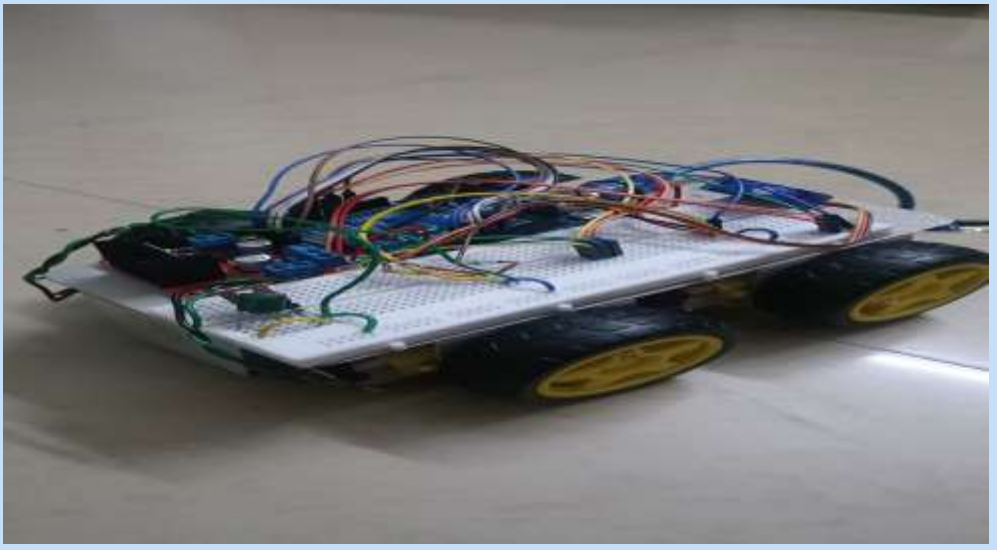


Image while testing

Conclusion :

The Fire Fighting Robot using Arduino can automatically detect and move towards a fire and spray water to extinguish it. This project helps to reduce human risk and demonstrates the use of Arduino, sensors, motors, and a water pump in fire safety applications.

Anbu Meenakshi.S

II - EEE

E Shots
28th Edition
DEPARTMENT OF EEE

Smart Water Tank Level Monitoring and Alert System

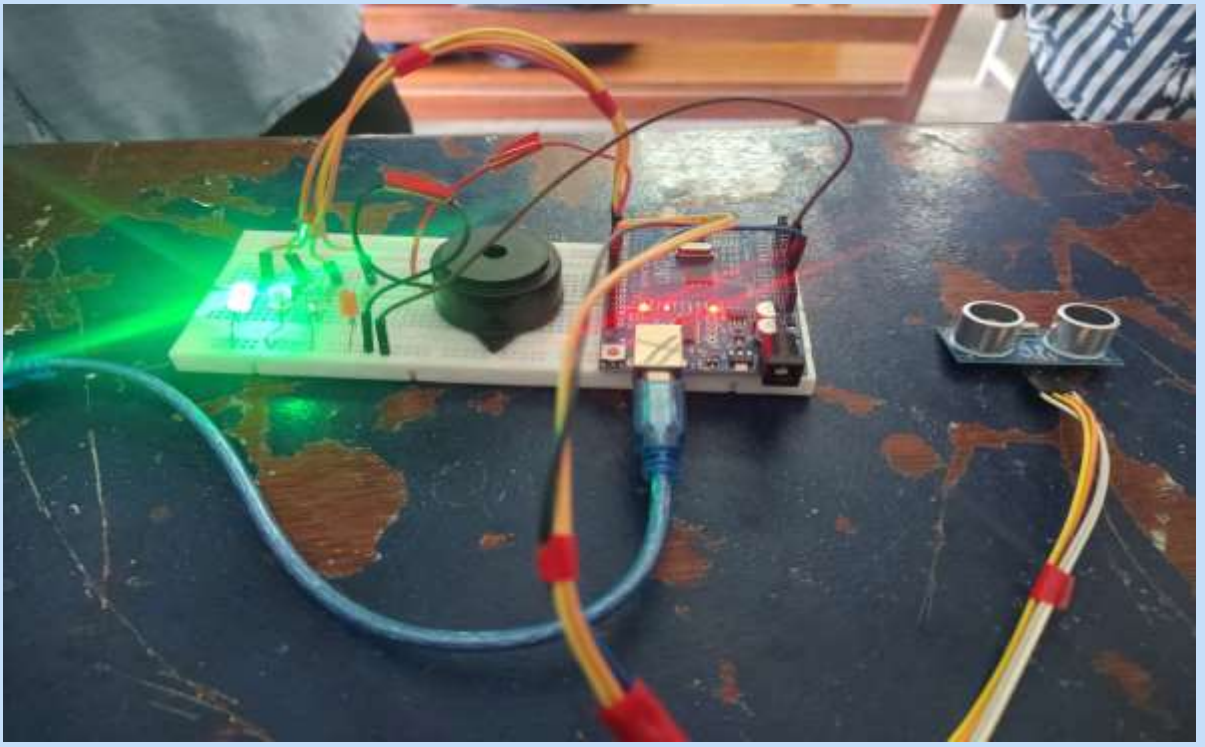
Introduction

The Smart Water Tank Level Monitoring and Alert System is an Arduino based project designed to monitor the water level in a tank without requiring manual checking. An ultrasonic sensor is used to measure the distance between the sensor and the water surface. Based on the measured distance, the controller provides visual and audio indications of the water level using LEDs and a buzzer. This system helps prevent water overflow, unnecessary water wastage, and low-water conditions.

Working Principle

The system uses an ultrasonic sensor which is placed at the top of the water tank to continuously monitor the water level. The ultrasonic sensor sends ultrasonic waves toward the water surface and receives the reflected waves. The Arduino measures the time taken for the waves to return and calculates the distance between the sensor and the water surface. Based on this distance, the Arduino determines the water level in the tank and controls the LEDs accordingly. When the water level is low, the green LED turns ON, indicating that the tank needs more water. When the water level reaches the medium level, the yellow LED turns ON, indicating that the tank is partially filled. When the water level becomes high, the red LED turns ON and the buzzer gives an alert, indicating that the tank is nearly full and water overflow should be avoided. Thus, the system provides a simple and automatic method to monitor the water level and alert the user at different levels.

Prototype



Conclusion

The system monitors the water level using an ultrasonic sensor and Arduino. LEDs show the water level, and the buzzer alerts when the tank is full. It helps prevent overflow of water automatically.

R. Jegisha
II - EEE

E Shots
28th Edition
DEPARTMENT OF EEE

Conveyer Belt Health Monitoring System

Introduction

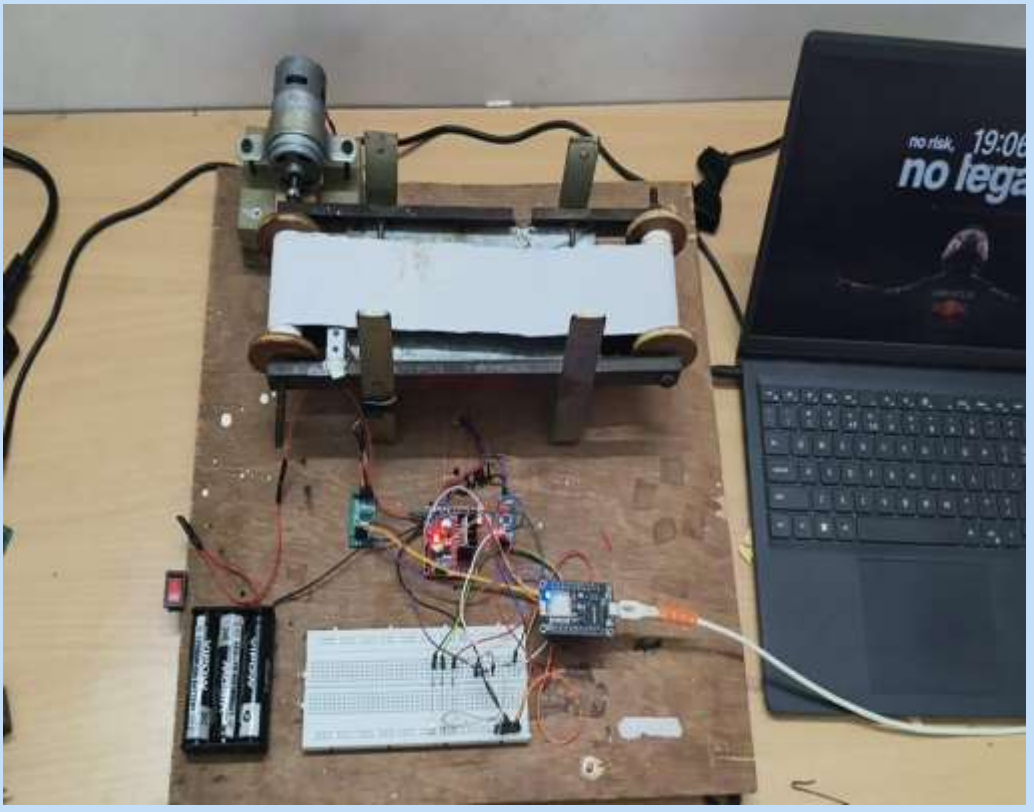
The ESP32 Intelligent Conveyor Belt Health Monitoring System is an intelligent system developed to continuously monitor the condition and performance of conveyor belts used in industries such as mining, manufacturing, and material handling. Conveyor belts are used to transport heavy materials over long distances, and failures such as excessive loading, belt damage, joint rupture, and motor overload can lead to production delays and safety problems. Traditional monitoring methods may depend on manual inspection, which can take more time and may not detect faults at an early stage. This system uses an ESP32 microcontroller along with a Load Cell, HX711 module, and ACS712 current sensor to monitor important operating conditions of the conveyor

Working Principle

The conveyor system is driven by a DC motor, and sensors are placed to continuously monitor its operating condition. The Load Cell with the HX711 module measures the load carried by the conveyor belt. At the same time, the ACS712 current sensor measures the current consumed by the conveyor motor. These sensor values are continuously given to the ESP32, which acts as the main processing and control unit. The ESP32 compares the measured values with a predefined safe operating condition and determines the health status of the conveyor. During normal operation, the green LED remains ON and the buzzer remains OFF. When the system detects an abnormal condition, it provides the warning through LED and buzzer. If the condition becomes critical, the system activates the red LED and buzzer and can automatically stop the conveyor motor using the motor control circuit.

The ESP32 can also use its Wi-Fi capability to send the monitoring information to a dashboard. This allows the operator to observe the conveyor condition and receive fault information quickly. By continuously monitoring the load and motor current, the system can help identify problems before they develop into major failures.

Prototype Model



CONCULSION

The ESP32 Intelligent Conveyor Belt Health Monitoring System effectively monitors conveyor belt conditions in real time. The Load Cell and HX711 detect changes in conveyor load, while the ACS712 sensor monitors the motor current. The ESP32 processes the sensor data and identifies abnormal conditions. LEDs and a buzzer provide immediate alerts, and during critical conditions, the motor can be automatically stopped.

ABISHEK.S

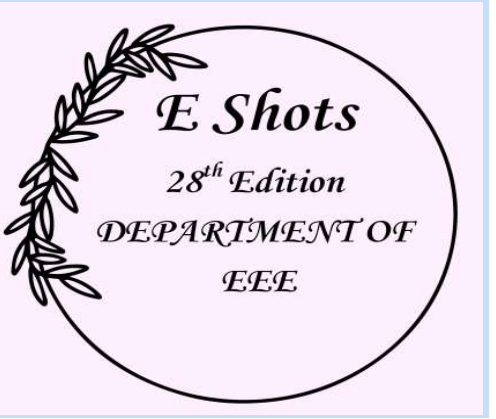
II - EEE

E Shots
28th Edition
DEPARTMENT OF EEE

Soil Dryness Detection Using Op-Amp 741

Introduction

Soil moisture is an important factor for healthy plant growth. Excessive dryness can affect plants, while unnecessary watering wastes water. The Soil Dryness Detection Sensor Using Op-Amp 741 is a simple and low-cost system used to identify soil moisture conditions. Two conductive probes are inserted into the soil, and the electrical conductivity changes according to the moisture level. The IC 741 operational amplifier is used as a comparator to detect this change. When the soil becomes dry, the circuit activates an LED and buzzer to alert the user. This system can be used for potted plants, gardens, and small scale irrigation applications.

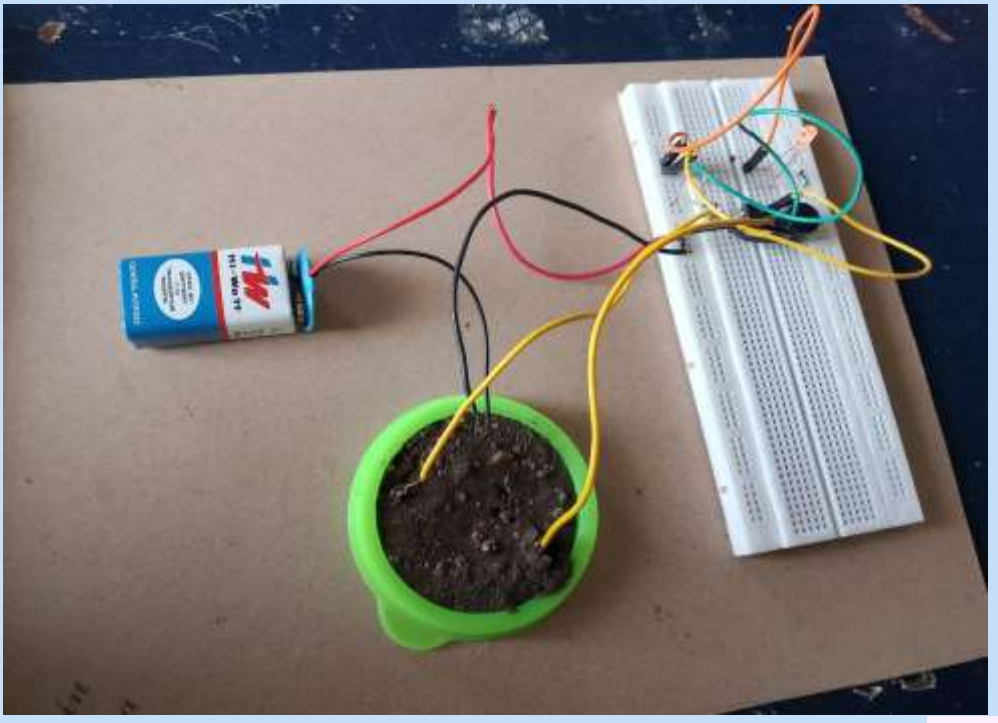


Working Principle

The system works based on the variation in electrical conductivity of soil with its moisture content. Two metal probes are placed in the soil to sense the moisture level. When the soil is wet, water present between the probes increases electrical conductivity, whereas dry soil has comparatively lower conductivity. The voltage obtained from the sensing probes is applied to one input of the IC 741, and a predetermined reference voltage is applied to the other input using a voltage-divider circuit. The IC 741 compares the sensor voltage with the reference voltage and produces the corresponding output. When the soil is sufficiently wet, the output remains LOW and the LED and buzzer remain OFF. As the soil dries, the conductivity decreases and the sensing voltage changes. When it crosses the reference level, the IC 741 output becomes HIGH, turning ON the LED and buzzer. Thus, the user can easily identify when watering is required.

The system works on line-of sight transmission where an LED sends audio signals as light and a photo detector receives them. The audio is converted to electrical signals, amplified, transmitted through light, received by a LDR, reamplified, and played through a speaker. The circuit uses components like LED, microphone/audio source, amplifiers, resistors, capacitors, power supply, LDR and connecting wires for proper operation.

Prototype:



Conclusion

The Soil Dryness Detection Sensor Using Op-Amp 741 successfully detects the moisture condition of soil and provides an immediate alert when the soil becomes dry. The system is simple, economical, and easy to construct using basic electronic components. It also demonstrates practical concepts such as soil conductivity, voltage comparison, and op-amp operation. The LED and buzzer provide a clear indication of the dry condition, making the system useful for plants, home gardens, and small-scale applications. In the future, the same system can be connected to a relay and water pump for automatic irrigation.

Muthusanthiya .K

II EEE

E Shots
28th Edition
DEPARTMENT OF
EEE

Name of the Program:

Worshop : Foundations of AI and Machine Learning for Electrical Engineers

Date of the Program:

21.01.2026

Participants:

IV EEE

E Shots
28th Edition
DEPARTMENT OF EEE

Name of the Program:

Guest lecture on Emerging Trends in PCB and IC Package Substrate

Date of the Program:

07.03.2026

Resource Person:

Mr.Prabhakaran, PCB & IC Package Substrate Design , Engineer, NVIDIA

Participants:

III EEE

E Shots

28th Edition

DEPARTMENT OF EEE

Name of the Program:

Workshop : Emerging Trends in Solar PV

Date of the Program:

18.02.2026

Participants:

Ayya Nadar Janaki Polytech College

E Shots

28th Edition

DEPARTMENT OF EEE

Name of the Program:

Symposium :EVATAR'26 - A National level Technical Symposium

Date of the Program:

17.02.2026

Participants:

Students from various Engineering College

E Shots

28th Edition

DEPARTMENT OF EEE

Name of the Program:

48 hours Hackathon : VOLTEDGE

Date of the Program:

05-03-2026 to 06-03-2026

Participants:

II & III EEE Students

E Shots

28th Edition

DEPARTMENT OF EEE

Name of the Program:

ISTE Sponsored Idea Presentation Contest Idea Ignite

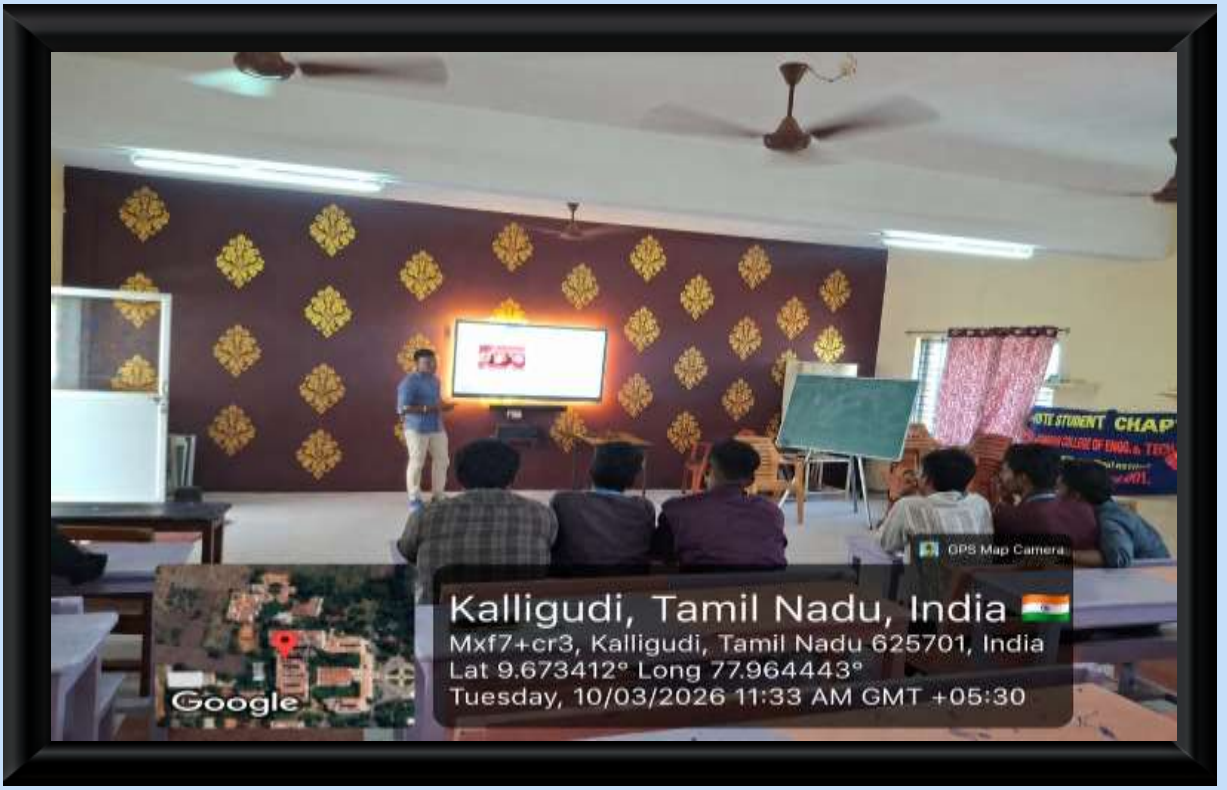
Date of the Program:

03-03-2026

Participants:

II & EEE Students

E Shots
28th Edition
DEPARTMENT OF EEE



Name of the Program:

ISTE Sponsored Technical Connection Contest - Tech Connect

Date of the Program:

10-03-2026

Participants:

II & III EEE Students

E Shots
28th Edition
DEPARTMENT OF EEE

Students Achievements

M.Surya Praksah Kumar, S.Manikandan of III EEE and T.Dharun Raja of II EEE won third prize in Project Contest held at Kalasalingam Academy of Research and Education on 13-03-2026

Students Achievements

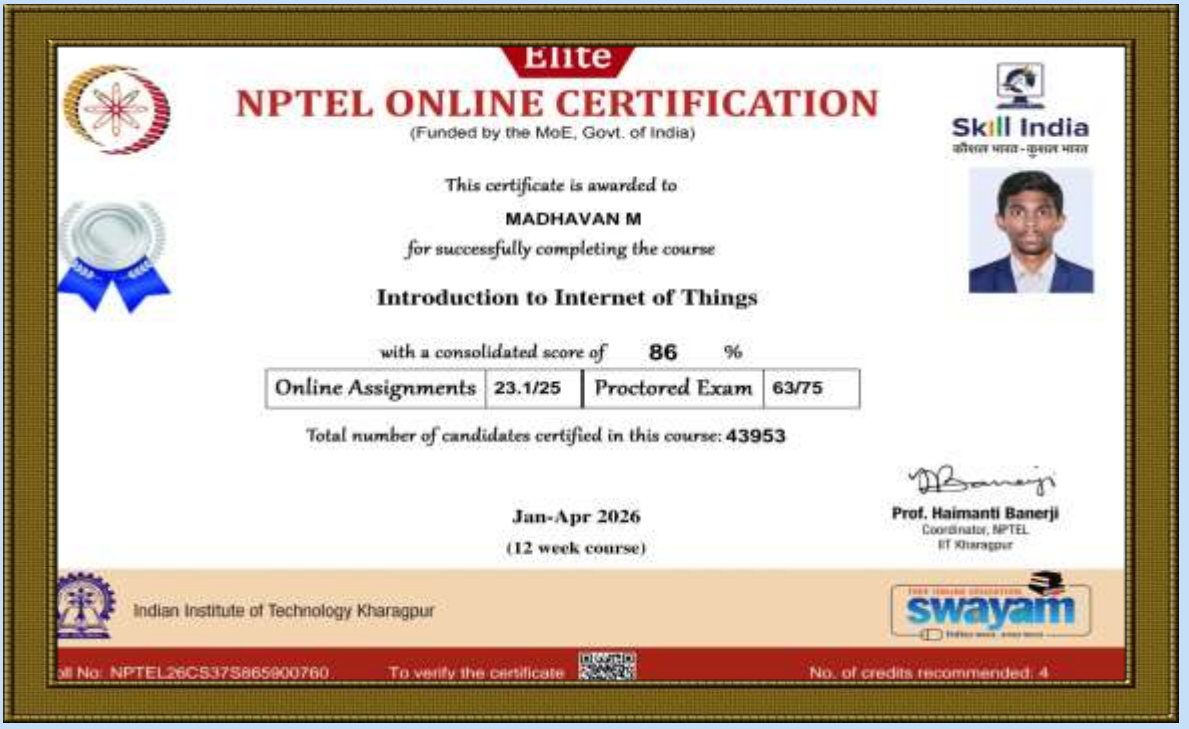
M.Surya Praksah Kumar and S.Hariprasad of III EEE won first prize in Paper Presentation held at Thiagarajar College of Engineering Education on 06-03-2026

E Shots
28th Edition
DEPARTMENT OF EEE

Students Achievements

T.Dharun Raja, A.Sundravel, M.Shyam, T.Sivalingam of II EEE have received funds wirth Rs. 15 lakhs from MSME Idea Hackathon 5.0

Students Achievements



Mr.M.Madhavan completed the NPTEL course on Introduction to Internet of Things during January to April 2026 with Silver +Elite

Mr.G.Kalaiselvan completed the NPTEL course on Introduction to Industry 4.0 and Industrial Internet of Things during January to April 2026 with Silver +Elite

Students Achievements

Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India

This certificate is awarded to

SASIKHANTH B

for successfully completing the course

Programming in Java

with a consolidated score of 78 %

Online Assignments	23.78/25	Proctored Exam	54/75

Total number of candidates certified in this course: 19306

Jan-Apr 2026

(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

Mr.B Sasikanth completed the NPTEL course on Programming in Java during January to April 2026 with Silver +Elite.

T.Dharun Raja of II EEE, S.Kesavan of IV EEE presented their paper at the International Conference held at the Institute of Technical Education and Research, Odhisha on 20-02-2026

Co Curricular Activities

- **Mr.Kamaleswaran.M,Mr.Sudarshan.K, Mr.Kalaichelvan G and Mr.Mahesh R of II EEE participated in the 3rd Indo-Japan Workshop on Machine Learning for Crystal Growth (MLCG) at SSN College of Engineering, Chennai from 16.02.2026 to 19.02.2026.**

- **Mr.Joshua Lawrance Kirubakaran R, Mr.Arun Sampath K, Mr.Krishna Priyan M, Mr.Afsar Hussain G, Mr.Sri Nishanth B, Mr.Yoghanand M, Mr.Arunpandian V, Mr.Ranjith N and Mr.Anish S of II EEE participated in Sparkathon-2K26 and took part in the Hackathon at Jai Shriram Engineering College on 24.03.2026.**

- **Mr.Shyam M and Mr.Sundara Vel A of II EEE participated in Gyanmitra 26 and presented a paper at Mepco Schlenk Engineering College on 19.02.2026 and 20.02.2026.**

- **Mr.Kamaleswaran.M and Mr.Yuvaraj S of II EEE participated in Mechatronz 2K26 and presented a paper at Sethu Institute of Technology on 17.03.2026.**

Co Curricular Activities

- **Mr.Sarukesh A of II EEE presented a paper at Nimdha, Kalasalingam Academy of Research and Education, on 13.03.2026.**
- **Mr.Sarukesh A of II EEE presented a paper at Texperia, SNS Institution, on 12.03.2026.**
- **Mr.Kalaichelvan G of II EEE participated in Sparkathon-2K26 and presented his project at Jai Shriram Engineering College on 24.03.2026.**
- **Mr.Arunpandian V of II EEE participated in Sparkathon and secured First Place in the Hackathon at Jai Shriram Engineering College on 24.03.2026.**
- **Ms.Rajuka S, Ms.Jegisha R, Ms.Anbu Meenakshi S and Mr.Sundara Vel A Mr.Santhosh P ,Mr.DharunRaja T,Mr.Shyam M, M.sMuthusanthiya K and Ms.Esaimozhi of II EEE participated in TechFest 2K26 and presented papers at Karpagam Academy of Higher Education on 13.02.2026.**

Co Curricular Activities

- **Ms.Rajuka.S,Ms.Jegisha.R,Ms.Anbu Meenakshi.S,Mr.SundaraVel.A,Mr.Santhosh.P,Mr.DharunRaja,T,Mr.Shyam.M, Ms.Muthusanthiya.K and Ms.Esaimozhi.R of II EEE participated in NexGen Hackathon at Hindustan College of Engineering and Technology on 11.02.2026.**
- **Mr.R.Mahesh has undergone internship on Energy Auditing at Pentagon Garments Unit 2, Virudhunagar for 3 weeks.**
- **Mr.Sudarshan K and Mr.Shri Bala Ganesh S of II EEE participated in TechUtsav 26 and presented papers at Thiagarajar College of Engineering on 04.03.2026.**
- **Mr.Krishna Priyan M of II EEE participated in Ideathon 26 and secured Second Place in the Idea Presentation at PSR Engineering College on 27.03.2026.**
- **Mr.Dharunraja T of II EEE participated in SDG-Techathon at Kalasalingam Academy of Research and Education on 13.03.2026.**

Co Curricular Activities

Mr.Dharunraja T of II EEE participated in MATLAB Cody Challenge 24-Hours Hackathon and secured First Place at Kalasalingam Academy of Research and Education on 13.03.2026

Mr.Madhavan M of II EEE participated in Kyronix 26 and presented a paper at SRM Madurai on 27.03.2026

Mr.Mahesh R of II EEE participated in TechUtsav 26 Teletec and presented a paper at Thiagarajar College of Engineering, Madurai on 06.03.2026

Mr.Ranjith N of II EEE participated in TechFest and took part in the Hackathon at Karpagam Academy of Higher Education, Coimbatore on 13.02.2026

Mr.Tharoun V of II EEE participated in Varnam and presented a paper at Karpagam Institute of Technology on 05.02.2026.

Co Curricular Activities

Mr.Joseph Amalraj A, Mr.Siva Pardeepan M, Mr.Nanthakumar A and Mr.Madhavan U of III EEE participated in Neurathon 26 and took part in the Hackathon at New Prince Shri Bhavani College of Engineering and Technology on 09.02.2026.

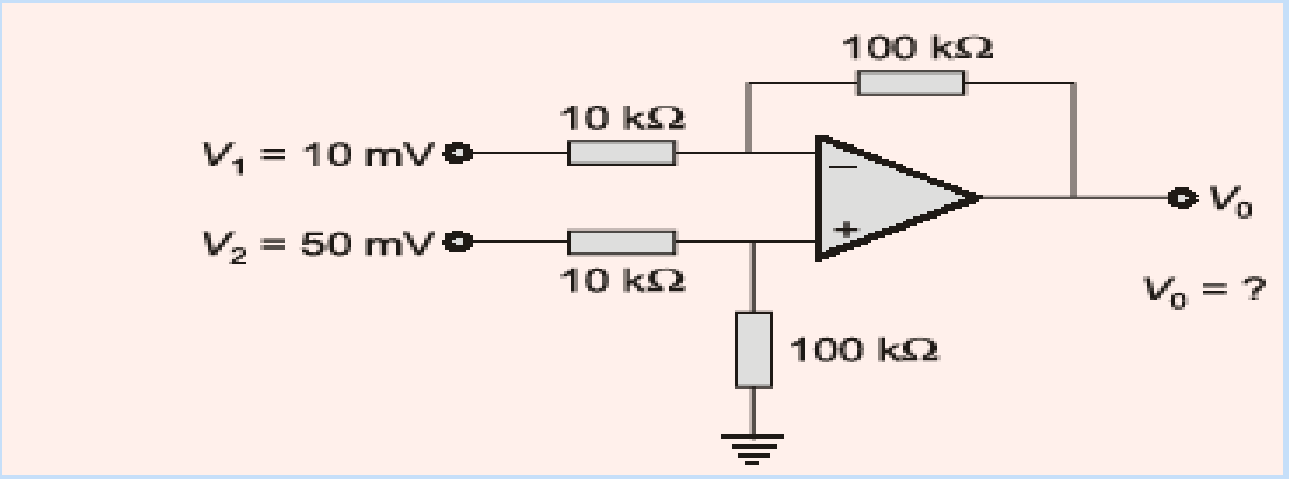
Ms.Saravana Bhavan S, Mr.Joseph Amalraj A, Mr.Surya Prakash Kumar, Mr.Sanjay C and Mr.Vairavan K of III EEE participated in Euphoria and presented his project work at Kalasalingam Academy of Research and Education on 13.03.2026.

Mr.Surya Prakash Kumar M and Mr.Mani Kandan N of III EEE participated in Impulse 2026 and took part in the Hackathon at Chennai Institute of Technology on 05.02.2026.

Ms.Shanthini S of III EEE participated in ImpactX3.0 and took part in the Hackathon at St. Joseph's Institute of Technology on 05.02.2026.

Ms.Shanthini S of III EEE participated in Gyanmitra 26 and secured First Place in the Paper Presentation at Mepco Schlenk Engineering College on 19.02.2026.

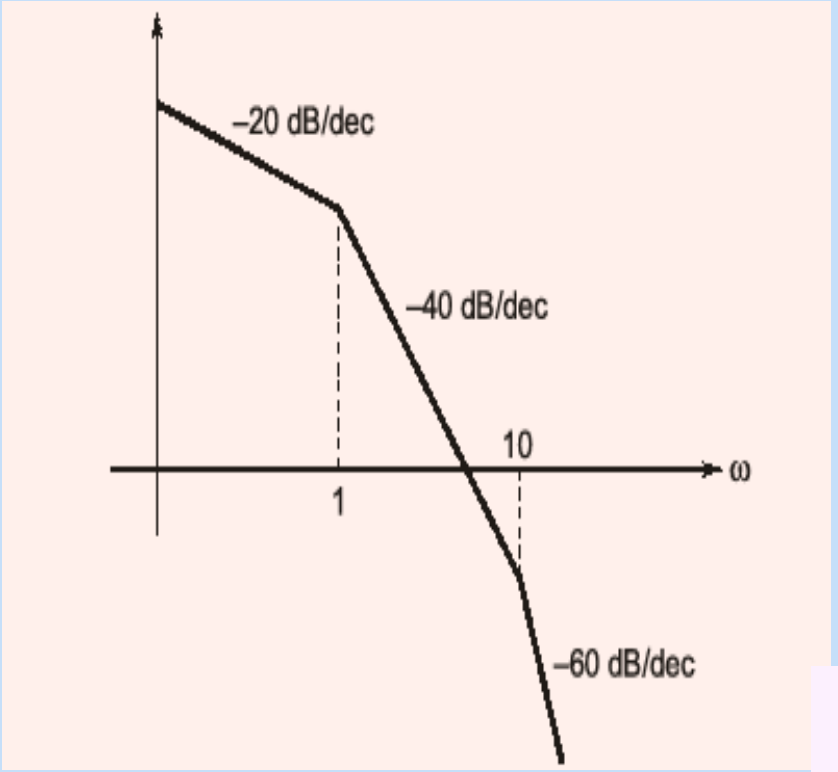
GATE Questions



(a)500 mv
(b)400mv
(c)300 mv
(d)100mv

ANS:400mv

2) For the Bode plot given below which of following statement are correct?



Statement-I : The transfer function has 3 pole and one zero.
Statement-2: Value of <G(jW)H(jW) is 3∏/2 when tends to infinity
(a) Statement 1 is correct statement 2 is wrong
(b) Statement 2 is correct statement 1 is wrong
(c) Both statements are correct.
(d) Both statements are wrong

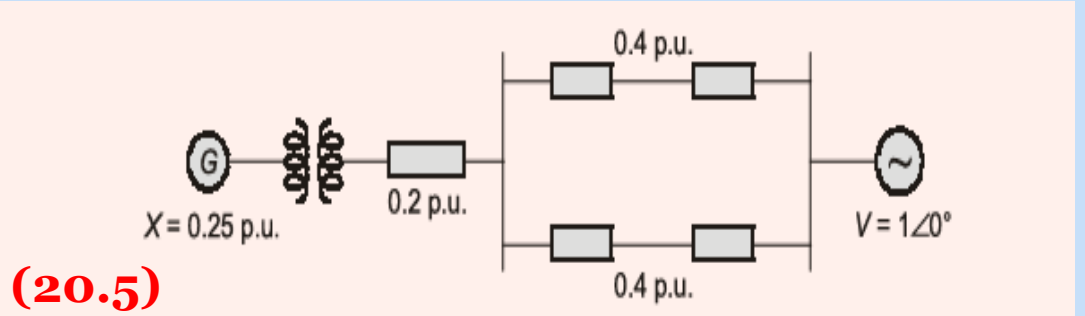
ANS:(b)Statement 2 is correct statement 1 is wrong.

3)A three-phase synchronous motor draws 200 A from line at unity power factor at rated load. The line current IL at power factor 0.5 lead for same line voltage and load will be

(a)400 A (b)200A (c)300A (d)100A

ANS:(a)400 A

4)Single machine connected to infinite bus system generator delivers real power of 0.8 p.u. at 0.8 power factor (lag) to 'Infinite bus. The power angle of generator is



ANS: (20.5)

Faculty Advisors

Dr. D. Prince Winston
Prof & Head /EEE
Mrs.J.Uma Maheswari
AP/EEE

Student Editor

ABISHEK. S

24UEE010

II-EEE

E-Shots

Department of Electrical and Electronics Engineering

(Accredited by NBA, New Delhi)

Kamaraj College of Engineering and Technology,

SPGC Nagar - 625701, Tamilnadu, India.