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

27th Edition
2025-2026 ODD

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

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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.

Automatic Plant Watering System

Introduction

An Automatic Plant Watering System is a modern and efficient way to ensure plants receive the right amount of water at the right time without manual intervention. The system uses sensors and Arduino to monitor soil moisture levels and automatically activate a water pump when the soil becomes dry.

This system helps maintain the ideal moisture content in the soil, promoting healthy plant growth and preventing problems caused by overwatering or underwatering . It is especially useful for people who have busy schedules or are away from home for longer periods. The automatic plant watering system not only saves time, water, and effort but also supports sustainable gardening practices by water wastage.

Working

The Automatic Plant Watering System works on the principle of sensing soil moisture and automatically controlling water flow based on the moisture level. A soil moisture sensor is placed in the soil near the plant roots. This sensor continuously monitors the moisture content. The sensor's output sends a signal to Arduino. When the soil is dry, the sensor value drops below a set threshold. The microcontroller activates a water pump or solenoid valve to supply water to the plants. Once the soil becomes moist enough, the sensor reading increases above the threshold. The microcontroller then turns off the pump, stopping the water supply. This automatic feedback loop ensures that plants receive water only when necessary, avoiding both overwatering and water wastage.

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Prototype

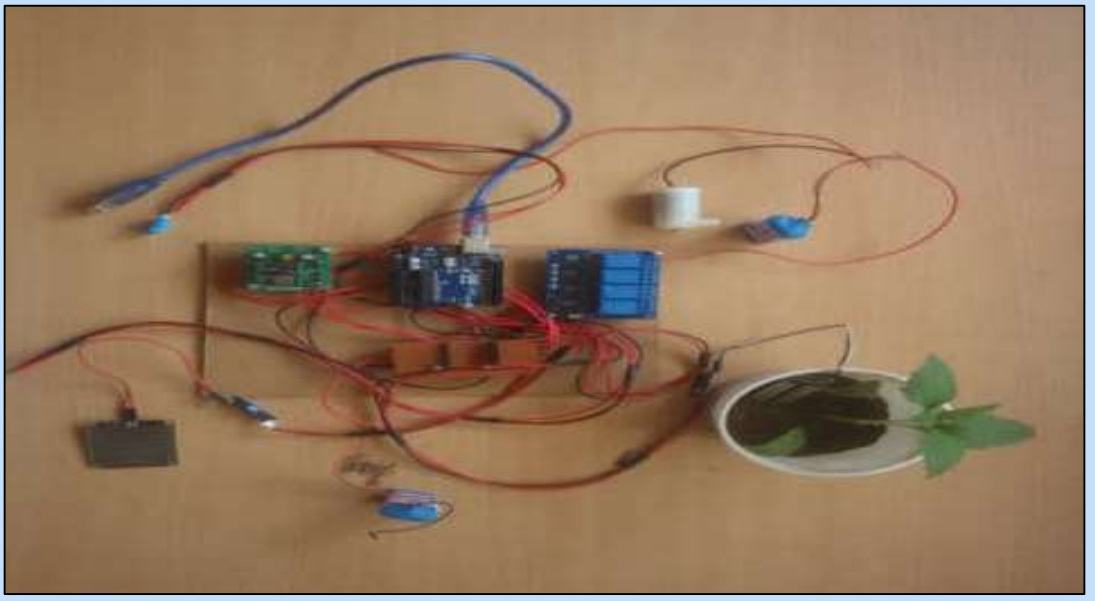

Image while testing

Conclusion :

The Automatic Plant Watering System is an efficient, reliable, and eco friendly solution for maintaining healthy plants without manual effort. By using a soil moisture sensor and microcontroller based control, the system ensures plants receive the right amount of water at the right time.

AnbuMeenakshi.S

II - EEE

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Smart Gesture Control On Audio System

Introduction

By integrating sensors such as infrared (IR), ultrasonic, or camera based motion detectors, smart speakers can interpret gestures to perform functions such as adjusting volume, changing tracks, pausing playback, or activating specific modes. Gesture controlled speakers offer a hands free, hygienic, and user friendly experience, making them ideal for modern smart homes, public spaces, and environments where voice commands may be inconvenient or ineffective. Combining machine learning algorithms with sensor data processing, these systems can accurately recognize user gestures, ensuring seamless and responsive operation. As technology continues to evolve, smart gesture control stands as a immersive human-device interaction, enhancing accessibility and convenience in everyday life.

Working Principle

The smart gesture controlled speaker uses sensors to detect hand movements, which are then translated into commands for audio control.

Key stages:

1. Gesture Detection

Sensors(IR, ultrasonic, or camera) detect hand movements.

Example: IR sensors measure reflected light; ultrasonic sensors measure sound wave delay.

2. Signal Processing

A microcontroller (Arduino, Raspberry Pi, ESP32) processes raw sensor data to identify gesture direction and type.

3. Gesture Recognition

Processed signals are matched to predefined commands (e.g., swipe right = next track). Advanced systems may use machine learning for complex gestures.

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4. Command Execution

The microcontroller sends the command to the audio module or Bluetooth speaker to perform the action (e.g., volume change).

5. Feedback

Optional LED or audio feedback confirms gesture recognition and execution.

Conclusion

The development of a smart gesture controlled speaker represents a significant step forward in creating more intuitive and contactless human machine interfaces.

R. Jegisha
II - EEE

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Street Light Automation

Introduction

Street Light Automation is a modern solution for controlling street lighting automatically based on environmental conditions. Traditional lights consume power even when not needed, leading to energy wastage. This project uses sensors and microcontrollers to automatically turn lights ON in darkness and OFF in daylight. The system ensures proper illumination only when required. The model in this project uses Arduino, sensors, and LEDs to demonstrate how automatic lighting can work efficiently in real life — especially useful in streets, highways, and residential areas, improving safety while saving electricity and maintenance costs.

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Working Principle

The working principle of the street light automation system is based on the sensing of ambient light using an LDR (Light Dependent Resistor) or motion sensors. When the surrounding light level falls below a set threshold (as at night), the LDR sends a signal to the Arduino, which switches ON the LEDs (street lights). When the light level rises (during the day), the LEDs turn OFF automatically. Optionally, IR sensors can detect movement, allowing lights to turn ON only when a vehicle or person is nearby. This reduces unnecessary power consumption while ensuring visibility and safety.

COMPONENTS USED

Arduino UNO – The controller takes decision based on that sensor's output.

LDR Sensors – Detect intensity of ambient light to control ON/OFF operation.

IR Sensors – Detect movement of vehicles or people

LEDs – Act as miniature street lights.

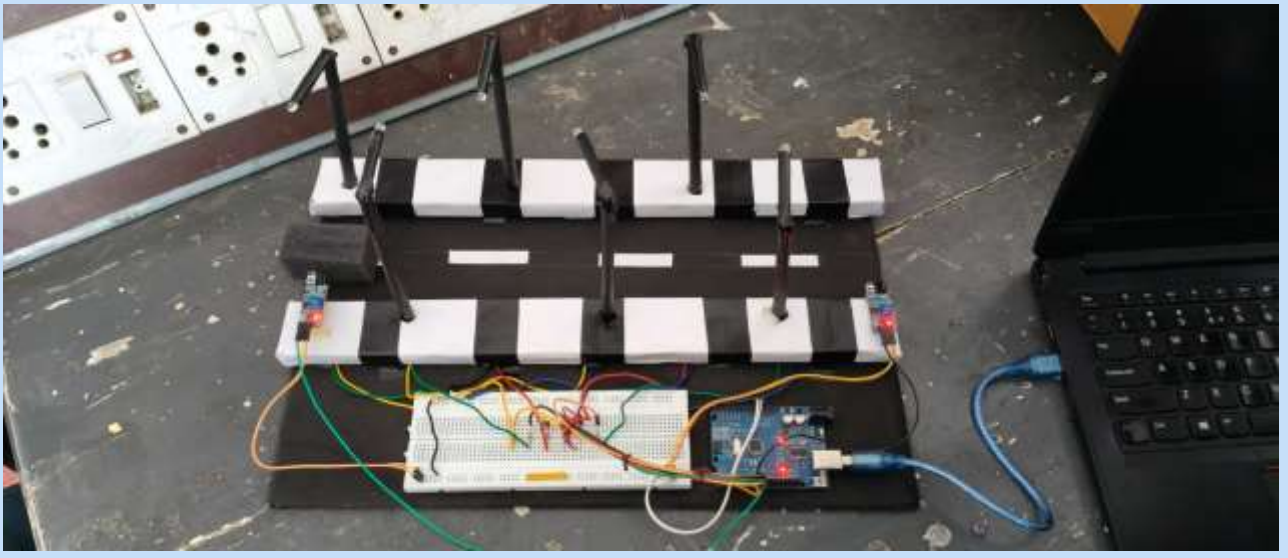
Resistors and Jumper Wires – For connections and current control.

Breadboard – Used for circuit prototyping.

USB Cable & Laptop – For power supply and programming.

All these components together form a small scale model replicating real world street light automation.

Prototype Model



In this prototype LEDs is automatically turn ON in low light and turn OFF in bright light to conserve power.

CONCULSION

The Street Light Automation project demonstrates how technology can simplify everyday operations and reduce energy waste. By using simple components like LDRs, IR sensors, and Arduino, the system automatically controls street lights without human effort. This project proves that automation can be implemented even at a small scale to achieve significant benefits. The model provides a glimpse into smart city infrastructure, promoting sustainability, cost-effectiveness, and environmental responsibility through intelligent energy management.

ABISHEK.S

II - EEE

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Audio Transmitter Using LED

Introduction

An audio transmitter using LED is an optical communication system that converts audio signals into light signals, transmits them through an LED, and then reconverts them back to sound at the receiver end. Unlike traditional wired communication, this system uses light as a medium to transfer information, making it suitable for short distance, interference free transmission. The basic principle involves modulating an LED with the audio signal, which causes the light intensity to vary according to the sound waveform. A light dependent resistor (LDR) at the receiver detects these variations and converts them back into electrical signals. These signals are then amplified and sent to a speaker to reproduce the original audio.

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Working Principle

The audio transmitter using LED works on the principle of optical communication, where audio signals are converted into light signals and transmitted through an LED to a receiver. The system starts with an audio signal, usually from a microphone or an audio source such as a phone or MP3 player. This audio signal is an electrical analog signal representing sound waves. The weak audio signal is first passed through a pre amplifier circuit to boost the signal strength so it can effectively modulate the LED. The amplified audio signal is used to modulate the intensity of an LED. LED's brightness changes according to the variations in the audio signal. Higher audio voltage makes the LED brighter, and lower voltage dims it. The modulated LED emits light carrying the audio information. This light travels through free space toward the receiver.

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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, re-amplified, 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 Audio Transmitter Using LED demonstrates a simple yet effective method of wireless audio communication using light. By converting audio signals into light signals and then back into sound, it showcases the principles of optical communication, modulation, and detection in a practical way. This system is cost effective, safe, and free from electromagnetic interference, making it ideal for educational purposes, short-range wireless audio transmission, and experimental projects. Though limited to line-of-sight transmission and short distances, it provides a strong foundation for understanding advanced optical and wireless communication systems.

Arunsampath .K

II EEE

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Name of the Program:

Six Day FDP on Next Generation Technologies: An Integrated Approach to EV, AI, Embedded Systems, and Custom IC

Date of the Program:

12.12.2025 to 18.12.2025

Participants:

Faculty members from Various Colleges

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Name of the Program:

Guest lecture on Recent developments and future trends in Power Plant Engineering

Date of the Program:

28.08.2025

Resource Person:

Dr.J.Gnanavadivel, Professor,

Mepco College of Engineering

Participants:

III EEE Students

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Name f the Program:

ISTE Sponsored Contest-Crack the GATE

Date of the Program:

16.10.2025

Participants:

II,III,IV EEE Students

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Name of the Program:

AICTE VAANI Conference-Viksit Bharat 2047: Innovations in Clean Energy for a Sustainable Future and Resilient India

Date of the Program:

04.12.2025 & 05.12.2025

Participants:

Research Scholars and faculty from various colleges

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Name of the Program:

Two Day FDP on Bridging Electronics Learning to Industrial Needs

Date of the Program:

15.12.2025 to 16.12.2025

Resource Person:

Er. M. Devaraj, Consulting GM, Freedom group of companies

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Development of Hardwere Interface to Generate Electric Power from Parked Electric Vehicles

❖ Our Renewable Energy Club students successfully implemented an Electric Vehicle project with financial support from MSME.

MSME Ref. No	Incubatee	Mentor	Sanctioned Amount
IDEATN007342	M. Pravin	Dr.D.Prince Winston	11,75,000
IDEATN007372	D.Shalini	Dr.D.Prince Winston	10,50,000

Students Achievements

R.Mahesh of II EEE won first prize in Quiz Contest held at Srividya College of Engineering

Students Achievements

R.Mahesh of II EEE won first prize in Tamil Elocution organized by Tamil Mandram, Virudhunagar

Students Achievements

T.Dharun Raja, A.Sundravel, M.Shyam, T.Sivalingam of II EEE have undergone two weeks internship at NIT, Trichy during December 2025

Co Curricular Activities

- **Mr.R.Joshua Lawrance Kirubakaran and Mr.V.Tharoun of II EEE participated in Gilbertronix'2k25 and presented a paper in PSR College of Engineering on 10.08.2025.**

- **Mr.S.Yuvaraj and Mr.S.Anish of II EEE participated in Gilbertronix'2k25 and presented a paper in PSR College of Engineering on 10.08.2025.**

- **Mr.S.Hariprasad and Mr.M.Surya Prakash Kumar of III EEE presented a paper in Ematix Embedded and Software Solutions Inc on 13.09.2025.**

- **Mr.M. Yoghanand, Mr.P.Santhosh, Ms.S.Rajuka and Mr.N.Ranjith of II EEE participated in Fusion Festa'25 and presented a paper at Sethu Institute of Technology on 26.09.2025.**

- **Mr.T.Dharunraja, Mr.T.Sivalingam, Mr.M.Shyam and Mr.A.Sundravel of II EEE participated in Tech Aura 2.0 and presented a paper at KPR Institute of Engineering and Technology on 26.09.2025.**

Co Curricular Activities

- **Mr.M.Shyam and Mr.A.Sundravel of II EEE participated in Tech Aura 2.0 and demonstrated their project work at KPR Institute of Engineering and Technology on 26.09.2025.**
- **Ms.P.V.Deepthika and Ms.S.Shanthini of III EEE participated in Tech Aura 2.0 and demonstrated their project work at KPR Institute of Engineering and Technology on 26.09.2025.**
- **Mr.S.Manikandan of III EEE presented a paper in PSR College of Engineering on 06.10.2025.**
- **Mr.R.Mahesh of II EEE completed AICTE Virtual Internship Program 2025 organized by Cisco Academy on 24-08-2025.**
- **Mr.S.Hariprasad of III EEE completed NPTEL Course on Introduction to C Programming organized by IIT Kharaghpur with Elite during July to September 2025.**
- **Mr.R.Mahesh of II EEE completed NPTEL Course on Introduction to Internet of Things organized by IIT Kharagpur during July to October 2025.**

Co Curricular Activities

- **Mr.S.Hariprasad of III EEE completed NPTEL Course on Digital Circuits Programming organized by IIT Kharaghpur with Elite during July to October 2025.**
- **Mr.R.Mahesh of II EEE has undergone 3 weeks internship on Energy Auditing at Pentagon Garments Unit 2, Virudhunagar.**
- **Mr.G.Kalaichelvan of II EEE attended the workshop on Introduction to Machine learning organized by HCL on 21-12-2025.**
- **14 students of III EEE and 14 students of II EEE have completed the course on Cyber Security Essentials offered by CISCO Academy.**

GATE Questions

1. ‘If Anish had scored hundred runs in today’s match, he would have been made the captain of his team. He would have then become the youngest captain in his team’s history. Unfortunately, he got out without scoring any runs. Hence, there won’t be any change in the captaincy for now.’ Based on the paragraph above, which one of the following statements is true?

a. Anish made a hundred runs but was denied captaincy

b. Anish was the captain of his team before the game today.

c. The current captain is older than Anish.

d. Anish is the youngest player in his team.

Ans : c. The current captain is older than Anish.

2. P and Q are two positive integers such that

P^2 = Q^2 + 13.

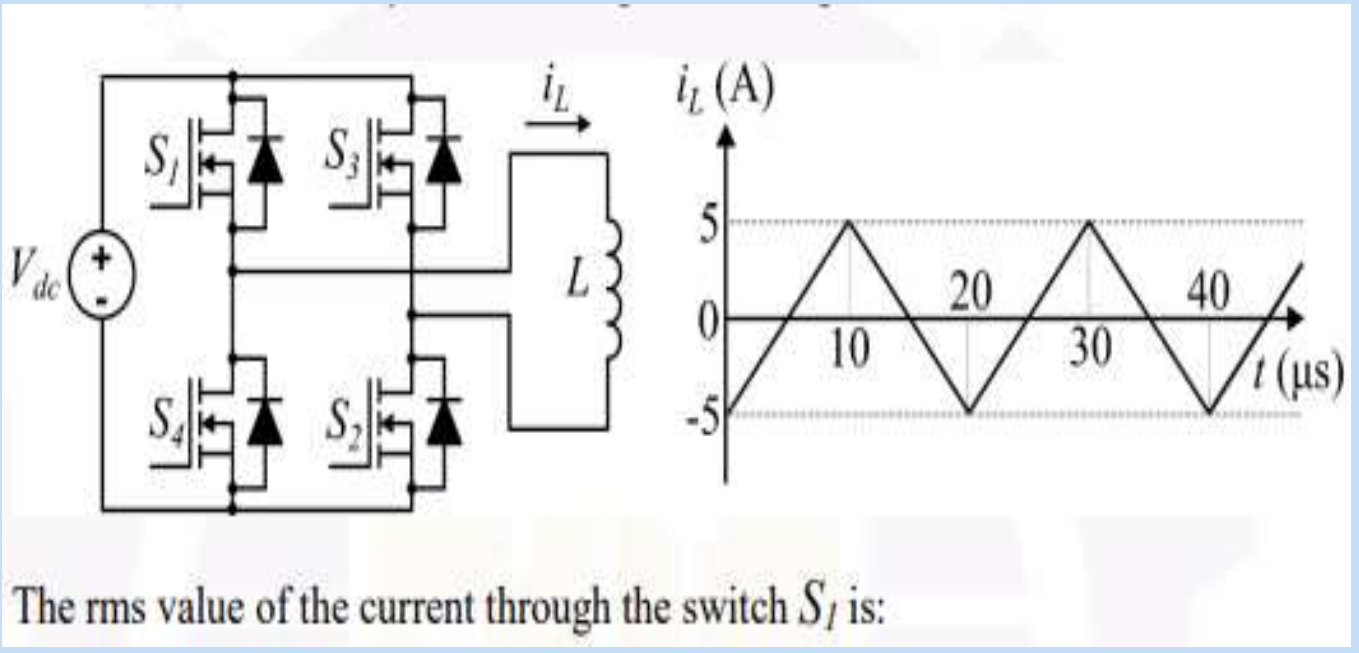
The product of the numbers P and Q is -----

a. 13 b. 26 c. 39 d. 42

Ans : d. 42

GATE Questions

3. Consider the single phase voltage source inverter circuit feeding an inductive load (L). Assume that the power MOSFET switches are ideal. S1 and S2 are switched on during the first 10 μs, and S3 and S4 are switched on during the next 10 μs in a switching cycle. The switches in the same leg are thus switched in a complementary fashion. Neglect the dead time. The waveform of the inductor current (i_L) in the steady state is triangular with a peak value of 5 A as shown. The rms value of the current through the switch S1 is:



a. 2.88 A

b. 2.04 A

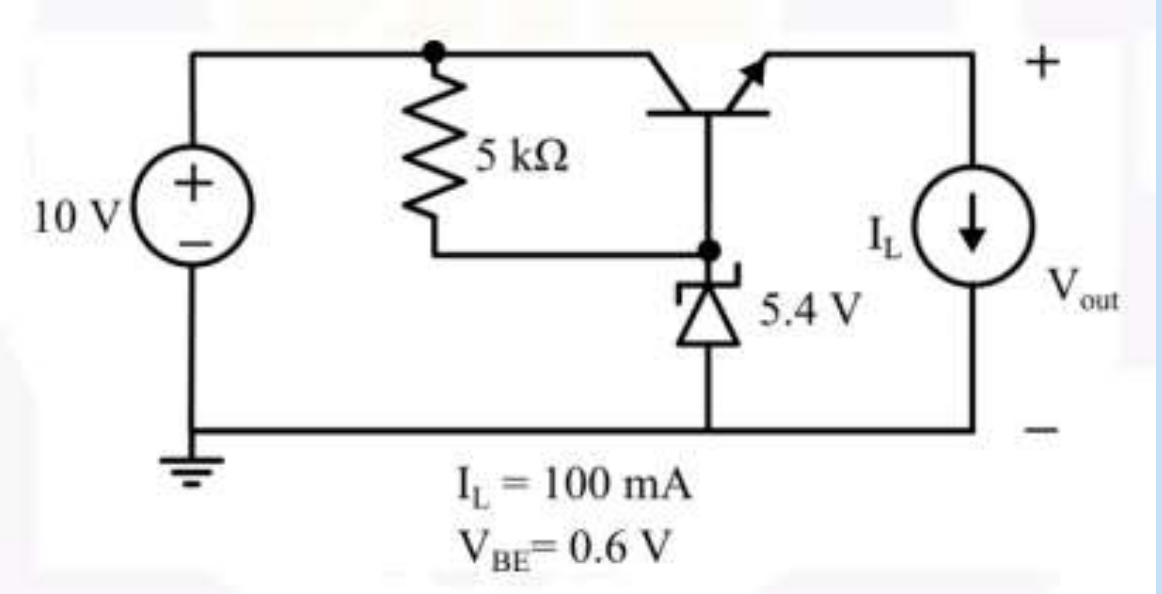
c. 3.54 A

d. 2.50 A

Ans : b. 2.04 A

GATE Questions

4. In the linear regulator circuit shown, the base to emitter voltage VBE of the BJT is 0.6 V. The Zener diode clamps the base voltage to 5.4 V. Ignore the biasing current of the Zener diode and BJT. The maximum possible efficiency of the regulator circuit is _____ %. Round off to one decimal place



Ans : 48.0%

Faculty Advisors

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

Student Editor

Surya Prakash Kumar M
23UEE016
III-EEE

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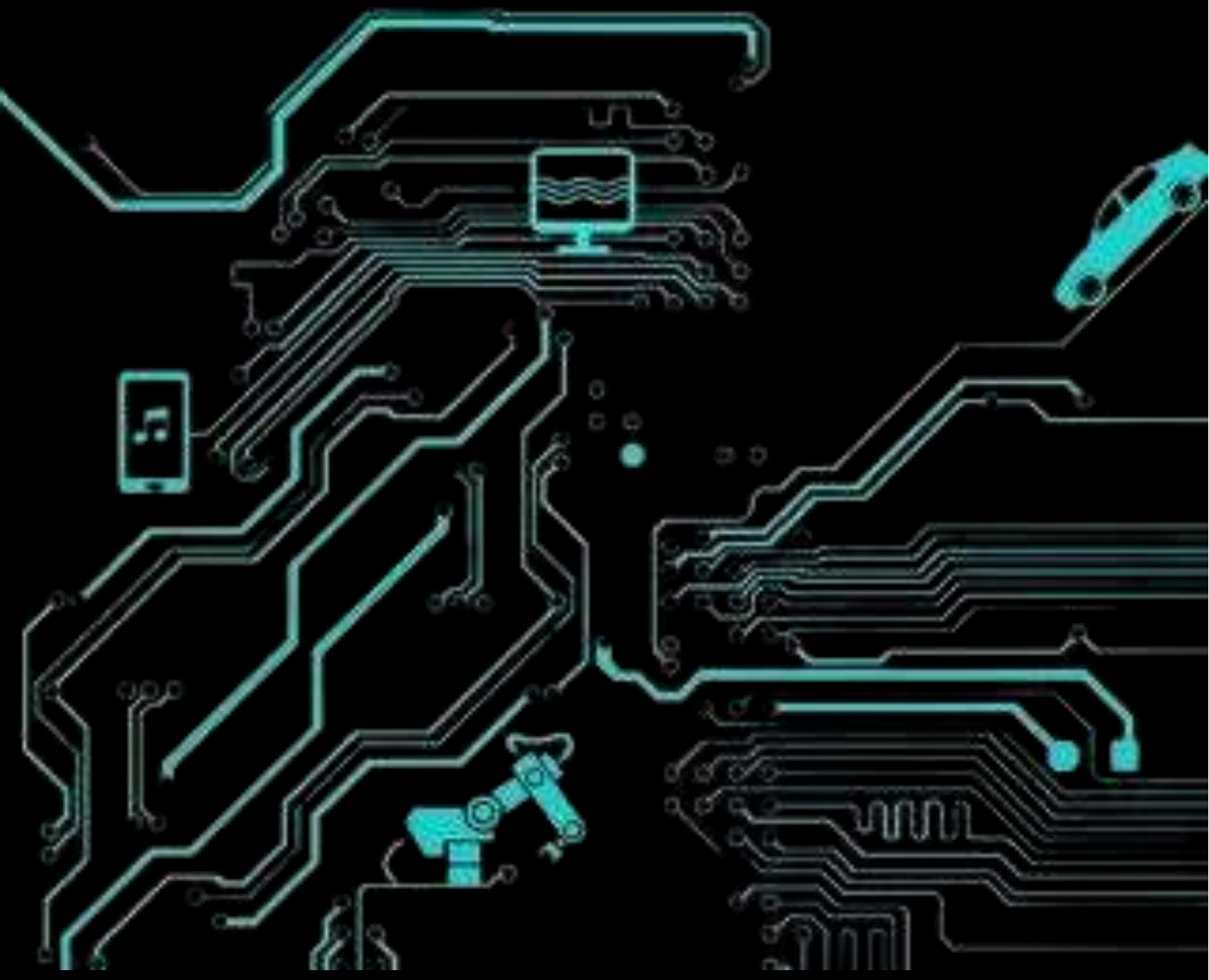

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