

Department of Electronics and  
Communication Engineering  
Government Polytechnic  
Jamnagar

# Resonance

Vol-I Issue-1 Jan-2021

Editor:

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G P Jamnagar

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## ABOUT THE DEPARTMENT

In June 2007, Diploma Programme namely Electronics & Communication Engineering has been started at Government Polytechnic, Jamnagar. The Department of Electronics and Communication Engineering envisions upliftment of students especially living in rural areas, through an effective teaching learning process and quality teaching, to make them competent globally with sound technical, interpersonal, analytical, managerial skills and professional ethics. The department possess a well-equipped Labs which provides practical learning of actual environment of industry. The department has highly qualified faculties to ensure qualitative education. At present, the department has student intake of 30.

## VISION

To produce creative, innovative and ethical EC engineers that will serve to societal and industrial needs

## MISSION

- M1. To impart excellent technical education from fundamentals to application level, with ethics, to EC engineering students so that they can provide solution to industrial or social problems.
- M.2 Provide creative teaching-learning environment to students for achieving excellence in technical education.
- M3. To develop state of art laboratories with latest instruments and equipment's to develop psychomotor skills in students.
- M4. To establish department library with latest books, magazines, eBooks, video tutorials-lectures and other learning resources to promote reading attitude in students.
- M5. To make students entrepreneur or employable in industries.



**Mr. A K Zala**  
**Principal Government**  
**Polytechnic Jamnagar**

### From the Desk of principal

It gives me great pleasure to see the launch of 'Resonance' department newsletter. Despite the unprecedented challenges posed by the COVID-19 pandemic, our faculty and students have shown remarkable adaptability and commitment to learning. Online education became the new normal, and I am proud of the way our institution embraced the digital shift. I congratulate the Electronics and Communication Engineering Department for documenting this unique period and sharing the academic journey through this newsletter.



### Message from the HOD

It's a pleasure to present the first issue of 'Resonance', highlighting the journey of our department during July to December 2020. Though the pandemic restricted physical activities, our team remained committed through online classes, virtual sessions, and self-learning. This newsletter captures the spirit of resilience and adaptation. I thank all contributors and look forward to continued excellence.



**Mr. A M Bhatt**  
**HOD ECE Department**  
**Government Polytechnic**  
**Jamnagar**



### COVID-19 Awareness and Responsible Conduct

The period from July to December 2020 was marked by uncertainty and disruption due to the COVID-19 pandemic. During this time, it was crucial for students, faculty, and communities to stay informed, take preventive measures, and act responsibly to reduce the spread of the virus.

Despite the absence of physical classes and events, our department remained connected through digital platforms, ensuring that learning never stopped. Along with academic continuity, we prioritized awareness and encouraged everyone to follow health guidelines strictly.

### Stay Safe. Stay Aware.

1. To protect ourselves and others, we reinforced the following safety practices:
2. Regular hand washing with soap or using alcohol-based sanitizers
3. Wearing masks properly in public spaces
4. Maintaining social distancing (at least 6 feet)
5. Avoiding crowded or poorly ventilated areas
6. Following quarantine or isolation instructions when needed
7. Monitoring symptoms and seeking medical advice promptly

### Say No to Rumours

In the age of social media, misinformation spreads faster than viruses. The department urged all students and staff to:

- ❖ Verify information from trusted sources such as WHO, Ministry of Health, and Government advisories
- ❖ Avoid forwarding unverified messages on WhatsApp, Facebook, or other platforms
- ❖ Educate peers and family about reliable health practices and official guidelines

Our collective responsibility went beyond just staying safe — it included spreading truth, compassion, and awareness during a global crisis.

## Community Service During COVID-19

Amid the challenging times of the COVID-19 pandemic, Mr. R. S. Oza, faculty member of the Government Polytechnic, Jamnagar, along with his dedicated team, extended exemplary service to the people across Jamnagar city.



Through their tireless efforts, they contributed to relief operations, supported community needs, and upheld a strong sense of social responsibility. Their dedication and selfless service during this public health crisis reflect the values and commitment of our institution toward society at large.



### Webinar on “Gujarat Startup Stories”

As part of encouraging entrepreneurial thinking and innovation among students, the “**Gujarat Startup Stories**” arrange during the COVID-19 period.

The session highlighted inspiring journeys of successful startups emerging from Gujarat, their challenges, innovations, and contributions to the economy. The speakers shared real-life experiences, ideas on business incubation, and the role of technology in modern startups.

This initiative aimed to install an entrepreneurial mindset in diploma students and expose them to the evolving startup ecosystem of the state. The webinar was well-received and appreciated by both students and faculty.



**STARTUP SAKSHAM**  
**Webinar on Gujarat Startup Stories**  
**The Inaugural Episode**

**Anju Sharma, IAS**  
 Principal Secretary (Education)  
 Gujarat

**Startup Stories**  
 AltMat  
 Frendy  
 UrbanKhet  
 LymbEdge  
 Durogreen  
 Espresso arts  
 Brook and Blooms

**ON SATURDAY, MAY 2**  
**11:30 AM - 1:00 PM**

**f LIVE ihubGujarat**

## Webinar on Entrepreneurial Opportunities in Technical Startups

As part of its ongoing efforts to promote innovation and self-employment among diploma students, the Electronics and Communication Engineering Department, Government Polytechnic, Jamnagar successfully organized a webinar titled “Entrepreneurial Opportunities in Technical Startups.”

The webinar was held on 18th July 2020 (Saturday), from 11:00 AM to 12:00 PM via Google Meet. The session was conducted under the patronage of Shri A. K. Zala, Principal, Government Polytechnic, Jamnagar, with Smt. V. R. Kotdawala serving as the event coordinator. The session was hosted by Shree R. K. Borsaniya and featured expert speaker Shree J. B. Patel from the Entrepreneurship Development Institute of India (EDII), Gandhinagar.

The session provided valuable insights into the landscape of technical startups, funding avenues, and innovation-driven entrepreneurship. Shree J. B. Patel delivered an engaging talk focusing on opportunities available for technically skilled students to initiate startups with minimal resources. Students actively participated in the discussion and gained motivation to explore entrepreneurship as a career path, especially in the context of Atmanirbhar Bharat and Gujarat’s growing startup ecosystem.

**A WEBINAR ON**  
**Entrepreneurial Opportunities for Technical Start-ups**  
**18th JULY 2020**  
**11:00 AM to 12:00 PM**

Government Polytechnic Jamnagar  
 Organized by SSIP Cell - GP Jamnagar

**Webinar Expert**  
**Shri J. B. Patel**  
 EDII, Gandhinagar

Principal : Shri A.K.ZALA  
 SSIP Coordinator : Prof. V. R. KOTDAWALA  
 Event Coordinators : Prof. R.K. BORSANIYA & Prof. J.B. KACATHARA

Registration Link : <https://forms.gle/ExL7D3Efjhiv1BAz7>  
 Webinar link : <https://meet.google.com/meq-vvwh-ezr>

11:41 AM

Sujai Sarviya 19-9501

Thakar Shyam

Tilak Makwana 19-9538

V R Kotdawala **NEW**

Vaibhav P- 19-9116

## National Mathematics Day Celebration – 2020

To commemorate National Mathematics Day, **Government Polytechnic, Jamnagar**, in collaboration with **L. E. College, Morbi (Diploma)**, organized an expert lecture titled *“Some Milestones of Mathematics Learning.”*

The event was held on **21st December 2020 (Monday)** at **11:30 AM** through the **Microsoft Teams** platform. The expert speaker for the session was **Dr. Gautam G. Borisagar**, Assistant Professor in Mathematics, Department of Mathematics, **IITRAM, Ahmedabad**.

The session offered a fascinating exploration of key milestones in mathematical learning, providing valuable insights into the evolution of mathematical thought. Students and faculty actively participated, paying tribute to the legacy of **Srinivasa Ramanujan** and acknowledging the importance of mathematics in the field of engineering.

EXPERT

**DR. GAUTAM BORISAGAR**  
ASSISTANT PROFESSOR  
DEPARTMENT OF MATHEMATICS  
IITRAM, AHMEDABAD

ON MICROSOFT-TEAMS

Event Details:  
Date: 21st Dec, 2020  
Time : 11:30 AM

<https://youtu.be/YHXBWcStSPc>

Government Polytechnic, Jamnagar  
and  
L. E. College (Diploma), Morbi  
Jointly organize Expert talk  
on  
**"Some Milestones  
of  
Mathematics learning"**

भारत INDIA 500  
राष्ट्रीय गणित दिवस  
NATIONAL MATHEMATICS DAY  
श्रीनिवास रामानुजन  
SRINIVASA RAMANUJAN  
भारत INDIA 500

**CELEBRATION OF  
NATIONAL MATHEMATICS DAY - 2020**

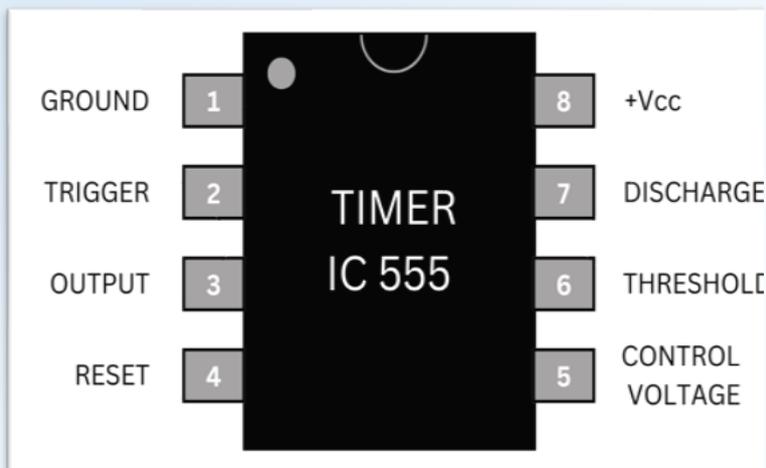
## Student Contribution

By: Yash Dodiya

Enrolment No.: 196250311002

## Understanding the IC 555

The IC 555 is an 8-pin dual-in-line package (DIP) device that contains a combination of analogue and digital components. Internally, it consists of two comparators, a flip-flop, a discharge transistor, and a voltage divider network that sets reference voltages at one-third and two-thirds of the supply voltage.



The comparators compare the input voltage at the trigger and threshold pins with these reference voltages, controlling the state of the flip-flop, which in turn drives the output. The reset pin allows for immediate termination of the output pulse, while the control voltage pin can be used to modulate the timing characteristics externally.

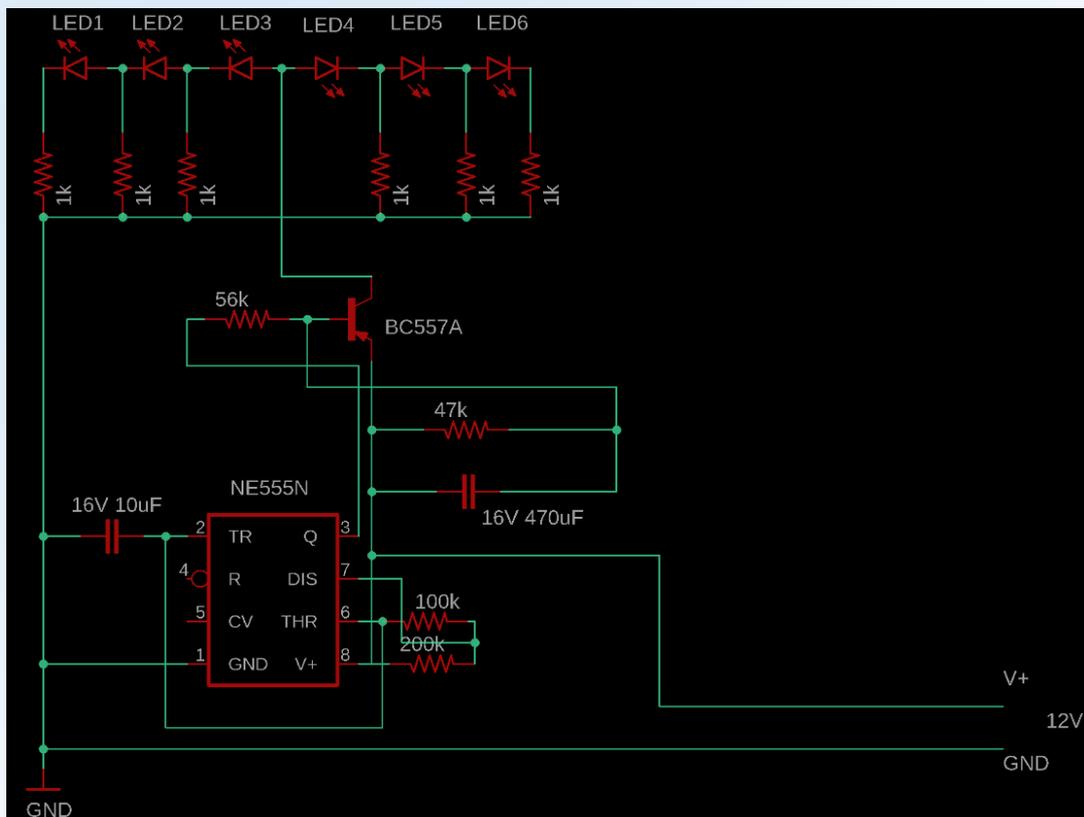
## 555 Timer-Based LED ON/OFF Circuit

The IC 555 is one of the most versatile and widely used integrated circuits in electronics. Since its introduction in 1971, it has played a fundamental role in countless electronic projects—from simple timers to advanced pulse-width modulation systems.

This project demonstrates the design and working of a led on/off circuit using the widely known 555 timer IC and BC557 transistor. The project emphasizes practical understanding of timing circuits and their role in sequential led control, configured using the astable multivibrator mode of the 555 IC.

## Required Components

- 555 Timer IC
- BC557 PNP Transistor
- Resistors: 1k $\Omega$  ( $\times 6$ ), 56k $\Omega$ , 47k $\Omega$ , 100k $\Omega$ , 200k $\Omega$
- Capacitors: 470 $\mu\text{F}/16\text{V}$ , 10 $\mu\text{F}/16\text{V}$
- LEDs
- 12V DC Power Supply



## Circuit Connections Overview

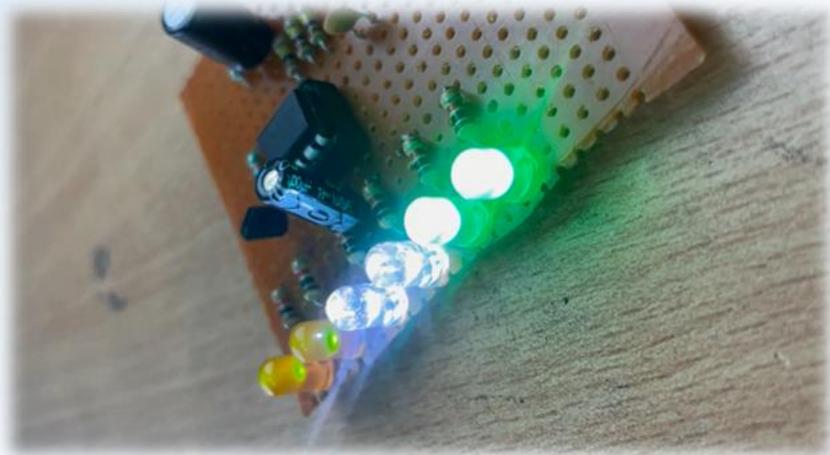
1. **Pin 1 (GND):** Connected to circuit ground
2. **Pin 2 (Trigger):** Connected to 10 $\mu\text{F}$  capacitor, which is grounded. Also connected to Pin 6 (Threshold)
3. **Pin 3 (Output):** Connected to the base of BC557 via a 56k $\Omega$  resistor, which drives the LED array
4. **Pins 4 & 5:** Left unconnected (floating)
5. **Pin 6 (Threshold):** Connected to a 100k $\Omega$  resistor in parallel with a 200k $\Omega$  resistor, which ends at Pin 8 (Vcc)

6. **Pin 7 (Discharge):** Connected at the junction between the 100k $\Omega$  and 200k $\Omega$  resistors
7. **Pin 8 (Vcc):** Connected to the positive terminal of the 12V supply and emitter of BC557
8. **Power Supply GND:** Connected to Pin 1 (GND)
9. Additionally, a 47k $\Omega$  resistor and 470 $\mu$ F capacitor are connected in parallel to Pin 8 (Vcc), with the output routed back to the base of the transistor after the 56k $\Omega$  resistor
10. **Collector of BC557:** Drives the LED array in sequence

### Working Principle

This LED circuit operates on the principle of an astable multivibrator, a configuration where the 555 timer continuously switches states, generating a square wave signal.

The timer's output toggles between HIGH and LOW states, which controls the switching of the BC557 transistor. When the timer output is HIGH, the transistor conducts,



allowing current to flow through the connected LEDs. When it's LOW, the transistor cuts off current, turning the LEDs off.

The resistors and capacitors connected to the timer IC control the frequency and duty cycle of the output signal:

**Frequency:** Determines how fast the LEDs blink

**Duty Cycle:** Affects brightness and ON time of the LEDs

This circuit produces a visually appealing LED sequence, simulating movement or flashing patterns. By adjusting the timing components, the behaviour of the circuit can be customized for various applications like indicators, decorations, or light animations.