School of Engineering
Department of Electronics and Communication Engineering

Academic Year: 2025-26 **Date:** 23-02-2026

TEACHING ACTIVITY SHEET

Course Details

Class	**: II B. Tech. II Sem**	**Course Name**	**:** Electronic Circuit Analysis
Module Name	**: VLSI**	**Course Coordinator**	**:** Mr.K.Ramesh
Module Coordinator	: Dr.B. HARI PRASAD NAIK	**Course Instructor(s):**	1.Dr. SK Fairooz 2.Ms.K.Shiva Prasanna 3.Ms.MH Sushma Mercilin

Gap(s) identified in the course:

1. Students often memorize the circuit diagram of an Astable Multivibrator without clearly understanding its switching operation and practical waveform generation.

Gap(s) bridged by conducting the activity:

1. This activity converts the theoretical design of the Astable Multivibrator into a live circuit implementation, enabling students to observe continuous oscillations and waveform generation practically.

Teaching Activity Details

Unit No: III **Time & duration:** 09:15 AM to 10:10 PM **Venue: S-07**

Teaching Approach: Think–Pair–Share Approach

Covered Topics: Astable multivibrator

Utilization of ICT: No

Remarks (If Any)

Tabe1: Impact Analysis of the activity

Objectives	Outcomes	POs & PSOs Coverage	SDG Addressed	Impact Analysis	
				No. of attendees	No. of beneficiaries
1. To understand the design and working principle of an Astable Multivibrator circuit	1. Students designed and constructed an Astable Multivibrator circuit successfully.	PO1, PO2	SDG 4	50	50

Brief Report of the Activity with photographs

Subject: Electronic Circuit Analysis

Topic: Design and Operation of Astable multivibrator

Students Batch: II Year Electronics and Communication Engineering Students

Think pair share : The Think–Pair–Share approach helped students first analyze the Astable Multivibrator circuit individually, then discuss its design and operation with a partner, and finally share their understanding with the class, improving conceptual clarity and collaborative learning.

Scenario Title :

"From Circuit Assembly to Continuous Switching – The Astable Multivibrator in Action"

Background of the Scenario

In Electronic Circuit Analysis, the Astable Multivibrator is an important oscillator circuit used to generate continuous square wave signals without any external triggering. Although students learn its circuit diagram and time-period formulas theoretically, they often struggle to understand how the capacitor charging and discharging process leads to continuous switching between transistors. This scenario focuses on bridging that gap by guiding students through the design, assembly, and observation of the Astable Multivibrator, enabling them to connect theoretical calculations with practical waveform generation and real-time circuit behavior.

Setting

- Location: Classroom
- Students arranged in pairs to discuss circuit design parameters (resistors, capacitors, transistors)
- Each stage of the Astable Multivibrator (Charging and Discharging path) is explained by an individual student, highlighting its role in continuous oscillation

SystemFlow:
Circuit Design → Circuit Assembly→ Power supply application→ harging and discharging process → Continuous oscillation→ Output observation.

Enact Summary :

The activity began with students individually analyzing the Astable Multivibrator circuit and predicting its operation (Think). They then formed pairs to discuss RC timing calculations, switching action, and waveform generation, clarifying doubts collaboratively (Pair). Finally student shared their understanding of the circuit design and continuous oscillation process with the class, reinforcing conceptual clarity and promoting active, peer-supported learning (Share).

Learning & Outcomes from the Activity

Conflict / Problem – Due to improper selection of resistor and capacitor values, the generated waveform may have incorrect frequency or unstable oscillations.

Through discussion, students conclude:

· importance of proper RC value selection for desired time period and frequency

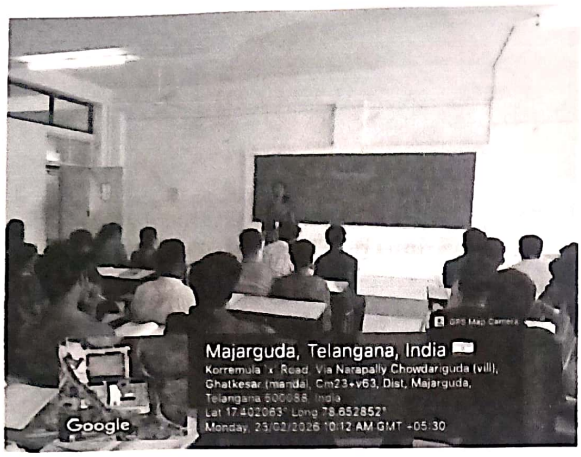
· Need for correct transistor biasing and proper circuit connections

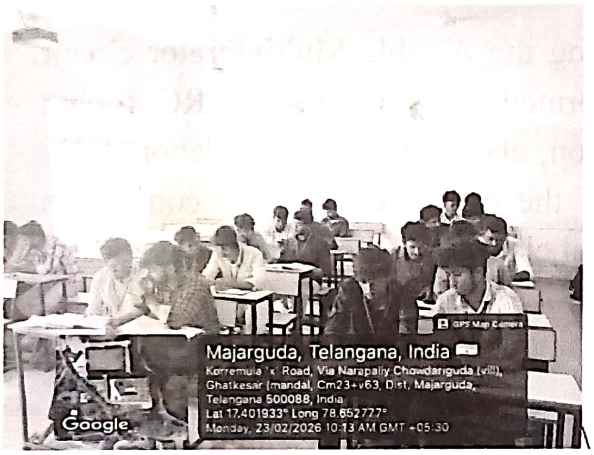
· Significance of capacitor charging and discharging in producing continuous oscillations

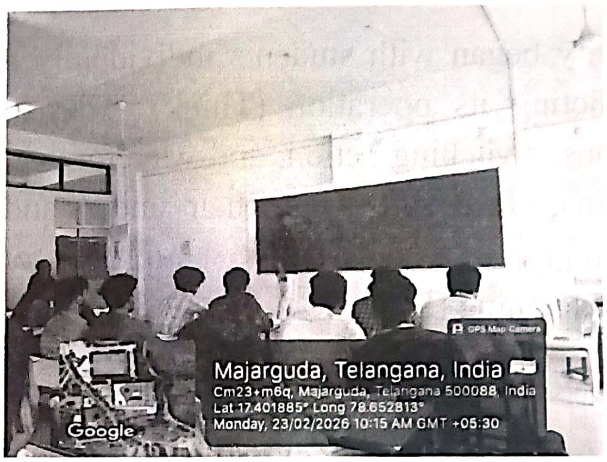
The activity strengthened students' understanding of oscillator principles and improved their ability to design, analyze, and implement an Astable Multivibrator effectively.

Students compared theoretical time-period calculations with practical CRO/DSO observations to evaluate circuit performance and identify errors.

Students related classroom concepts to real-world applications such as clock pulse generation, LED flashers, square wave generators, and timing circuits.







Justification of SDG Relevant to the Activity

SDG 4 – Quality Education

The activity moves beyond traditional lecture methods by promoting analytical discussion and collaborative problem-solving, thereby improving conceptual clarity and long-term retention of Astable Multivibrator principles.

Through structured peer interaction, students better understand key concepts such as RC time constant calculation, transistor switching behavior, and the mechanism behind continuous square wave generation, even without performing a physical laboratory experiment.

Course Instructor(s) **Course Coordinator** **Module Coordinator** **Program Coordinator** **HoD**