



Department of Electrical and Electronics Engineering Academic Year 2022 – 2023 (Even Semester)

Degree, Semester & Branch: B.E, II Semester & Civil

Course Code & Title: BE3252 & Basic Electrical Electronics and Instrumentation
Engineering

Name of the Faculty member: Mr. A. Guna, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit I / Steady State analysis of RLC Circuit
- **Course Outcome:** CO1
- **Topic Learning Outcome:** TLO2
- **Activity Chosen:** One minute paper

- **Justification:**

This topic is chosen, since it consists of complicated derivation and circuit diagram and problems. Since the upcoming concepts are interrelated to Instrument transformers, Student feedback on their understanding level about Instrument transformer is highly needed. Feedback of the Students who are hesitant to express their doubts can be easily known with the help of this activity

- **Time Allotted for the Activity:**

- 5 Minutes - Total time
- 2 Minute - Instruction about the activity
- 2 Minute -Time given for the students to complete
- 1 Minute - Collecting the paper

- **Details of the Implementation:**

The Purpose and Nature of the activity is explained to the students. Students were given 1 Minute of time to write in a piece of paper about the Concepts they have learnt in that day of class in few lines or points in bullet form. Papers are collected from the students and an assurance is given to the students that the concept will be discussed again in the next class.

- **CO – PO / PSO mapping:**

CO	PO1	PO3	PO10	PO12	PSO1
CO1	3	2	1	1	2

- **PO / PSO mapped:**

Innovative practice	PO1	PO3	PO10	PO12	PSO1
	3	2	1	1	2
Justification for correlation	Students will apply the knowledge of Electrical and Electronics engineering fundamental concepts to understand the basics of measurements and instruments	Students will determine the design objectives and functional requirements of the instruments and arrive at specification	Students will be able to produce clear, well-constructed written documents	Students will describe the rationale for the requirement for continuing professional development	Students able to analyze the performance of Electrical instruments by measured parameters

- **Images / Screenshot of the practice:**



- **Reflective Critique:**

- ❖ ***Feedback of practice from students and other stakeholders:***

The students enjoyed this One Minute Paper Activity. After the class many students requested me to insist other Course faculty members to conduct this activity. I have taken this feedback to by Head of the Department

- ❖ ***Benefit of the practice:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

The students actively participated in the One-minute paper activity. As a teacher I could know the real students feeling, their understanding level from this activity. This greatly helped me to correct my flaws in my teaching process and able to find what are all the concepts I have to retake in the class.

- ❖ ***Challenges faced in implementation:***

Still few students were hesitant to convey their points in paper. Few students have not taken this activity seriously and had given empty paper

References:

- ❖ **<https://omerad.msu.edu/teaching/teaching-strategies/active-learning-strategies/27-teaching/184-visual-modeling-one-minute-paper>**

Signature of Faculty Member

HOD



Department of Electrical and Electronics Engineering
Academic Year 2022 – 2023 (Even Semester)

Degree, Semester & Branch: II Semester B.E Civil

Course Code & Title: BE3252 Basic Electrical Electronics & Instrumentation
Engineering

Name of the Faculty member: Mr. A. Guna, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit III / Construction and working of DC Generators
- **Course Outcome:** CO 3/ Electrical Machines
- **Topic Learning Outcome:** TLO 11
- **Activity Chosen:** Demonstration
- **Justification:**

After teaching the concept, I thought of conducting this activity for making the students to understand the constructional part of DC Machines and its working. Students understand the construction much clearly with practical demonstration

- **Time Allotted for the Activity: 5 Minutes**

After teaching the concept, give students one or two minutes to think about the topic without writing anything.

At the end of the Class (Last 5 minutes)

- I asked the students to think about various parts in DC Machine
 - Then I told them to pair with their neighbours and discuss about the construction parts of DC Machine
 - Finally, I have demonstrated the DC Motor and AC Motor for all the students
- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO12
C111.2	2	1	1

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO12
	2	1	1
Justification for correlation	Students will apply the knowledge of Electrical and Electronics engineering fundamental concepts to understand the working of meters.	Students will compare and contrast alternative solution processes to select the best process for the measurement.	Students will describe the rationale for the requirement for continuing professional development

- **Images / Screenshot of the practice:**

❖ *Reflective Critique:*

1. Pre-implementation Reflection :

- **Benefits:**

- Students are able to attend the question even in the questions are in indirect form.
- Students are able to explain the concepts in examination without any confusion.

- **Challenges:**

- In the class few students are hesitate to answer the questions.
- Time utilization for conducting activity.

2. Post-implementation Reflection :

- **Benefits:**

- Students understood the concept which was reflected from their answers

for the questions I have asked during discussion session.

- **Challenges:**

- Slow learners were not able to understand some topics during discussion hours.

❖ *Benefit of the practice:* (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

The assessment of effectiveness of the activity was felt when told most of the points.

- While conducting the activity, I understood that the students can able to explain the analog meters (Electrodynamometer and Wattmeter) construction and working principle.

- The success of the activity was evaluated by asking the same question in **Internal Assessment test I – Around 85%** of students answered.

References:

1. D P Kothari and I.J Nagarath, “Basic Electrical and Electronics Engineering”, McGraw Hill Education (India) Private Limited, Second Edition, 2020
2. A.K. Sawhney, Puneet Sawhney ‘A Course in Electrical & Electronic Measurements & Instrumentation’, Dhanpat Rai and Co, 2015.
3. S.K. Bhattacharya, Basic Electrical Engineering, Pearson Education, 2019 4. James A Svoboda, Richard C. Dorf, Dorf’s Introduction to Electric Circuits, Wiley,2018

Signature of Faculty Member

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Department of Electrical and Electronics Engineering Academic Year 2022 – 2023 (Even Semester)

Degree, Semester & Branch: II Semester B.E Civil

Course Code & Title: BE3252 - Basic Electrical Electronics and
Instrumentation Engineering

Name of the Faculty member: Mr.A.Guna

Innovative Practice Description

- **Unit / Topic:** Unit IV / Zener Diode Characteristics and Applications
- **Course Outcome:** CO 4
- **Unit Outcome:** TLO16
- **Activity Chosen:** Virtual Lab
- **Justification:**

Virtual lab refers to a virtual teaching and learning environment aimed at developing students' laboratory skills. As one of the most important eLearning tools, they allow the student to conduct various experiments without any constraints to place or time, in contrast to the constraints of real labs. By this student can understand the characteristics of BJT under CE configuration.

- **Time Allotted for the Activity:** 15 minutes

- **Details of the Implementation:**

The students were asked to do the following steps

1. Set DC voltage to 10 volt.
2. Set the Series Resistance (R_S) to 505 Ω
3. Set Zener voltage (V_Z) to 5.0 V.
4. Vary the Load Resistance (R_L).
5. Voltmeter is placed parallel to load resistor and ammeter series with the series resistor.
6. Choose Load Resistance in such a manner, such that the Zener diode is 'on'.
7. Now note the Voltmeter and Ammeter reading for various Load Resistance.
8. Increase the load resistance (R_L).
9. Note the Load current(I_L), zener current(I_Z), Output voltage(V_O)
10. Calculate the voltage regulation.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO5
CO3	3	2	1

(1 – Low 2 – Moderate 3 – High)


- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO5
	3	1	1
Justification for correlation	Students will apply the knowledge of Electrical and Electronics engineering fundamental concepts to understand the basics of Electronics	Students will compare and contrast alternative solution process to solve basic problems of electronic devices	The students can effectively use the appropriate tool to understand the concept better

• Images / Screenshot of the practice:

Innovative Teaching Method Execution

Operation of Zener Diode – Virtual Lab



An MoE Govt of India Initiative

Zener Diode - LOAD Regulator

INSTRUCTION

EXPERIMENTAL TABLE

DC Voltage (V_{DC}): 10 V Zener Voltage (V_Z): 5 V

Series Resistance (R_S): 0.505 K Ω

Serial No.	Load Resistance (R_L) Ohm	Load Current (I_L) mA	Zener Current (I_Z) mA	Regulated Output Voltage (V_O) V	% Volt Regulation
1	495	10.1	0	10	50.5
2	640	7.81	2.09	5.00	44.1
3	709	7.05	2.85	5.00	41.6
4	808	6.19	3.71	5.00	38.5
5	915	5.46	4.44	5.00	35.6

CONTROLS

DC volt : Volt

Zener Diode (V_Z) : Volt

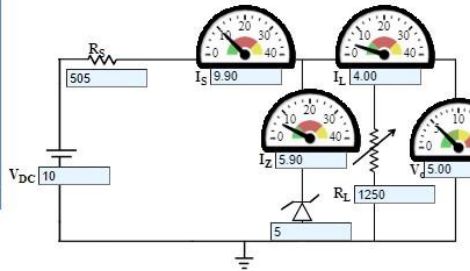
Resistance (R_S) : Ohms

Resistance (R_L) : Ohms

Print It

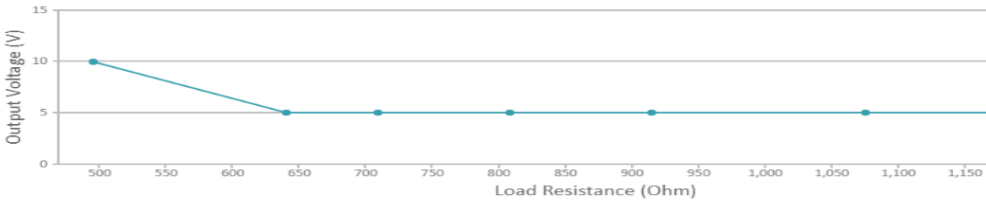
Take another set of Voltage for another Zener

Add to Table Plot Clear



GRAPH PLOT

RI-Vo Plot



Load Resistance (Ohm)	Output Voltage (V)
500	10
650	5
709	5
808	5
915	5

- **Reflective Critique:**

- ❖ ***Feedback of practice from students and other stakeholders:***

- ✓ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.
- ✓ Also they are able to visualise the IV characteristics of zener diode, therefore they easily understand the concept.

- ❖ ***Benefit of the practice:***

The process of simulating a scenario to practice different responses and actions to a real life situation is extremely effective in knowledge retention. This is because knowledge isn't in theory – the user needs to apply it in a real-life situation. Simulations can be slowed down to study behavior more closely. Conditions can be varied and outcomes investigated. Also Critical situations can be investigated without risk.

- ❖ ***Challenges faced in implementation:***

I planned the activity for 15 minutes. But in Class room it takes 25 minutes.

References:

1. David A. Bell , "Electronic devices and circuits", Oxford University higher education, 5th edition 2008.
2. S.K. Bhattacharya "Basic Electrical and Electronics Engineering", Pearson Education, Second Edition, 2017.

Signature of Faculty Member

HOD