Department of Electrical and Electronics Engineering
Academic Year 2024 - 2025 (Even Semester)

Degree, Semester & Branch: II Semester B.E-Mechanical Engineering
Course Code & Title: BE3251 - Basic Electrical and Electronics Engineering
Name of the Faculty member: Dr.P.Prem

Innovative Practice Description

- **Unit / Topic: Unit V / Instrument Transformer**
- **Course Outcome:** CO5
- **Topic Learning Outcome:** TLO16
- **Activity Chosen:** Flipped Classroom
- **Justification:**
  This topic is chosen, since it can be easily understood by students. Students can improve their understanding on this topic by this activity. More time for discussion is given the class unlike traditional learning. This activity greatly helps the student to know the concept much deeper.
- **Time Allotted for the Activity:** 25 Minutes
- **Details of the Implementation:**
  Each team was asked to discuss about the topic – Instrument Transformer (Current and Potential transformer). Students in each team were asked to present the topic. After the presentation, students could ask questions to the presenting team.
- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO5	3	1	1	3	3	-	-	1	-	3	-	1			

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	**PO10**
	3
Justification for correlation	The students can communicate effectively

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

- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***

    The students found the activity engaging. They came up with new ideas to explain the concept of transformers.

  - ***Benefit of the practice:***

    The students can communicate effectively

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

    Few students were found non participative. So, they were permitted to communicate in native language to improve their confidence

References:

1. Kothari DP and I.J Nagrath, "Basic Electrical and Electronics Engineering", Second Edition, McGraw Hill Education, 2020
2. S.K. Bhattacharya "Basic Electrical and Electronics Engineering", Pearson Education, Second Edition, 2017.

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Innovative Practice Description

- **Unit / Topic:** Unit III / Operation of Zener Diode
- **Course Outcome:** CO 3
- **Unit Outcome:** TLO7
- **Activity Chosen:** Virtual Lab
- **Justification:**

Virtual lab enables a virtual teaching and learning environment which develops students' practical knowledge. It is one of the most important eLearning tools that allows the student to perform various experiments without any constraints to place or time. Through this VLAB, the 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 10V
2. Set the Series Resistance (R_S) to 505 Ω
3. Set Zener voltage (V_Z) to 5V.
4. Vary the Load Resistance (R_L).
5. Voltmeter to be placed parallel to load resistor and ammeter in series with the series resistor.
6. Choose Load Resistance so that Zener diode is 'on' mode.
7. Note the Voltmeter and Ammeter readings for different values of Load Resistance.
8. Note the Load current(I_L), zener current(I_Z), Output voltage(V_O)
9. Calculate the voltage regulation.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO3	3	1	1	3	3	-	-	1	-	3	-	1	-	-	-

(1 – Low 2 – Moderate 3 – High)

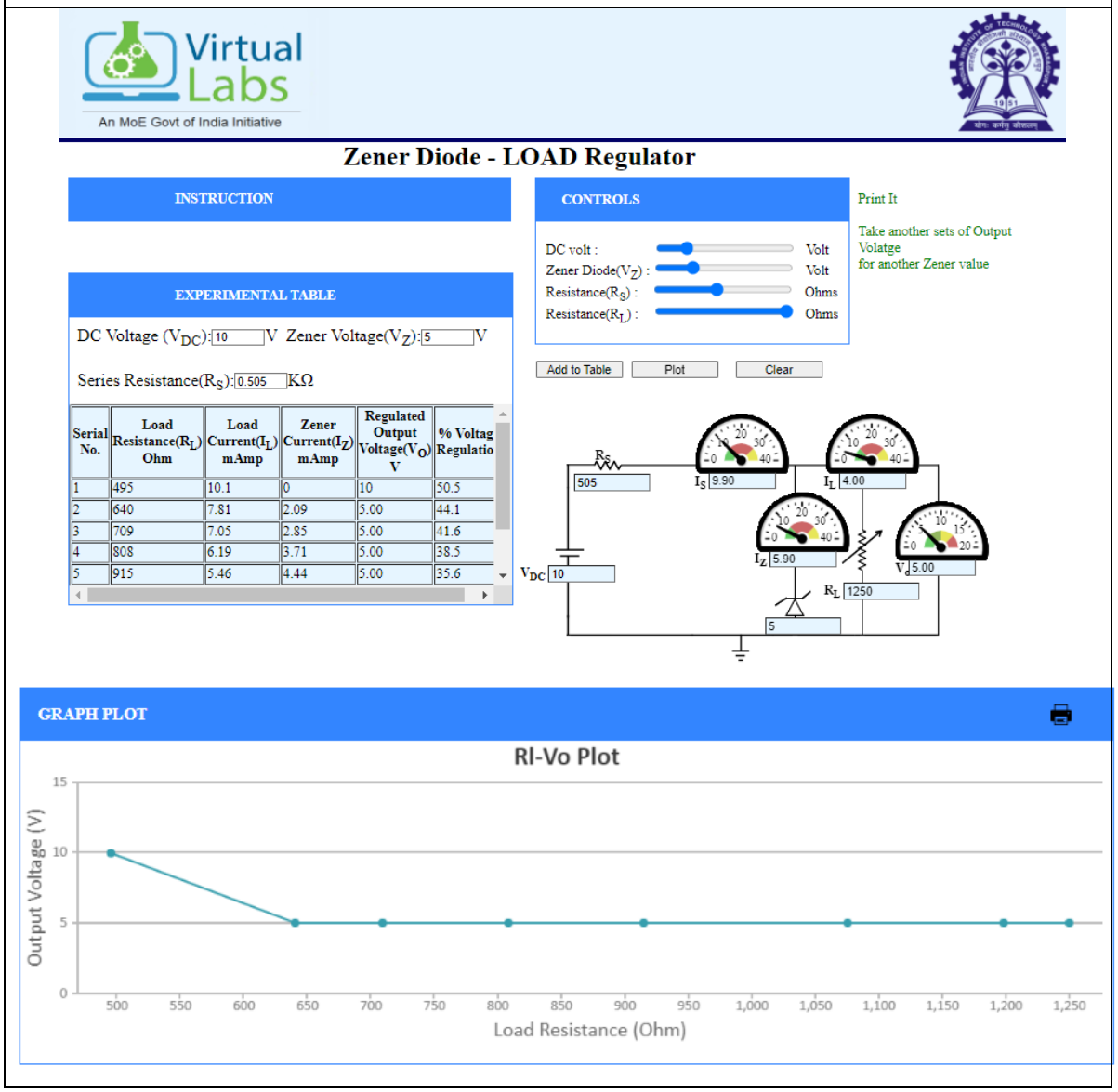
- **PO / PSO mapped:**

Innovative practice	PO5
	1
Justification for correlation	The students can effectively use the virtual lab and acquire knowledge about the characteristics.

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

Innovative Teaching Method Execution

Operation of Zener Diode – Virtual Lab



- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***
    - ✓ More questions were asked to the students and came to know that they understood the concept well and the usage of virtual lab.
    - ✓ They could be able to plot V-I characteristics of zener diode.

  - ***Benefit of the practice:***

    Beyond knowing the theoretical concepts, it is important to implement the concepts practically. So, knowing simulation is also needed to improve the technical knowledge of the students. Students can correlate the concepts studied theoretically with the experiments they simulated

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

    I planned the activity for 15 minutes. But it takes 30 minutes to implement.

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.

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Innovative Practice Description

- **Unit / Topic: Unit IV / Error Detection and Error correction codes**
- **Course Outcome:** CO 4
- **Unit Outcome:** TLO11
- **Activity Chosen:** Think pair share
- **Justification:**
  - ✓ Implementing this activity helps the students to think about any topic.
  - ✓ It enables the students to share ideas with classmates and enhance their oral communication skills.
- **Time Allotted for the Activity:** 15 minutes
- **Details of the Implementation:**
  Think-Pair-Share is an innovative practice conducted after explaining about the Binary codes to the students. First, I instruct the students to think about error detection and correction for 2 minutes. Then I grouped them in to pairs to discuss their approach among them to detect and correct the code for 3 minutes. Finally, I asked each pair to share their answers with the entire class for 10 minutes.
- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO4	3	1	1	3	3	-	-	1	1	3	-	1	-	-	-

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	PO9
	1
Justification for correlation	The students can function effectively as a team and learn the concepts

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

- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***
    - ✓ Students understood the concept well and able to solve any given problem and detect the error and correct.
    - ✓ I have asked questions from the students and came to know that they could analyse and detect the error codes easily.
  - ***Benefit of the practice:***

    Think-pair-share activity makes all the students to involve and discuss about the topic. This enhances them to improve their idea representation and team work.
  - ***Challenges faced in implementation:***

    I planned the activity for 10 minutes. But in Class room it takes 20 minutes.

References:

1. Kothari DP and I.J Nagrath, "Basic Electrical and Electronics Engineering", Second Edition, McGraw Hill Education, 2020
2. S.K. Bhattacharya "Basic Electrical and Electronics Engineering", Pearson Education, Second Edition, 2017.

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