**Round 1**

**Experiment Basic Electrical Engineering Lab**

| **Discipline** | **Electrical Engineering/ Electrical and Electronics Engg.** |
| --- | --- |
| **Lab** | **Basic Electrical Engineering Lab** |
| **Experiment** | **Connection and measurement of power consumption of a fluorescent lamp (tube light)** |

**1.Focus Area : Instrumentation and Practical Skills**

By this experiment we want students to understand the connections of fluorescent lamp with the help of starter and choke coil and measure power consumed in the fluorescent lamp with the help of single phase wattmeter in the single phase circuit. Also students will able to calculate the power factor of the circuit.

**2.Learning Objectives and Cognitive Level**

**Description:**

There will be a tentative circuit diagram shown in the theory part of the experiment. There will be block diagram of different instruments provided in the simulation and the same will be required to be connected as per the circuit diagram shown in the theoretical part by student while performing the experiment. After completing the circuit diagram students will record the reading of wattmeter, voltmeter and Ammeter. Based on the reading students will calculate the power factor of the circuit.

**Method:**

To achieve attainment of all the objectives the experiment is designed so that students can learn through performing.

| **Sr. No** | **Learning Objective** | **Cognitive Level** | **Action Verb** |
| --- | --- | --- | --- |
| 1. | User will be able to:  Understand fluorescent tube, starter, choke coil, ammeter, voltmeter and wattmeter connection in 1-Phase circuit. | Understand | [Describe](http://vlabs.iitb.ac.in/vlabs-dev/document.php) |
| 2. | User will be able to:  calculate the power consumed in the fluorescent tube | [Apply](http://vlabs.iitb.ac.in/vlabs-dev/document.php) | [Calculate](http://vlabs.iitb.ac.in/vlabs-dev/document.php) |
| 3. | User will be able to: Calculate the power factor of the circuit. | [Apply](http://vlabs.iitb.ac.in/vlabs-dev/document.php) | [Calculate](http://vlabs.iitb.ac.in/vlabs-dev/document.php) |

**3.Instructional Strategy**

Name of Instructional Strategy : Expository

Assessment Method: Formative assessment

**Description:**

Step by step instructions are provided at each level in the simulator to make it more user friendly.

**Scope:**

With this experiment students will learn the connection and power consumed in fluorescent lamp.

**4.Task & Assessment Questions:**

Read the theory and comprehend the concepts related to the experiment. (LO1, LO2, LO3)

| **Sr. No** | **Learning Objective** | **Task to be performed by the student in the simulator** | **Assessment Questions as per LO & Task** |
| --- | --- | --- | --- |
| 1. | Understand fluorescent tube, starter, choke coil and wattmeter connection in 1-Phase circuit. | Students will make connections in the simulator. | 1.How choke coil and starter are connected in the 1-Phase circuit for measurement of power?  **A. series and parallel**  B. series and series  C. parallel and parallel  D. parallel and series |
| 2. | Calculate the power consumed in the fluorescent tube | After proper connection student will record the wattmeter, voltmeter and ammeter reading in the observation table | 1.What is the formula for calculating power of 1-phase load?  **A. VA Cos Φ**  B. 3VA CosΦ  C. 3 VA CosΦ  D. 2VA CosΦ |
| 3. | Calculate the power factor of the circuit. | By using the readings of wattmeter, voltmeter, and ammeter student will calculate power factor of the circuit. | 1.What is the formula for calculating power factor in 1-phase circuit? |

**5.Simulator Interactions:**

| **Sr.No** | **What Students will do?** | **What Simulator will do?** | **Purpose of the task** |
| --- | --- | --- | --- |
| 1. | Student click on the simulation tab. | Simulator screen of the experiment will open up. | To open the screen for performing the experiment. |
| 2. | Draw the circuit diagram according to the circuit provided in the theoretical part by using the different blocks of instrument. | Circuit is drawn accordingly in the simulator. | Circuit diagram is formed for which student have to calculate power and power factor. |
| 3. | Switch on the circuit to observe and note the wattmeter, voltmeter and ammeter reading. | Simulator will show the value of voltage, current and power through voltmeter, ammeter and wattmeter. | Readings of voltmeter, ammeter and wattmeter helps in calculating power consumed by fluorescent tube and power factor of the circuit. |

You can add more rows by copying the last row