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| Course Name: | **Elements of Electrical and Electronics Engineering Laboratory** | **Semester:** | **I** |
| **Date of Performance:** | **08 / 11 / 2024** | **Batch No:** | **C4-1** |
| **Student Name:** | **Dhruv Pankhania** | **Roll No:** | **16010124216** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 20** |

**Experiment No: 7**

**Title:** **Measurement of Power using Two Wattmeter Method**

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| **Aim and Objective of the Experiment:** |
| * To measure the power of three phase power using Two Wattmeter Method |

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| **COs to be achieved:** |
| **CO2:** Demonstrate and analyze steady state response of single phase and three phase circuits |

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| **Circuit Diagram:** |
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| **Stepwise-Procedure:** |
| 1. 1.Connect the circuit as shown in circuit diagram 2. 2. Increase the load and note down the reading VL,IL,W1 and W2 3. 3. Practically you will obtain total power W=W1+W2 4. 4. Theoretically power is measured by using formula P=√3VLILcosϕ,   using cosϕ=1(unity) for resistive load. |

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| **Observation Table:**   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Sr No.** | **VL (Volts)** | **IL**  **(Amp)** | | **W1**  **(KW)** | | **W2**  **(KW)** | | **W= (W1+W2)**  **(KW)** | | **P= VLIL Cosϕ (KW)** | **Lamp**  **load given from lamp bank**  **(KW)** | |  |  | **TH** | **PR** | **TH** | **PR** | **TH** | **PR** | **TH** | **PR** |  |  | | **1** | 384.5 | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | | **2** | 384.5 | 0.9021 | 0.9 | 300.38 | 268 | 300.38 | 264 | 600.76 | 532 | 0.6007 | 0.6 | | **3** | 384.5 | 1.8018 | 1.7 | 599.98 | 588 | 599.98 | 596 | 1199.96 | 1184 | 1.1999 | 1.2 | | **4** | 384.5 | 2.7028 | 2.6 | 899.99 | 860 | 899.99 | 880 | 1799.98 | 1740 | 1.7999 | 1.8 | | **5** | 384.5 | 3.4535 | 3.4 | 1149.96 | 1060 | 1149.96 | 1180 | 2299.92 | 2240 | 2.2997 | 2.3 |   **Theoretical Calculations:**  **Power= x VL x IL x cos φ**  **cos φ=1**  **Power =Wattage rating of lamp load x No of lamps (One lamp is of 100W rating)**  **W1= VL x IL x cos (30+φ)**  **Φ=0**  **W2= VL x IL x cos (30-φ)**  **Total Power=P=W1+W2** |

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| **Conclusion:** |
| We measured the power of three phase power using Two Wattmeter Method and analyze steady state response of single phase and three phase circuits. |

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| **Signature of faculty in-charge with Date:** |