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| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **I** |
| **Date of Performance:** | **27/10 / 2023** | **Batch No:** | **C4-1** |
| **Faculty Name:** |  | **Roll No:** | **16010123217** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 25** |

**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 = √3VLILCOSϕ (KW)** | **Lamp**  **load given from lamp bank**  **(KW)** | |  |  | **TH** | **PR** | **TH** | **PR** | **TH** | **PR** | **TH** | **PR** |  |  | | 1 | 397.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | **2** | 395.5 | 0.88 | 0.88 | 300 | 200 | 300 | 300 | 600 | 500 | 602.82 | 600 | | **3** | 395.0 | 1.75 | 1.76 | 600 | 300 | 600 | 600 | 1200 | 900 | 1204.12 | 1200 | | **4** | 395.1 | 2.63 | 2.63 | 900 | 600 | 900 | 880 | 1800 | 1480 | 1799.8 | 1800 | | **5** | 395.1 | 3.51 | 3.48 | 1200 | 940 | 1200 | 1160 | 2400 | 2040 | 2381.48 | 2400 | | **6** | 393.6 | 2.93 | 2.63 | 1000 | 880 | 1000 | 880 | 2000 | 1760 | 1792.96 | 2000 |   **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:** |
| Through this experiment, it becomes evident that the double-wattmeter setup is an indispensable tool for accurately assessing power in three-phase systems. Its versatility, accuracy, and applicability to various load conditions make it a vital component in the field of electrical engineering. |

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