Course Name:	Elements of Electrical and Electronics Engineering Laboratory	Semester:	I/II
Date of Performance:	8 / 11 / 2024	Batch No:	C4-01
Student Name:	RAMESH. S. PATEL	Roll No:	16010124224
Faculty Sign & Date:		Grade/Marks:	/ 20

Experiment No: 7

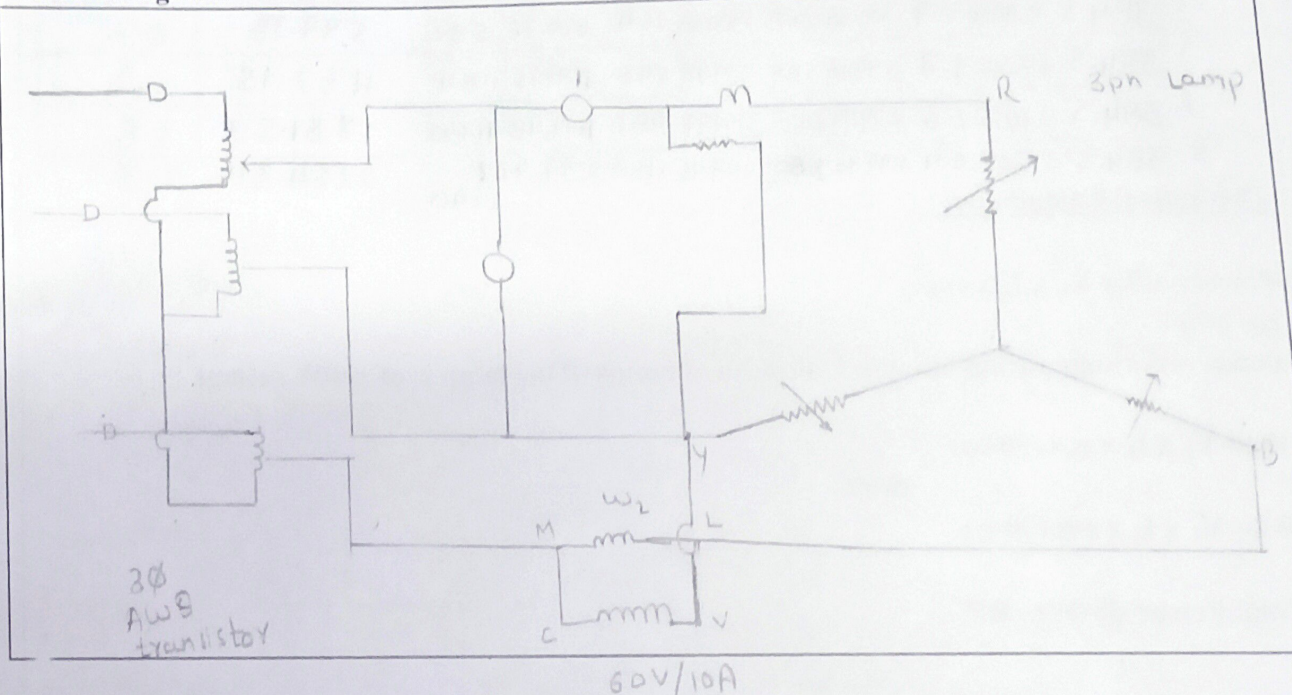## Title: Measurement of Power using Two Wattmeter Method

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

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

Circuit Diagram:

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Stepwise-Procedure:
1. Connect the circuit as shown in circuit diagram
2. Increase the load and note down the reading VL,IL,W1 and W2
3. Practically you will obtain total power W=W1+W2
4. Theoretically power is measured by using formula $P=\sqrt{3}V_LI_L\cos\phi$, using $\cos\phi=1$(unity) for resistive load.

Observation Table:

Sr.no	V_L (Volts)	I_L (Amp)		W_1 (KW)		W_2 (KW)		$W=$ (W_1+W_2) (KW)		$P=$ $\sqrt{3}V_LI_L\cos\phi$ (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	599.38	0.6
3	384.5	1.8018	1.7	599.98	588	599.98	596	1199.96	1184	1132.15	1.2
4	384.5	2.7018	2.6	899.99	860	899.99	886	1799.98	1740	1731.53	1.8
5	384.5	3.4535	3.4	1149.96	1060	1149.96	1180	2299.92 / 2240		2264.31	2.3

Theoretical Calculations:

Power= $\sqrt{3} \times V_L \times I_L \times \cos\varphi$

$\cos\varphi=1$

Power =Wattage rating of lamp load x No of lamps (One lamp is of 100W rating)

W1= $V_L \times I_L \times \cos(30+\varphi)$

$\Phi=0$

W2= $V_L \times I_L \times \cos(30-\varphi)$

Total Power=P=W1+W2

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Conclusion:

The two wattmeter Method proves to be a robust and accurate technique for measuring 3 phase power, ensuring reliable assesment of power consumption in diverse electric systems.

Signature of faculty in-charge with Date: