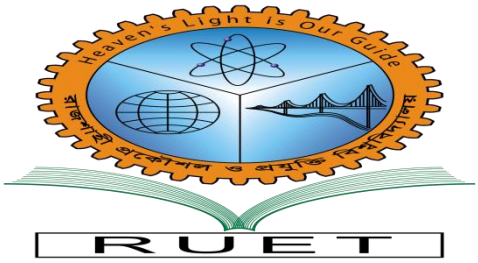
Heaven's Light is Our Guide



Rajshahi University of Engineering & Technology

Department of Electrical & Computer Engineering

Lab report

Course Code : ECE 1202

Course Title : Circuits and Systems -II Sessional .
Date of Experiment : 10-09-2024

Date of Submission :24 -09-2024

Submitted To:	Submitted By:
Oishi Jyoti **Assistant Professor** **Department of ECE, RUET**	**Name : Md.Abu Rahul Nafiz Pk** **Roll : 2210020** **Registration : 1074** **Session : 2022-2023** **Department of ECE, RUET**

Experiment No :3

Experiment Name :Power measurement of a 3-phase balanced system using two Wattmeter method.

Objectives:

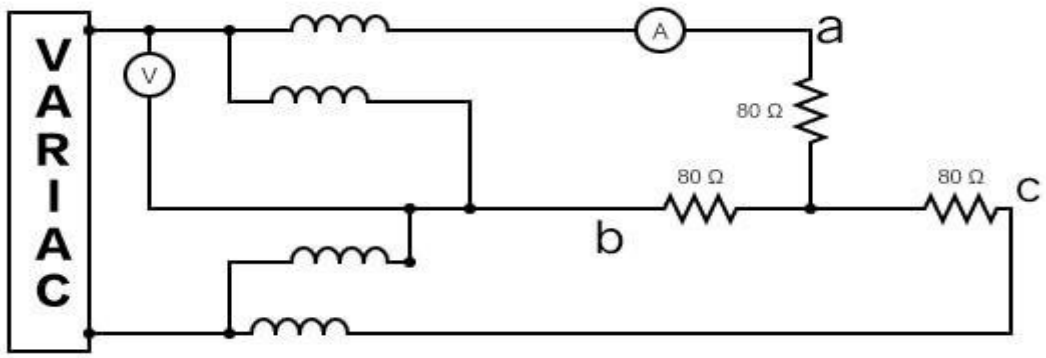
i) To determine total power from the balanced 3-phase system.
ii) To analize three-phase systems.

Theory:

The measurement of 3 phase power by 2 wattmeter method is an important technique which is used to calculate the power supplied to a 3 phase system with balanced or unbalanced loads in electrical engineering, renowned for its accuracy and efficiency. This method is indispensable for analyzing three-phase systems, which are extensively utilized in industrial and commercial power distribution. Understanding this method not only helps in precise power measurement but also aids in diagnosing system performance and efficiency.

Here, $P_T = \sqrt{3}\, V_L I_L$

Circuit Diagram:



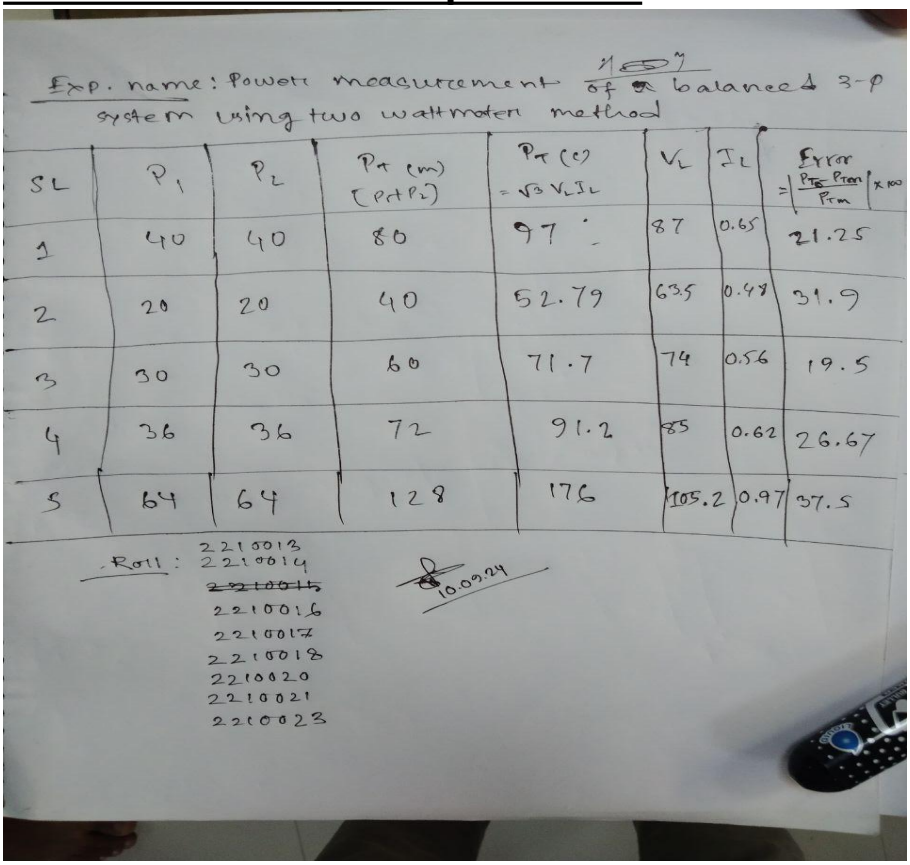
Required Apparatus:

1.Source
2. Ammeter/Clamp meter
3.Resistor (Three)
4.Connecting Wire
5.Multimeter
6.VARIAC
7.Wattmeter

Data Table:

Sl	P_1	P_2	$P_{T(M)}$	$P_{T(Cal)}$	I_L	V_L	% error
1	40	40	80	97	0.65	87	21.25
2	20	20	40	52.8	0.48	63.5	31.9
3	30	30	60	71.7	0.56	74	19.5
4	36	36	72	91.2	0.62	85	26.67
5	64	64	128	176	0.97	1052	37.5

Data table from lab Experiment:



Results:

This experiment satisfied those two equaltions;

$$P_T = \sqrt{3}\, V_L I_L$$

and the calculative power and the mathematical power is almost equal but there is a little bit error .the average error is

$$\% \text{ error} = \frac{21.5+31.9+19.5+26.67+37.5}{5} \%$$

$$= 27.414\%$$