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 & Systems - II Sessional

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Submitted To:	Submitted By:
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1.1 Experiment No. : 01

1.2 Name of the Experiment: Study the relation between phase and line voltage of wye connected three phase balanced

1.3 Theory:

In balanced "Y" circuits, the line voltage is equal to phase voltage times the square root of 3, while the line current is equal to phase current.

The magnitude of the line voltage V_L is $\sqrt{3}$ times the magnitude of the voltages V_p

$$\mathbf{V_L = \sqrt{3}\ Vp}$$

The Phase current is equal to line current

$$\mathbf{I_p = I_L}$$

1.4 Circuit Diagram :

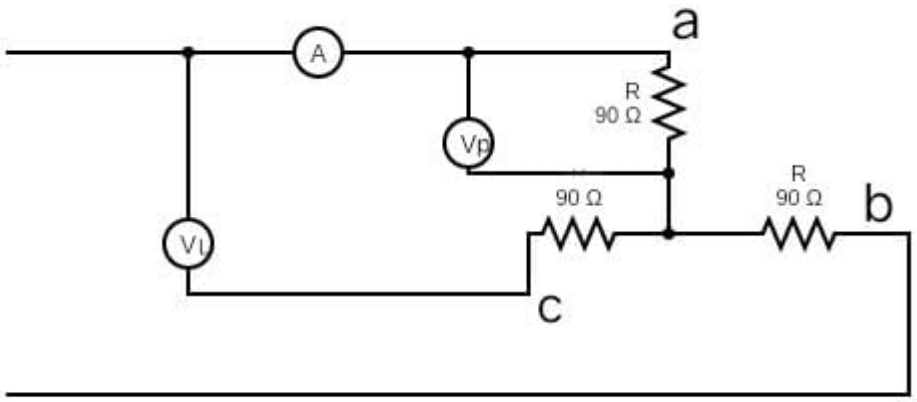


Fig. –¬01—¬ Circuit Diagram wye-wye connected system .

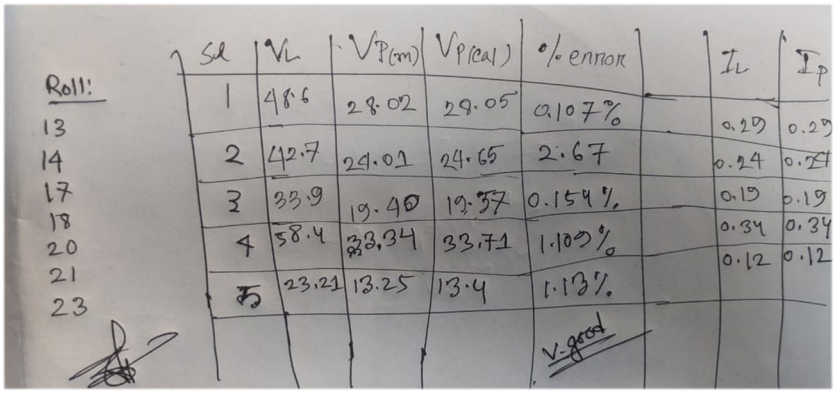
1.5 Required Apparatus:

1. AC voltage source
2. step-down transformer.
3. Resistor . (3 piece)
4. Connecting wires.
5. Ammeter .
6. Voltmeter .
7. Multimeter .

1.6 Data Table:

Sl	V_L	$V_{P(m)}$	$V_{P(cal)}$	% error	I_L	I_P
1	48.6 V	28.02 V	28.05 V	0.107%	0.29	0.29
2	42.7 V	24.01 V	24.65 V	2.67%	0.24	0.24
3	33.9 V	19.40 V	19.37 V	0.154%	0.19	0.19
4	58.4 V	33.34 V	33.71 V	1.109%	0.34	0.34
5	23.21 V	13.25 V	13.4 V	1.13%	0.12	0.12

1.7 Data table from lab Experiment:



1.9 Result:

Because of having different limitations, some errors have been found. From the experiment we can come to the decision that the relation between phase and line voltage and current is correct and applicable . $\mathbf{V_L = \sqrt{3}\ Vp}$ $\mathbf{I_p = I_L}$

$$\% \text{ of } \boldsymbol{error} = \frac{0.107+2.67+0.154+1.109+1.13}{5}\%$$
$$= 1.034\ \%$$

1.10 Discussion:

1. For the 1st Time I learn to use step down transformer .
2. I learn to handle three phase .

1.11 Precaution:

1. Low voltage source should be used for this experiment to avoid risks.
2. Wires should be connected properly.
3. We should keep ourself away from wire when line is ON .

1.12 Reference:

Fundamentals of Electric Circuits by Charles K. Alexander & Matthew N. O. Sadiku.