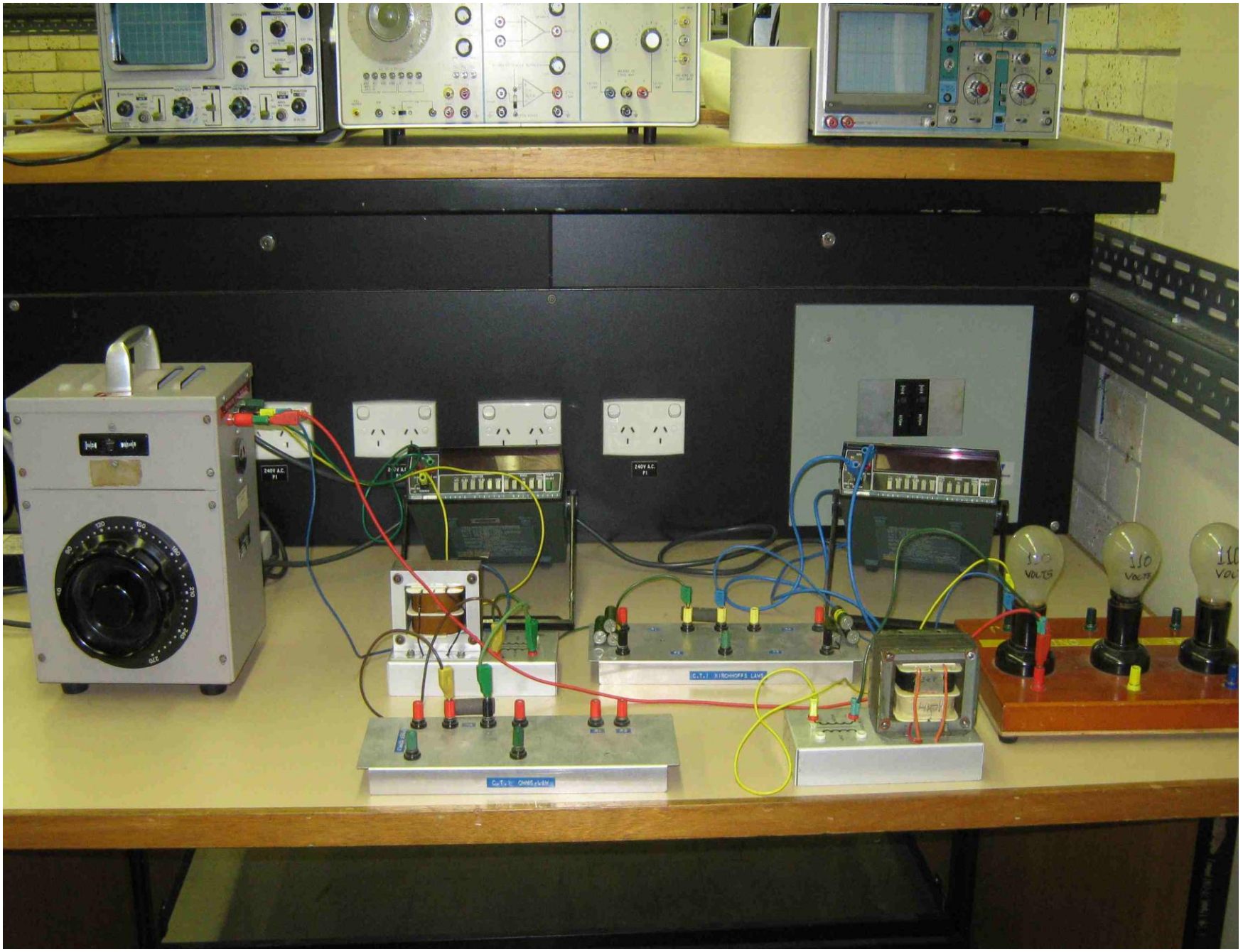
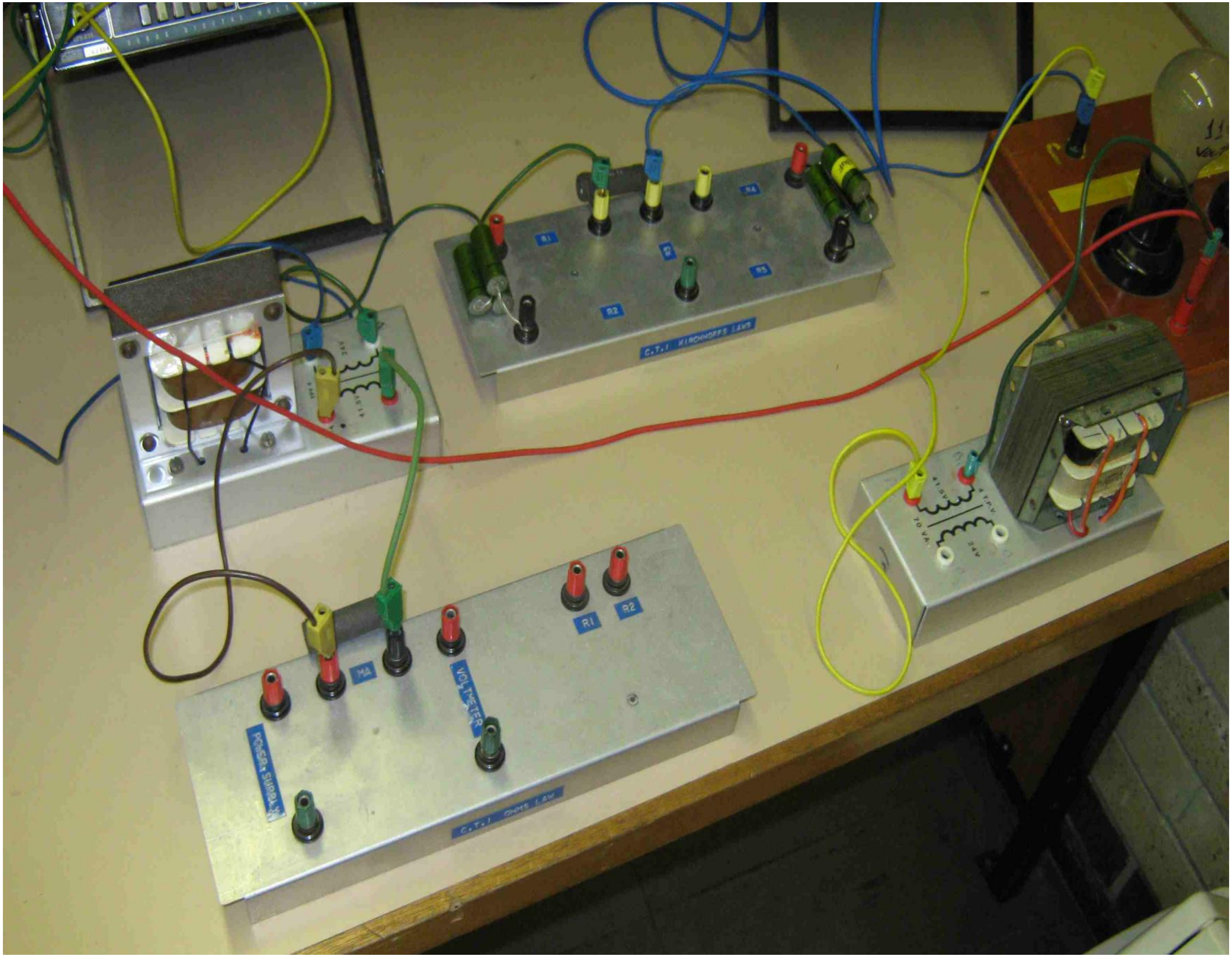
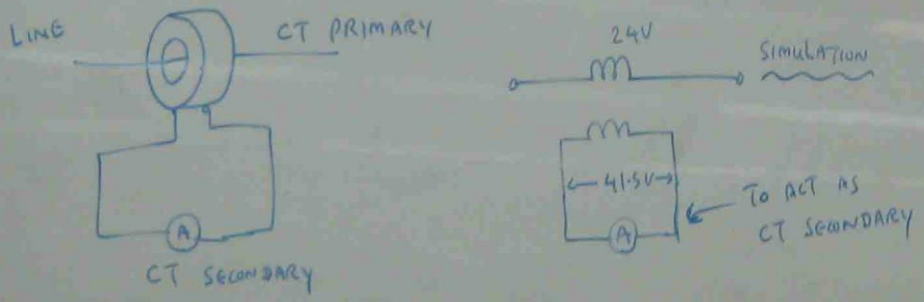

240V A.C.
110 VOLTS
110 VOLTS


C.T.I KIRCHHOFFS LAWS
MA
VOLTMETER
R1
R2
POWER SUPPLY
C.T.I OHMS LAW

POWER SYSTEM PROTECTION PRACTICAL (2)

CURRENT TRANSFORMER RATIO

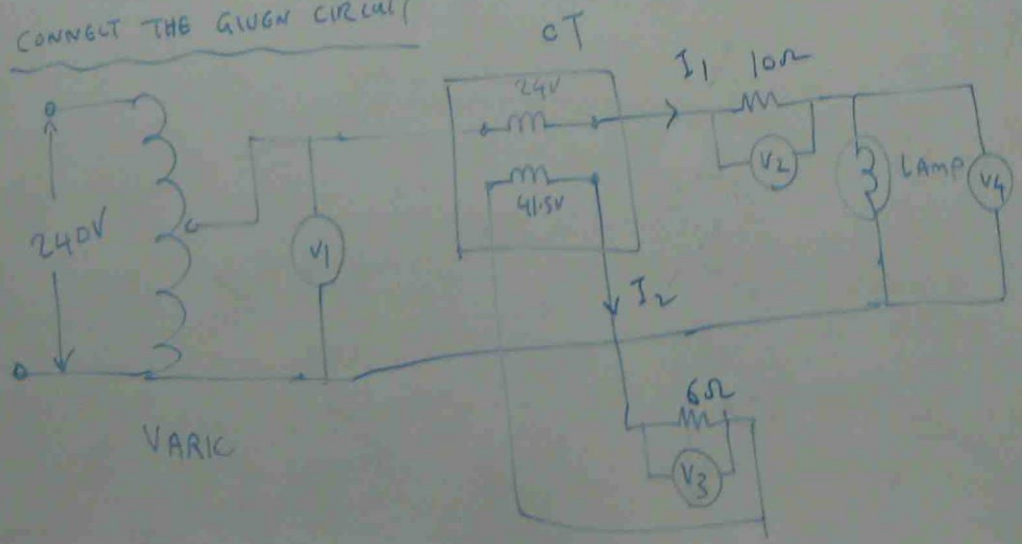


TAKE THE READINGS & FILL IN THE TABLE

V_1	V_2	$I_1 = \frac{V_2}{10\Omega}$	V_3	$I_2 = \frac{V_3}{6\Omega}$	$\frac{I_1}{I_2} = a$ CT RATIO
4V					$a_1 =$
5V					$a_2 =$
6V					$a_3 =$
7V					$a_4 =$

AVERAGE CT RATIO = $\frac{a_1 + a_2 + a_3 + a_4}{4}$

CONNECT THE GIVEN CIRCUIT



CT RATIO

$\frac{I_1}{I_2} = a$

$a_1 =$

$a_2 =$

$a_3 =$

$a_4 =$

THEN ADJUST

$V_3 = 0.3\ V$ (OR) $I_2 = \frac{0.3}{6} = 0.05\ A$

USE CT RATIO AND CALCULATE

PRIMARY CURRENT I_1

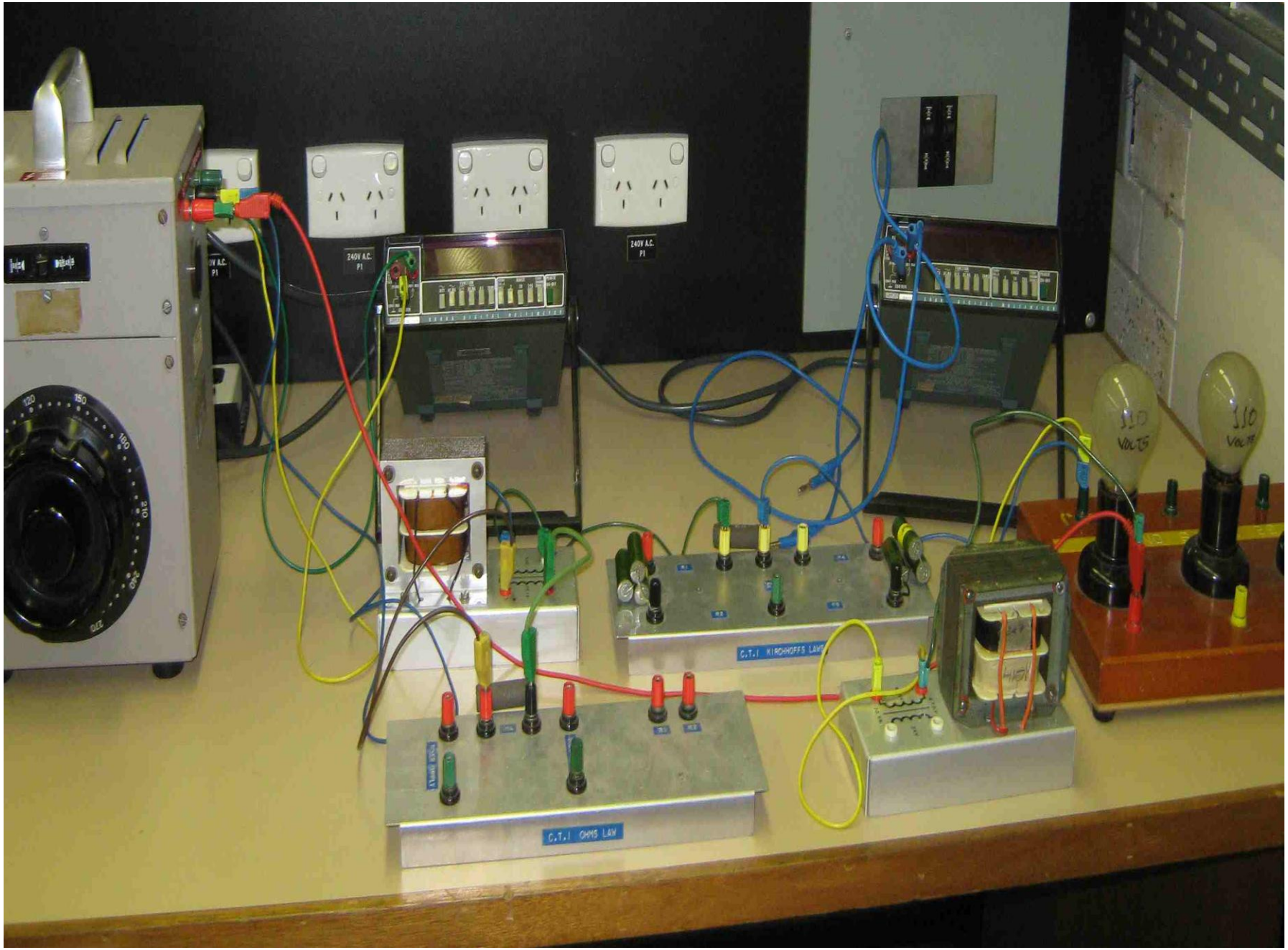
I_1 = AVERAGE CT RATIO × 0.5 AMP

=

THEN MEASURE V_2 AND FIND

$I_1 = \frac{V_2}{10\ \Omega}$

COMPARE CALCULATED RESULT AND MEASURED RESULT.

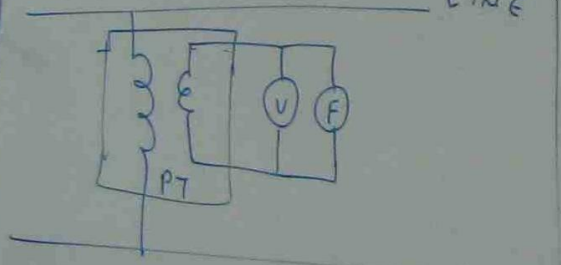

240V A.C.
P1
240V A.C.
P1
C.T.I OHMS LAW
110
VOLTS
110
VOLTS

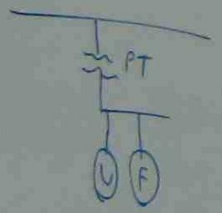
PROTECTIVE TRANSFORMERS

CT - CURRENT TRANSFORMER & PROTECTIVE TRANSFORMER
PT - POTENTIAL TRANSFORMER

PROTECTIVE TRANSFORMERS ARE UTILIZED TO REDUCE THE SYSTEM LEVEL HIGH VOLTAGE AND CURRENT TO RELAY LEVEL / INSTRUMENT LEVEL LOW VOLTAGE AND CURRENT.

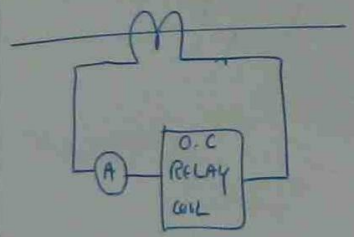
CONNECTION (PT)

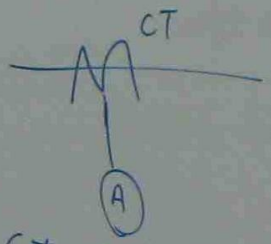




PT REDUCES HIGH VOLTAGE TO LOW VOLTAGE

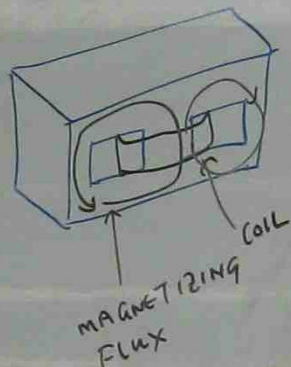
CT CONNECTION

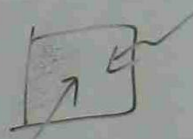




CT - REDUCES HIGH CURRENT TO LOW CURRENT

DIFFERENCE BETWEEN POWER TRANSFORMER & INSTRUMENT TRANSFORMER





$$\text{FLUX DENSITY} = \frac{\text{FLUX}}{\text{C.SA}} \quad (\text{wb})$$

IN POWER TRANSFORMER, CORE FLUX DENSITY IS CONSTANT REGRADLESS OF THE LOAD.

BUT IN CURRENT TRANSFORMER, CORE FLUX DENSITY DEPENDS ON (1) MAGNITUDE OF PRIMARY CURRENT
(2) IMPEDANCE OF SECONDARY CIRCUIT.

$$\frac{V_1}{V_2} = \frac{I_2}{I_1} = \frac{N_1}{N_2}$$