Miniboard Parallel Trainer

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MB#

WORKSHEET

Parallel P1 date

Student Name_

Students should be able to Calculate, Measure and Compare fundamental characteristics of a parallel circuit.

- <u>Measure (A)</u>: The student will use a Digital Multimeter (DMM), to measure the current (I), voltage (E), and resistance (R) for the Circuit on the P1 circuit on the Miniboard Parallel Trainer (simulator).
- <u>Calculate(B)</u>: The student will use the principles of ohms law to calculate, current (I), voltage (E), and resistance (R) for the P1 Circuit using the measurements taken with the DMM on the Miniboard Parallel Trainer (simulator) Part A.
- <u>Compare (C)</u>: The student will then compare the results of the measurements taken and those calculated using the DMM measurements to compare.

Part A Measure

Measuring Voltages: a_______ Measure and record Battery Voltage a_______ Measure and record Total Voltage Drop for circuit P1 b_______ Measuring Resistance: b_______ Measure and Record total resistance (Rt) for circuit P1 c_______ Measuring Amperage: d_______ Measure and Record the Total Amperage for circuit P1 d_______

Part B Calculate

Calculate Resistance Total for circuit P1 (E / I)=R

Using the value of the resistors according to color code bands or instructor might supply resistance values to the student. (measuring individual resistance values with a DMM are not possible in a Parallel circuit for this reason another method must be used to find individual resistance values) Using the formulas of ohms law to calculate total resistance in a parallel circuit. Calculate the total Resistance for circuit P1.

Calculate resistance total for Circuit P1 by using resistor values for all resistors.

R1 resistance (circle one- color bands or provided)	e
R2 resistance (circle one- color bands or provided)	f
Calculate Resistance Total (Rt) using resistor values	g

Calculate Amperage (E / R) = I

Current flow through any resistor is dependent on the resistance of the resistor. Therefor it must be calculated for each resistor by multiplying resistance of the individual resistor by the total amperage for the circuit (It). Then sum the amperage's for each resistor, to obtain total amperage for that circuit (It) for P1.

Calculate amperage for:

R1 amperage	(b / e)	h
R2 amperage	(b / f)	i
P1 (It) amperage total	sum	j
Calculate P1 Total Amperage	(b/c)	k

Since the amperage has been calculated for R1 and R2, resistance can be calculated for R1 and R2 using the calculated amperage for each resistor and circuit voltage:

Calculate the resistance for R1		1
Calculate the resistance for R2	(b / i)	m
Calculate Voltage (R X I)		
Calculate P1 Total Voltage Drop	(c x d)	n

Part C Compare

(measured and calculatedreadings should be within the tolerance 5%)

Voltages	Measured		Calculated		< 5% Difference Y / N
P1 Voltage Drop (Et)	b		n		
Resistance	Measured	circle one	Calculated		
R1 resistance	e	/Bands or Provided	k		
R2 resistance	f	/Bands or Provided	m		
P1 resistance total (Rt)	c		g		
Amperage	Measured		Calculated		
R1 amperage	NA		h		NA
R2 amperage	NA		i	Amperage Sum	NA
P1 amperage total (It)	d		k	j	