



# EXPLORATORY ELECTRONICS

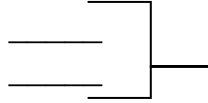
eSeries "GRADING SHEET"

NAME: \_\_\_\_\_

Partner: \_\_\_\_\_

Period: \_\_\_\_\_ Rotation: \_\_\_\_\_

MODULE GRADE: \_\_\_\_\_ COURSE GR. \_\_\_\_\_  
POST TEST \_\_\_\_\_



MODULE AVE.= \_\_\_\_\_

EXP. ELECTRONICS "WORKSHEET"

"WORKSHEET" TOTAL= \_\_\_\_\_

LAB PERFORMANCE: \_\_\_\_\_  
(If you are absent, write ABS on the line for the day you miss and **DISCUSS** what you need to make up with the teacher)

LAB PERFORMANCE TOTAL= \_\_\_\_\_

**Extra Credit**—Discuss this with the instructor before beginning!!!

WORD SEARCH \_\_\_\_\_(5)

MODULE REPORT \_\_\_\_\_(5)

CHALLENGES \_\_\_\_\_(5)

"SNAP CIRCUITS" \_\_\_\_\_(5-10) at teacher's desk

MODULE NOTES \_\_\_\_\_(0-10)

LESSON 11 "Electro Magnetism" \_\_\_\_\_

TOTAL EXTRA CREDIT= \_\_\_\_\_

BONUS POINTS \*\*\* \_\_\_\_\_

## EXPLORATORY ELECTRONICS "WORKSHEET"

**LESSON 3-** Switch 1 controls Lamp # \_\_\_\_\_. Switch 2 controls Lamp # \_\_\_\_\_. When the switch is open, the metal bar for the switch is: UP or DOWN. (Circle one). (5 points)

**Fill out the Table below.**

### LESSON 3: EXERCISE #1

Fill these two tables in while answering the questions in Lesson 3.

Volt Settings	Brightness	Current
1 volt	Very Dim	_____ mA
2 volts	_____	_____ mA
3 volts	_____	_____ mA
4 volts	_____	_____ mA
5 volts	_____	_____ mA
6 volts	_____	_____ mA

10 points

### LESSON 3: EXERCISE #2

Voltage at <b>1.0</b> Volts	Current: Answers to questions #1-4	Voltage at <b>1.5</b> Volts	Current: Answers to #6-9		
#1	_____	#6	_____	_____	_____
#2	_____	#7	_____	_____	_____
#3	_____	#8	_____	_____	_____
#4	_____	#9	_____	_____	_____

10 pts

## LESSON 4-CONDUCTORS & INSULATORS

Which materials were conductors: \_\_\_\_\_.

Which materials were insulators: \_\_\_\_\_.

What makes the conductors “good” conductors of electricity (Hint explain something about the atom)

(5)

**Impacts Video-** Write notes from video clips

**Impacts Paper:** \_\_\_\_ (5)

## LESSON 5 - OHM'S LAW

**OHM'S LAW EXPERIMENT #1 & #2.** Fill out the “Data Sheet” **BELOW.**

### EXPERIMENT #1

Voltage ( V )	Resistance (R)	Calculated Current (A)	Measured Current (mA)
10 volts	100 $\Omega$	A	mA
10 volts	200 $\Omega$	A	mA
10 volts	1000 $\Omega$	A	mA
10 volts	10,000 $\Omega$	A	mA

10 pts

**EXPERIMENT #2-** Be sure to use the Amps not mAmps for the calculations below

**HINT:** Be sure to use the “A” for Amps in the equation NOT the “mA” milliamps. The equation requires Amps, not milliamps.

Current (C)	Resistance (R)		Calculated Voltage (v)		Measured Voltage
60 mA (0.06A)	100 $\Omega$	#3	v	#4	v
50 mA (0.05A)	200 $\Omega$	#7	v	#8	v
5 mA (0.005A)	1000 $\Omega$	#11	v	#12	v
1 mA (0.001A)	10,000 $\Omega$	#15	v	#16	v

10 pts

T.I.: \_\_\_\_ (10)

## LESSON 6-SERIES CIRCUIT ANALYSIS--

Question	#3 voltage	#4voltage	#5voltage	#7current	#9current	#11current		
	v	v	v	mA	mA	mA		

5 pts

## LESSON 7-PARALLEL CIRCUIT ANALYSIS

	#3	#4	#5	#7	#11	#13	#14	#15	#16	#17
	v	v	v	mA	mA	mA				

**SEE NEXT PAGE!!!**

**LESSON 8-** 3WAY SWITCHES-- Explain the experiment: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_.(10)

**LESSON 9-** Magnetism-Get the magnets from the instructor. Explain the experiment below:

\_\_\_\_\_  
\_\_\_\_\_.(5)

**After you finish the 9<sup>th</sup> lesson**, you need to work on the career activity. Go to the Tech Design 2X catalog. Then click on Exploratory Electronics ver 2.0. Click on the last lesson titled "Careers". Then click on the "Careers Activity" and follow the directions for careers in the "Orientation Packet.

**LESSON 12-CAREERS**

**Career Guidance Report-**

**C.G. NOTES:** \_\_\_\_ (10)

**STUDY GUIDE—Turned in.**

**Study Guide:** \_\_\_\_ (5)

If you finish all the work above, work on Lesson 11 in the Tech Design 2.X Catalog called: "Electro Magnetism. Explain the experiment to the instructor for a T.I. On the Extra Credit Section.

Worksheet Total: _____
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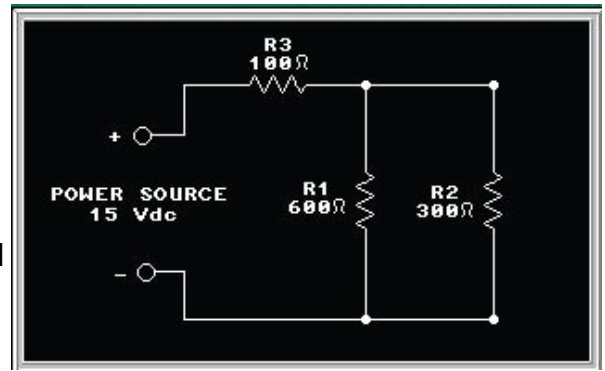
# EXPLORATORY ELECTRONICS Study Guide for Post TEST

1. The milliammeter measures current in units called \_\_\_\_\_.  
milliamperes volts analogs currents
2. The dc on a voltmeter and milliammeter stands for \_\_\_\_\_.  
damage current direct current direct connection digital current
3. An electrical diagram is called a(n) \_\_\_\_\_.  
blueprint map instruction guide schematic
4. The \_\_\_\_\_ is the control device on a flashlight.  
battery switch lamp plug
5. When a material opposes current it is called \_\_\_\_\_.  
passive stubborn solid resistance
6. In an electrical circuit, the difference in charge across an element is called \_\_\_\_\_.  
voltage drop current flow electron flow negative charge
7. A/an \_\_\_\_\_ blocks current.  
glass copper paper insulator
8. A/an \_\_\_\_\_ allows current to flow easily.  
conductor drift plug insulator
9. Ohm's law states:  
current equals voltage divided by resistance  
resistance equals voltage divided by current  
voltage equals current times resistance  
All of the above are correct.
10. Using the correct formula for Ohm's law, you can find the third value if you have \_\_\_\_\_.  
the first two values a calculator one value a voltmeter
11. Two lamps connected in series with the source will shine \_\_\_\_\_ a single lamp connected to the source.  
brighter than about the same dimmer than None of the above is correct.
12. When three identical loads are connected in series, the individual voltage drops across each load are \_\_\_\_\_ the source voltage.  
a third of half of the same as triple
13. When all components in a circuit are wired side by side, the circuit is called a \_\_\_\_\_.  
parallel circuit horizontal circuit vertical circuit side-by-side circuit
14. In a parallel circuit the \_\_\_\_\_ is the same in each path.  
voltage electrons protons wattage

15. Which resistor is in series?  
R1 R2 R3 None of the above is correct.

16. The resistors R1 and \_\_\_\_\_ are in parallel.  
R3 R1 R2 None of the above is correct.

17. When contact is made between the movable contact and the stationary contact, \_\_\_\_\_ and the lamp lights.  
current flows current is stopped electron flow stops protons flow



18. To make a three-way switch circuit you need \_\_\_\_\_ single-pole, double throw switches.  
zero one two three

19. Invisible lines of magnetic force are called \_\_\_\_\_.  
force fields field lines goal lines boundary lines

20. In the experiment, the \_\_\_\_\_ was attracted to the magnet.  
zinc strip steel strip copper strip aluminum strip

21. Opposite poles of a magnet attract and like poles \_\_\_\_\_.  
repel stick resent reject

22. To intensify the magnetic force of a coil of wire, you would increase the number of coils of wire or \_\_\_\_\_.  
shorten the wire decrease the current increase the voltage increase the current flowing through the coil

23. In nature, magnetism and electricity \_\_\_\_\_.  
exist together repel each other cancel out attract

24. Many high schools, vocational schools, and colleges offer \_\_\_\_\_.  
work-study programs internships cooperative education programs All of the above are correct.

25. All of these opportunities require the study of \_\_\_\_\_ and science.  
mathematics politics English physical education

# EXPLORATORY ELECTRONICS TEST II

## STUDY GUIDE

### Exploratory Electronics Test

The milliammeter measures current in units called \_\_\_\_\_.

- milliamperes a.
- volts b.
- analog s c.
- currents d.

The dc on a voltmeter and milliammeter stands for \_\_\_\_\_.

- damage current a.
- direct b. current
- direct connection c.
- digital current d.

An electrical diagram is called a(n) \_\_\_\_\_.

- blueprint a.
- map b.
- instruction guide c.
- schematic d.

The \_\_\_\_\_ is the control device on a flashlight.

- battery a.
- switch b.
- lamp c.
- plug d.

When a material opposes current it is called \_\_\_\_\_.

- passive a.
- stubborn b.
- solid c.
- resistance d.

In an electrical circuit, the difference in charge across an element is called \_\_\_\_\_.

- voltage a. drop
- current flow b.
- electron flow c.
- negative charged.

A/an \_\_\_\_\_ blocks current.

- glass a.
- copper b.
- paper c.
- insulator d.

A/an \_\_\_\_\_ allows current to flow easily.

- conductor a.
- drift b.
- plug c.
- insulator d.

Ohm's law states:

- current equals voltage divided by resistance a.
- resistance equals voltage divided by current b.
- voltage equals current times resistance c.
- All of the above are correct. d.

Using the correct formula for Ohm's law, you can find the third value if you have \_\_\_\_\_.

- the first two values a.
- a calculator b.
- one value c.
- a voltmeter d.

Two lamps connected in series with the source will shine \_\_\_\_\_ a single lamp connected to the source.

- brighter than a.
- about the same b.
- dimmer than c.

None of the above is correct.d.

When three identical loads are connected in series, the individual voltage drops across each load are \_\_\_\_\_ the source voltage.

a third of a.

half of b.

the same as c.

tripled.

When all components in a circuit are wired side by side, the circuit is called a \_\_\_\_\_.

parallel circuit a.

horizontal circuit b.

vertical circuit c.

side-by-side circuit d.

In a parallel circuit the \_\_\_\_\_ is the same in each path.

voltage a.

electrons b.

protons c.

wattaged.

Which resistor is in series?

R1 a.

R2 b.

R3 c.

None of the above is correct.d.

The resistors R1 and \_\_\_\_\_ are in parallel.

R3 a.

R1 b.

R2 c.

None of the above is correct.d.

When contact is made between the movable contact and the stationary contact, \_\_\_\_\_

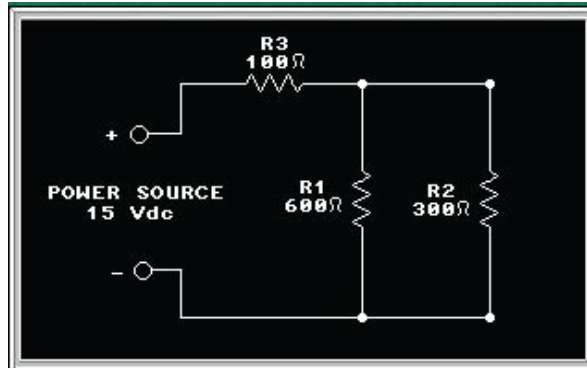
and the lamp lights.

current a. flows

current is stopped b.

electron flow stops c.

protons flow d.



To make a three-way switch circuit you need \_\_\_\_\_ single-pole, double throw switches.

zero a.

one b.

two c.

three d.

Invisible lines of magnetic force are called \_\_\_\_\_.

force fields a.

field lines b.

goal lines c.

boundary lines d.

In the experiment, the \_\_\_\_\_ was attracted to the magnet.

zinc strip a.

steel strip b.

copper strip c.

aluminum strip d.

Opposite poles of a magnet attract and like poles \_\_\_\_\_.

repel a.

stick b.

resent c.

reject d.

To intensify the magnetic force of a coil of wire, you would increase the number of coils of wire or \_\_\_\_\_.

shorten the wire a.

decrease the current b.

increase the voltage c.

increase the current flowing through the coil.

In nature, magnetism and electricity \_\_\_\_\_.

exist together a.

repel each other b.

cancel out c.

attract d.

Many high schools, vocational schools, and colleges offer \_\_\_\_\_.

work-study programs a.

internships b.

cooperative education programs c.

All of the above are correct d.

All of these opportunities require the study of \_\_\_\_\_ and science.

mathematics a.

politics b.

English c.

physical education d.