

PSC-4011 Quiz #3

Name:

Date:

A. Aluminum	F. Plastic
B. Copper	G. Porcelain
C. Germanium	H. Silicon
D. Nichrome	I. Silver
E. Helium	J. Tungsten

1. Of the above materials, name all those that could be used in each of the following applications. Give reasons for your answer.

a) Transistors and diodes *C + H*

Semiconductors

b) Light bulb filaments

J ; resistive conductor

c) Electric heating elements

D ; resistive conductor

d) Insulators for high-voltage lines

*F + G
insulators*

e) Diodes and transistors

f) Lightening conductors

A + B ; conductors

2. Are Industrial circuit wires thicker than, thinner than, or identical to those in residential circuits?

thicker (1)

Why?

To lower the resistance
So more current can flow through.

Explain your answer, referring the the appropriate formulas.

$$R = \frac{\rho L}{A} \quad ; \quad I = \frac{V}{R}$$

4. A force is exerted between two electric charges. If one of the charges is tripled, will the force increase or decrease?

increase (1)

By how much? 3X

Explain your answer, referring to the appropriate formula.

$$\textcircled{1} \quad F = \frac{k Q_1 Q_2}{d^2}$$

