SNC 1D
SAMPLE TEST 10.1-10.3

PART A: Match each key term in the left column with its definition in the right column.

Term	Definition
A. electricity _____	a material in which electrons cannot move easily from one atom to another
B. static charge _____	an electric charge that tends to stay on the surface of an object, rather than flowing away
C. charging by friction _____	generating a charge on a neutral object by touching it with a charged object
D. electrostatic series _____	a material in which electrons can move fairly well between atoms
E. insulator _____	a form of energy that results from the interaction of charged particles
F. conductor _____	a device for detecting the presence of an electric charge
G. semiconductor _____	a list of materials that have been arranged according to their ability to hold on to electrons
H. ground _____	a device that accumulates very large charges
I. electroscope _____	a material in which electrons can move easily from one atom to another
J. charging by contact _____	a process in which objects made from different materials rub against each other, producing a net static charge on each
K. laws of electric charges _____	laws that describe how two objects interact electrically when one or both are charged
L. electric field _____	the movement of electrons in a substance, caused by the electric field
M. induced charge separation _____	a property of the space around a charged object, where the effect of its charge can be felt by other objects
N. electrostatic precipitator _____	a type of cleaner that removes unwanted particles and liquid droplets from a flow of gas
O. Van de Graaf generator _____	an object that can supply a very large number of electrons to, or remove from, a charged object, thus, neutralizing the object

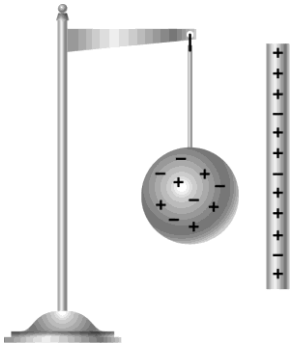
PART B: FILL IN THE BLANKS

1. *Movement of electrons creates both a negative and a positive charge.* Electrons exist in all materials, but they can be moved from a material with a _____ hold on them to a material with a _____ hold on them. When that happens, more electrons are present in one material, giving it a _____ charge, but fewer electrons are present in the other material, giving it a _____ charge. The combined charge of the two materials is always _____.

2. A piece of silk cloth is rubbed on a strip of polyethylene.
   The polyethylene will have a _____ (positive / negative) charge because it _____ (holds onto/gives up) _____ (protons/neutrons/ electrons) better than silk.

3. The electric charge on a solid object is always explained in terms of an excess or deficit of _____ (protons / neutrons / electrons) because _____
   _____

4. Will the ball be attracted to the rod? Explain why/why not. Draw the resulting diagram.



5. You can charge a balloon by rubbing it against your clothing. Then you can stick the charged balloon to a wall.

   a) The wall is charged by _____ (contact / friction / induction) because
      _____

   b) The balloon eventually falls from the wall because _____
      _____

6. A negatively charged ebonite rod is held near a pith ball electroscope. If the charge of the pith ball is...

A) positive, then the pith ball will _____.

B) neutral, then the pith ball will _____.

C) negative, then the pith ball will _____.

7. The 2 spheres are initially neutral. If there are a total of 8 positive and 8 negative charges, draw the charges in each sphere to show the changes that occur from Figure A to Figure D.

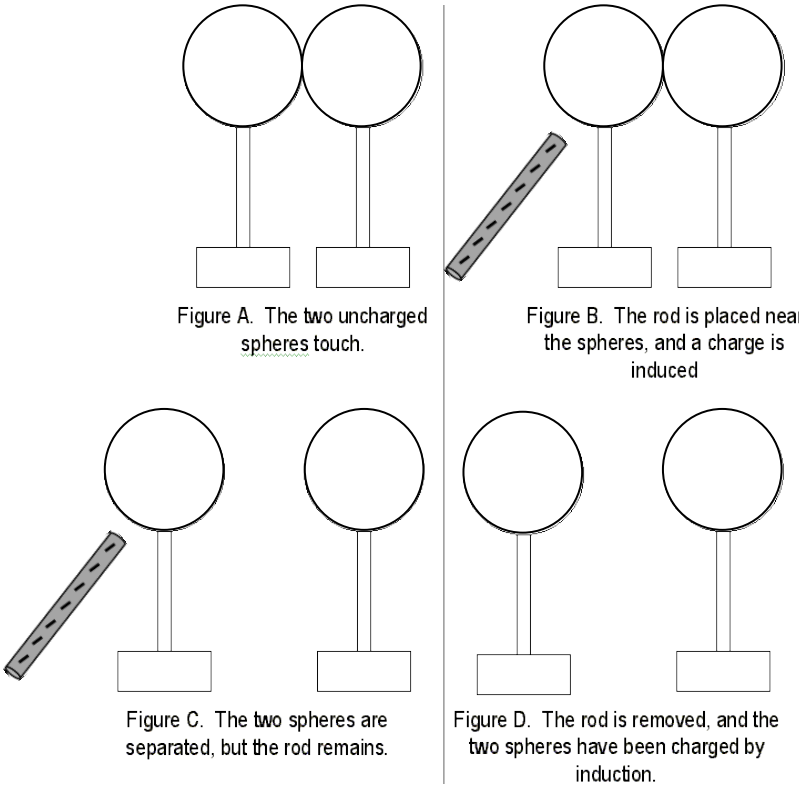


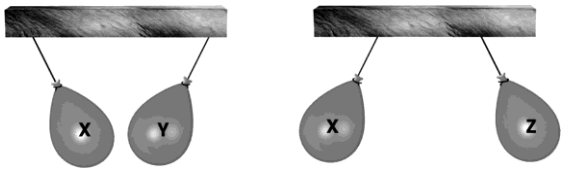
Figure A. The two uncharged spheres touch.

Figure B. The rod is placed near the spheres, and a charge is induced

Figure C. The two spheres are separated, but the rod remains.

Figure D. The rod is removed, and the two spheres have been charged by induction.

8. Check all possible charges for balloons Y and Z.



Balloon	Positive	Neutral	Negative
X	√	X	X
Y			
Z			

9. Which building needs a lightning rod more: a house in the city or a barn on a farm?

Why? _____

_____

10. Rani rubbed materials together and determined the charges:

A + X →	A= positive,	X= negative
A + W→	A= positive,	W= negative
W + S →	W= positive,	S= negative
W + X →	W= positive,	X= negative

Arrange A, W, and X in order, according to their ability to hold on to electrons, weakest first.

11. A) What evidence shows that this child has a static charge? _____

B) What generated the charge?

_____

C) A replacement slide is built of metal.

The new slide will cause _____ (more/ less/ the same) static charge.

PART C: SHORT ANSWER

1. Consider the electrostatic series. Describe the difference between rubbing objects that are closer to each other in the series than rubbing objects that are farther apart in the series.

_____

_____

_____

2. Touching a ground with a charged object causes the object to become _____

because _____

3. Describe the differences between a conductor and an insulator. Give 1 example of each in your description.

_____

_____

_____

4. You are given 2 pieces of different material, one is wool and the other is unknown. Describe how you could use a pith ball electroscope to determine which material holds on to its electrons more strongly.

_____

_____

_____

5. Modern materials used in homes, offices, and businesses have contributed to increased problems with electrostatic discharge. Name 2 such problems and list a way to prevent or reduce the effects of each.

Problems with Electrostatic Discharge	Reductions or Solutions

6. Choose one of the following to provide a brief description.

- Lightning rod
- Electrostatic precipitator
- Photocopier
- Radiation dosimeter