PHYSICS 3204

UNIT 2- SECTION 1:ELECTROSTATIC

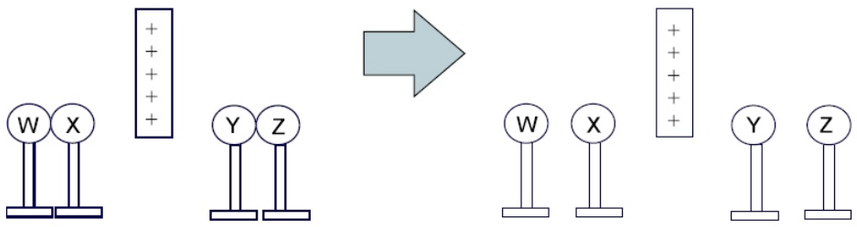
Worksheet 2 -Creating Charge

PART A: MULTIPLE CHOICE

1. A neutral electroscope becomes positively charged after it is briefly touched by a charged rod. Which explains the flow of charge?

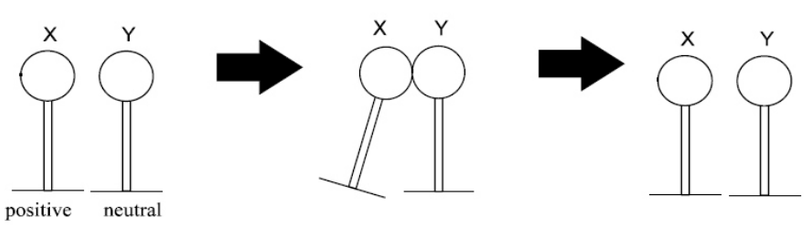
   (A) Electrons flow from the electroscope to the rod.
   (B) Electrons flow from the rod to the electroscope.
   (C) Protons flow from the electroscope to the rod.
   (D) Protons flow from the rod to the electroscope.

2. The diagram below shows four neutral spheres W, X, Y and Z on insulated stands with W touching X and Z touching Y. If a positive rod is placed between the spheres and then spheres W and Z are moved as shown, what are the resulting charges on spheres W and Z?



	W	Z
(A)	negative	negative
(B)	negative	positive
(C)	positive	negative
(D)	positive	positive

3. Spheres X and Y are on insulated stands as shown below. Sphere X, which is positively charged, comes into brief contact with sphere Y, which is neutral. When X and Y are separated what will be the charge on each sphere?

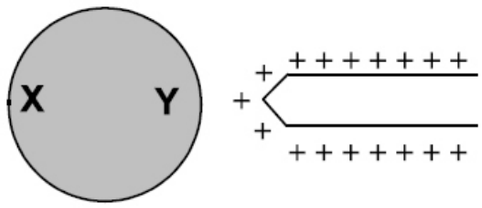


	X	Y
(A)	positive	positive
(B)	positive	negative
(C)	negative	positive
(D)	neutral	neutral

4. Which describes a neutral electroscope after it is briefly touched with a positively charged rod?

(A) top of electroscope negative, bottom of electroscope negative
(B) top of electroscope negative, bottom of electroscope positive
(C) top of electroscope positive, bottom of electroscope positive
(D) top of electroscope positive, bottom of electroscope negative

5. The diagram below shows a positively charged rod placed near, but not touching, a neutral metal ball. Which best describes what happens to the sides of the ball?

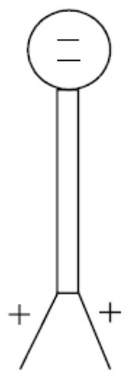


(A) X becomes negative and the ball is repelled from the rod.
(B) X becomes positive and the ball is attracted to the rod.
(C) Y becomes negative and the ball is repelled from the rod.
(D) Y becomes positive and the ball is attracted to the rod.

6. What happens to a grounded object when it is charged by induction with a positively charged rod?

(A) gains electrons from the rod
(B) gains electrons from the ground
(C) loses electrons from the rod
(D) loses electrons from the ground

7. Which best explains the charge distribution on the electroscope below?



(A) A negatively charged rod is close to, but not touching, the ball of the electroscope.
(B) A negatively charged rod has touched the ball of the electroscope.
(C) A positively charged rod is close to, but not touching, the ball of the electroscope.
(D) A positively charged rod has touched the ball of the electroscope.

8. What happens to a neutral electroscope that is briefly touched with a positively charged glass rod?

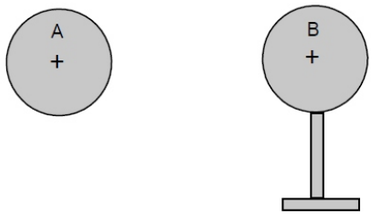
(A) gains electrons
(B) gains protons
(C) loses electrons
(D) loses protons

9. A positively charged rod is brought near one end of an uncharged metal bar. What will the end of the metal bar farthest from the charged rod become?

(A) negative as electrons move away from this end
(B) negative as protons move to this end
(C) positive as electrons move away from this end
(D) positive as protons move to this end

PART B: WRITTEN RESPONSE

1. Sphere A, which is positive, is held near a fixed positively charged sphere B as shown. Sphere A is then released and moves away from sphere B. Explain how and why the acceleration of sphere A changes as it moves away from sphere B. **JUNE 2009**



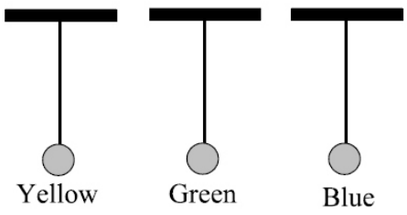
2. Using diagrams and brief explanations, describe how a negative charge on a metal leaf electroscope can be produced by induction **AUGUST 2007**

3. A charged rod is brought near a negatively charged electroscope causing the leaves to collapse. Explain what charge is on the rod. **AUGUST 2006**

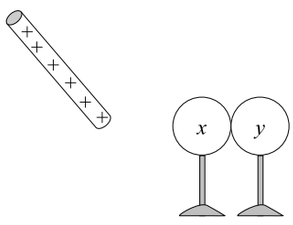
4. Using diagrams, explain how a negatively charged Van de Graaf generator can be used to induce a permanent positive charge on a neutral electroscope**. AUGUST 2005**

5. Three different pith balls are suspended by separate strings. Use the information below to determine the charges on the blue and green balls. Explain. **JUNE 2006**

- The yellow ball was charged by induction using a negatively charged rod.
- The blue ball repels the green ball.
- The blue ball is attracted to the yellow ball.



6. The diagram below shows a positively charged glass rod and two neutral metal spheres, x, and y, in contact and on insulating stands. Describe how one could cause one sphere to obtain a negative change and the other a positive charge, without touching either sphere with the glass rod. **JUNE 2005**



7. In the diagram below, a metal ball on an insulated thread moves back and forth between two bells, creating sound. Explain how this occurs. **AUGUST 2004**