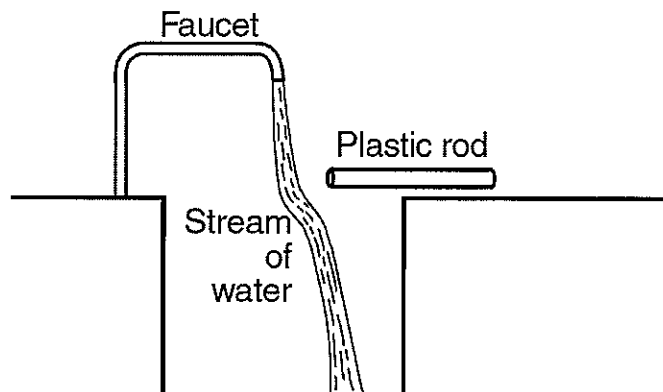


### Skill 33-Charge Transfer

1. A dry plastic rod is rubbed with wool cloth and then held near a thin stream of water from a faucet. The path of the stream of water is changed, as represented in the diagram below.



Which force causes the path of the stream of water to change due to the plastic rod?

- A) nuclear      B) magnetic      ☒ C) electrostatic      D) gravitational

2. Metal sphere *A* has a charge of  $-2$  units and an identical metal sphere, *B*, has a charge of  $-4$  units. If the spheres are brought into contact with each other and then separated, the charge on sphere *B* will be

- A) 0 units      B)  $-2$  units  
☒ C)  $-3$  units      D)  $+4$  units

$$\frac{\text{Total charge}}{\text{\# of objects}} = \frac{-2 + -4}{2} = -3$$

3. A positively charged glass rod attracts object *X*.  
The net charge of object *X*.

- ☒ A) may be zero or negative  
B) may be zero or positive  
C) must be negative  
D) must be positive

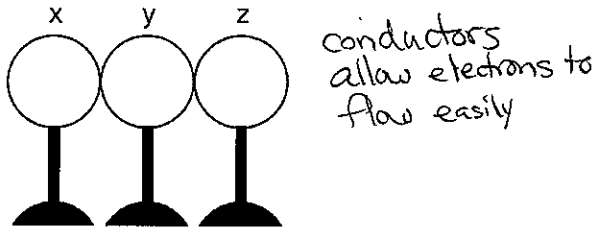
positive attracts opposite  
charged objects attract neutral

4. A negatively charged plastic comb is brought close to, but does not touch, a small piece of paper. If the comb and the paper are attracted to each other, the charge on the paper

- A) may be negative or neutral  
☒ B) may be positive or neutral  
C) must be negative  
D) must be positive

### Skill 33-Charge Transfer

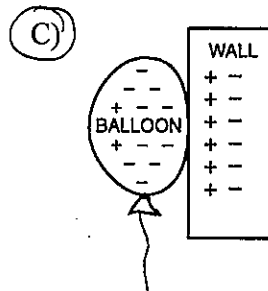
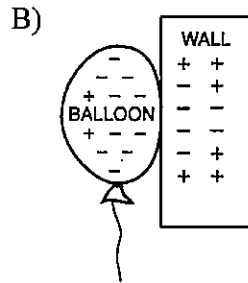
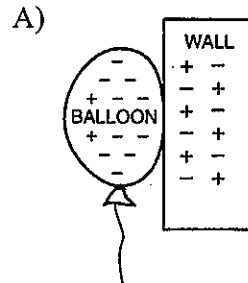
5. The diagram below shows three neutral metal spheres, x, y, and z, in contact and on insulating stands.



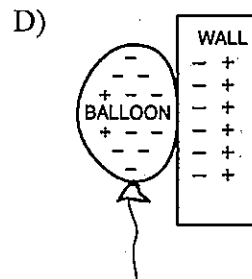
Which diagram best represents the charge distribution on the spheres when a positively charged rod is brought near sphere x, but does not touch it?

- A) this would be behavior of insulator
- B)
- C)
- D)

6. An inflated balloon which has been rubbed against a person's hair is touched to a neutral wall and remains attracted to it. Which diagram best represents the charge distribution on the balloon and wall?



Wall gets polarized



### Skill 33-Charge Transfer

7. Which part of an atom is most likely to be transferred as a body acquires a static electric charge?
- A) proton                      B) neutron  
C) electron                    D) positron
8. A body will maintain a constant negative electrostatic charge if the body
- A) maintains the same excess of electrons  
B) maintains the same excess of protons  
C) continuously receives more electrons than it loses *Charge doesn't have to flow*  
D) continuously receives more protons than it loses
9. A wool cloth becomes positively charged as it
- A) gains protons              B) gains electrons  
C) loses protons              D) loses electrons
10. If a positively charged rod touches a neutral metal sphere, the number of electrons on the rod will
- A) decrease                  B) increase  
C) remain the same
11. Two objects, *A* and *B* are rubbed together. If object *A* acquires an excess of 100 electrons object *B* must have
- A) gained 100 electrons  
B) gained 100 protons  
C) lost 100 electrons  
D) lost 100 protons
12. When hair is combed with a hard rubber comb, the hair becomes positively charged because the comb
- A) transfers protons to the hair  
B) transfers electrons to the hair  
C) removes protons from the hair  
D) removes electrons from the hair
- Comb  $\ominus \rightarrow -$   
hair  $\ominus \rightarrow +$  (loss of electrons)*
13. A neutral object attracts a charged object due to the process of
- A) Induction                  B) Conduction  
C) Gravitation                D) Diffusion
- Induction is the temporary polarization of an object due to presence of an electric field*
14. When two charged objects are brought into contact and then separated, the resulting charge on each object will be
- A) equal in magnitude and sign due to conduction  
B) equal in magnitude but opposite in sign due to induction  
C) equal in sign but not in magnitude  
D) random based on time of contact

### Skill 33-Charge Transfer

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15. When grounded a negatively charged object \_\_\_\_\_ electrons to become neutral and a positively charged object \_\_\_\_\_ electrons to become neutral.

- ☒ A) loses/gains      B) gains/loses  
C) loses/loses      D) gains/gains