

May 17, 2011

answers pg 281 #1,4,6

Discharging static electricity

Review Chp 9

Quiz tomorrow!!!!

Warm-Up

1. Name and give one example of the three ways to create static electricity

Friction - balloon on hair
- feet on carpet

Induction - dust and TV

Contact - walking on carpet then touching door knob

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1. Insulators do not allow electrons to flow easily while conductors allow electrons to flow easily.

4. There is less moisture in the air in the winter so there are fewer water molecules to remove charges from charged surfaces.

These problems could be reduced by increasing the humidity in the air. by using a humidifier for example.

6. Prevent wires from touching one another and to protect people from getting electric shocks from the wiring in the home.

Discharging Electrically Charged Objects

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We need to be able to discharge charged objects

i.e. when using a gas pump the flow of gas through the nozzle to your car generates huge amounts of static electricity. What would happen if a spark jumped to your car? The spark could ignite.

If a charged object has all the excess electric charges removed it is said to be discharged or neutralized.

Grounding

when a charged object is connected to ^{the} Earth, the charge is shared with the entire Earth, all excess charges are safely removed.

Ex. lightning rods are grounded to the Earth, gas pumps are attached to the ground carefully.

only used when it is easy to attach to the earth sometimes this is not possible. i.e. an airplane

Discharge at a Point

Used on airplanes, car or other objects that cannot be grounded.

Electrons repel each other off of the tip of a sharply pointed rod in a continuous stream. These rods are called **static wicks**.

Other Ways to Discharge Objects: exposure to humid air (recall why more static in winter), shine a light on it, or expose the object to radioactivity

Complete:

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Chapter 9 Review WS

Answers Chp 9 Review

1. The electrostatics series is a list used to determine the kind of electric charge produced on each substance when they are rubbed together. **TRUE**
2. You do not have to wear safety clothing in flour mills and grain elevators. **FALSE**
3. Conductors are substances in which the electrons CAN NOT move freely from one atom to another. **FALSE**
4. The law of electric charges states: like charges repel one another unlike charges attract one another. **TRUE**
5. The term “static” means to move from one spot to another constantly. **FALSE**
6. When a person combs their hair, their hair will become positive and the comb will become negative. **TRUE**
7. An example of an insulator is copper. **FALSE**
8. Charging by induction means charging without touching. **TRUE**
9. A neutral dust particle will be attracted to a charged TV screen because like charges repel and unlike charges attract. **FALSE**
10. The two kinds of electric charges are negative and neutral. **FALSE**

1. Name and give an example of each of the three ways objects can become electrically charged through static electricity.

Charging by Friction example: rubbing a balloon on your hair, rubbing your feet on carpet etc

Charging by Contact example: walking across carpet then touching a door knob

Charging by Induction example: dust and the TV screen

2. Explain why static electricity is not as bad in the summer compared to winter?

Static Electricity is not as bad in the summer because there is more moisture in the air in the summer. Moisture in the air acts as a conductor moving the charges away from the charged objects.

3. Explain the differences between charging using friction and charging by induction.

Charging using friction the objects are in direct contact with one another. If an object is charged using induction there is no direct contact.

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Answers

1. discharge refers to removing static electricity from an object.
4. People have metal clips attached to their bodies to remove any static charge that is generated by them from their movements.
6. Rubbing the toque would produce static on your toque and your hair from friction.
9. Hold a pointed metal object as you walk along to ground you or touch a metal object to the door knob first.