Name: _____ Hour: _____

Getting a Charge

(10 pts)

Warning: Electroscope leaves are very fragile; handle with care.

Procedure/Questions (address each of the following):

1. Operate the electrostatic generator (plate machine) and observe what happens.
   a. After operating the electrostatic generator, what charge (+ or -) does the tinsel have? How do you know?

   b. What type(s) of charging does the electrostatic generator use?

   c. Briefly explain how the electrostatic generator operates; include a diagram with charges.

2. Charge the glass and plastic rods and bring them close to the electroscope or pithballs. Observe what happens when these charged rods are brought into close proximity to either device and then removed, as compared to when the charged rods are actually touched to either device.
   a. Briefly describe what happens to the neutral electroscope when the charged glass rod is brought into close proximity and then removed. Draw a sketch (including charges) of this experiment.

   b. Briefly describe what happens when the charged glass rod is touched to the electroscope. Draw a sketch (including charges) of this experiment.

   c. Briefly describe what happens to the neutral pith balls when the charged plastic rod is brought into close proximity and then removed. Draw a sketch (including charges) of this experiment.

   d. Briefly describe what happens when the charged plastic rod is touched to one of the neutral pith balls. Draw a sketch (including charges) of this experiment.

   e. When the charged rods are touched to the neutral devices, what kind of charging occurs?

   f. Once charged, how might these devices be neutralized without being grounded?

3. Charge the plastic rod and use it to charge the pithballs by induction. Briefly describe what happens and draw a sketch (including charges) of this experiment.

4. Use a charged PVC tube to make the neon light glow.
   a. Why does it glow?

   b. Do you actually need to make contact? Explain.

5. Use a balloon, a charged PVC tube, and packing peanuts to answer the following questions.
   a. Does a balloon attract or repel packing peanuts?

   b. Is a balloon attracted or repelled by a charged PVC tube?

   c. Are packing peanuts attracted or reppelled by a charged PVC tube?

   d. Where is the charge most concentrated on the PVC tube? Why?

   e. What type of charge do the uncharged balloon, charged PVC tube, and uncharged packing peanuts carry? Explain your reasoning for each!

6. Try using a charged PVC tube to levitate a charged plastic-bag-loop.
   a. Draw a diagram of this expirment, including charges.

   b. Approximately how high above the tube (in cm) does the ring float?