STE End of Year Review 1 (also the basis for last test of the year)

1. From the point of view of electrons, what is the difference between a statically charged blanket and an ionic compound within a rock? Are just as many atoms charged in the rock as there are in the blanket?

2. a) Object Y is rubbed against object W. Which is negatively charged if electrons moved from W to Y?
   b) Do protons ever move in statics experiments?
   c) Show two different ways of representing W after the rubbing.

3. The force of repulsion between two positively charged spheres is 9.0×10^{1} N. They were originally 1.0 cm apart. If one of the spheres has 1.0×10^{-6} C of charge, find the other's charge.

4. In order for the force of attraction between two spheres to double, what must happen to their separation distance?

5. Analysis reveals that an ionic compound from the point of view of mass is 21.61% Na, 33.30 % Cl and 45.09% O. Find the ionic compound's empirical formula. Hint: start with 100 g.

6. Express V_2 in terms of V_1 if the concentration of the diluted solution is ¼ of the original.

7. In grounding, what is the force that drives electrons either towards a strongly positive area or towards the neutral earth?

8. Show that coulomb's constant indeed has units of Nm^2/C^2 .

This was originally written last year from my iBed, with an iBallPointPen, using my iBrain. I then scanned it, but the scan was so bad that I had to waste electricity and retype it today (May $8^{th,\ 2015}$)!