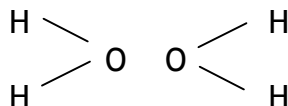


Name _____ Date _____ Period _____

HONORS BIOLOGY – PROBLEM SET

CHAPTER 2: THE CHEMICAL BASIS OF LIFE

1. Why is it unlikely that two neighboring water molecules would be arranged like this? Be specific in your explanation. [2 points]



2. Draw orbital diagrams for calcium and oxygen. Would you expect them to be connected by ionic or covalent bonds? Draw the correct bond(s) that links those two atoms together. [2 points]
3. Suppose that Gillette invented a SUPER-DUPER ANTI-PERSPIRANT DEODORANT that completely stops 100% of sweating. Now suppose that you are exercising in preparation for a marathon. Would you use this deodorant? Is it safe to run 26.2 miles using a deodorant that stops 100% of sweating? Explain your answer. [2 points]
4. The pH scale is like the Richter scale for measuring earthquakes in that each number is 10 times stronger than the previous number. How many times more acidic is lemon juice compared to urine? How many times more basic is bleach compared to blood? [2 points]
5. The oxygen in a water molecule is like a “bully” that is trying to beat up the hydrogens and steal its only possession. What is hydrogen’s only possession? What is the “partial charge” of each hydrogen after it loses its possession? What is the “partial charge” of the oxygen after it is finished stealing from hydrogen? [2 points]