STUDY SHEET FOR CHAPTER 2 HONORS BIOLOGY TEST

Extended Response: (12 points)
1. For the following properties of water be able to
   a. Identify the property
   b. Define it – with words and labeled sketches
   c. Explain it in terms of physical/chemical nature of water
   d. Describe 1 example of how it affects the functioning of living things
   a. cohesion
   b. surface tension
   c. capillary action
   d. as a solvent
   e. adhesion
   f. forming ice

1. Be able to recognize atom vs. molecule, symbol vs. formula, and element vs. compound.

2. If given an element as it appears on the periodic table, be able to determine its:
   a. mass number
   b. atomic number
   c. number of protons
   d. number of electrons
   e. number of neutrons

3. How do trace elements compare to other elements in their amount (grams or milligrams) needed in the body? (see chart p. 18)

4. How does a radioactive isotope behave differently than a stable isotope? (p. 20)

5. Why do atoms join to form compounds? (p.22)

6. How are ions and isotopes different than neutral atoms?

7. How do electrons behave differently in covalent and in ionic bonds?

8. In a solution, how would you be able to recognize which would be the solute and which would be the solvent? (p.27)

9. What does H-bonding have to do with ice floating? With surface tension?
10. List the following bonds in order of strength:
   hydrogen  van der Waals  ionic  covalent

11. How does a buffer behave in solutions?

12. How do acids and bases differ in the type of ions they put into solution (or take out of solution)?

13. Why do coastal areas have milder climate than inland regions? (p. 26)

14. What pH values are for strong and weak acids and bases? What pH for neutral?
   What –log values are for acids and bases?
   How does the strength of a pH of 4 differ from a pH of 6?

15. In what order do electrons fill the first three electron energy shells?

16. At what pH does it qualify to be acid precipitation? (p. 29)

17. Be able to recognize single, double, and triple bonds covalent bonds.

18. Be able to draw how a salt (NaCl) dissolves in water, meaning, how do the water molecules surround each ion? (p. 27)

19. Be able to recognize in a chemical reaction which are the reactants and which are the products. (p. 25)

20. Be able to determine trends on the periodic table: valence electrons, ion charges, which elements would form ionic bonds, which elements would behave more alike chemically. (p. 22)

21. Contrast polar covalent and nonpolar covalent bonds.

22. Be able to draw a Bohr model of an atom. (handout)

23. Be able to predict the type of bond if given the electronegativities of the atoms.

24. Most of the unique properties of water come from what 2 characteristics?

25. Which are the top four elements found in the human body? What constitutes a trace element?
26. What are some things that make one element unique from other elements on the Periodic Table? In which way are elements in the same column of the Periodic Table the same?

27. When examining isotopes of an element, what is the same and what changes about them when compared to the form on the Periodic Table?

28. How do you determine the number of valence electrons of an atom? How do you determine the ion formed?

29. What is the maximum number of covalent bonds an element with atomic number 8 can make with hydrogen?

30. Contrast van der Waals and hydrogen bonding (what causes them and strengths).

31. Contrast cations and anions (how formed).

32. Why does water have high heat of fusion and high heat of vaporization?

33. How do you determine the –log of [H+] or the [OH–] if given the pH of a solution?

34. If given two ions (with their charge), predict the ionic formula.
   EX: Mg²⁺ and Cl⁻, K⁺ and I⁻, Ca²⁺ and P³⁻

35. Review your elements and symbols.