

Study Guide Advanced Biology 'Chemistry of Life Exam'

The first exam covers material in Chapter 2 and 3 in the OpenStax Textbook or Chapters 3, 4 & 5 in the Campbell Textbook

Give an example and general explanation of each of the following: (In Dubs' mind general explanation means: Can you explain it to a Chem 200 student?)

Ionic Bond

Polar covalent bond

Nonpolar covalent bond

Hydrogen Bond

Van der Waals | London dispersion force

What is electronegativity?

Describe the structure of the water molecule including the charges (δ) on the Oxygen and Hydrogen molecules?

Be able to discuss the information contained in each box of the table. DO NOT MEMORIZE THE TABLE – READ - WRITE – DRAW PICTURES – GROUP & REGROUP THE INFORMATION UNTIL IT MAKES SENSE TO YOU

| <i>Life-supporting property of water</i> | <i>Description of the property</i> | <i>How the property aids organisms</i> |
|---|---|---|
| Adhesion/Cohesion Surface tension | | |
| High specific heat | | |
| High heat of vaporization | | |
| Lower density as a solid | | |
| Versatile solvent | | |

On the exam – you may be asked to apply this knowledge to an unfamiliar situation so don't plan on regurgitating what you memorized.

Some examples:

- In class I discussed the consequences of shifting the density curve of water so that ice is most dense at 0°C instead of 4°C and how this would cause lakes to freeze from the bottom up.
- The water strider is an insect that can walk across the surface of the pond due to water's high surface tension and the presence of hydrophobic hairs on their legs and feet. What would happen if the same insect tried to walk across the surface of a container of hexane?