

Label the graphs endergonic or exergonic.

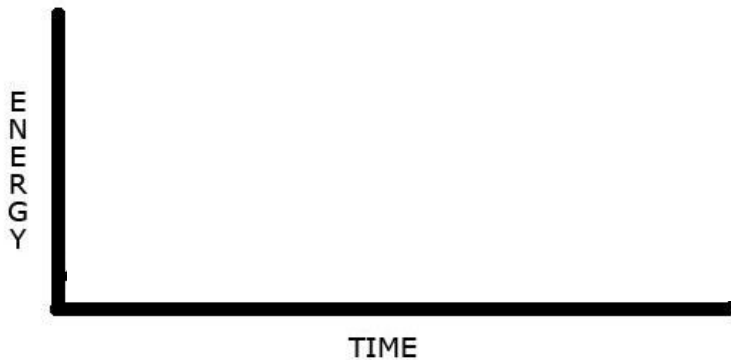
| | Definition | Substrates | Products |
|----------------------|------------|------------|----------|
| Endergonic Reactions | | | |
| Exergonic Reactions | | | |

1. Do endergonic reactions store or release energy?
2. What is an example of an exergonic reaction: photosynthesis or respiration?
3. If energy is being released, what type of reaction is this?
4. When two molecules are bonded together, they are storing energy. Breaking the bond would be what type of reaction?
5. What is the difference between B and C on graph 2?

Definition of Activation Energy: _____

Label the activation energy in each of the graphs above.

6. What is the function of enzymes?

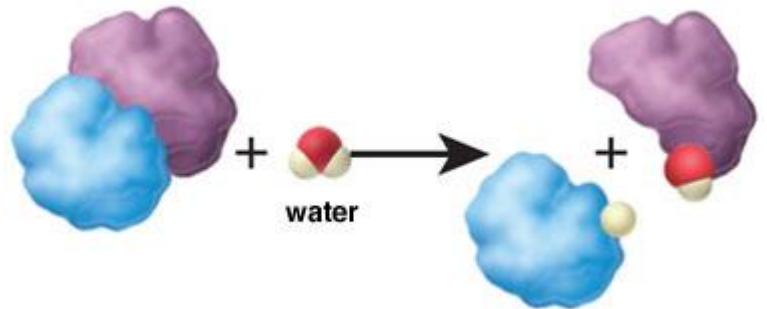


7. Illustrate an exergonic reaction in the graph to the left. (Hint: Don't forget the activation energy.)

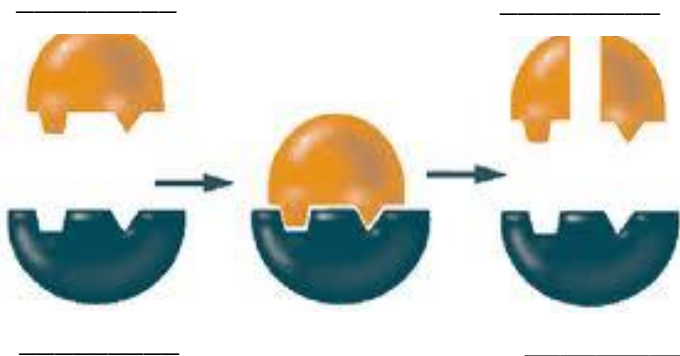
8. On the same graph, draw another line showing what the activation energy would be with an enzyme.

9. Label which line is with an enzyme and which is without an enzyme.

10. The diagram to the right shows a substrate being broken into 2 products. What type of reaction is this?



Enzyme-Substrate Complex



Enzyme and substrate fit together like a _____ and _____

Review Questions

1. How do enzymes effect chemical reactions?
2. If energy is stored in a reaction, what type of reaction is this?
3. When two molecules bond together, this is what type of reaction?
4. Products having more energy that reactants is true in what type of reaction?
5. Are enzymes good to have or bad? Why?
6. What are the properties of water? List examples/definitions of them.
7. Draw a water molecule label the parts (H, O, polar ends)

Organic Compounds

- Compounds that contain _____
- “Organic” means _____

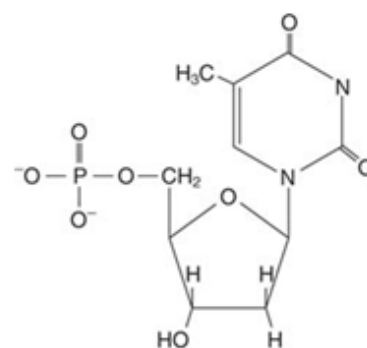
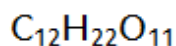
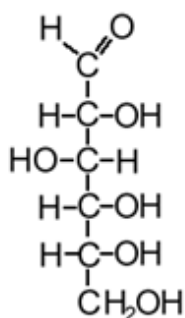
| Organic Molecules | Polymer | Monomer | Important Chemical Elements (C,H,O,N,P) | Structure | Function |
|--------------------------|----------------|----------------|--|------------------|-----------------|
| Carbohydrate | | | | | |
| Protein | | | | | |
| Nucleic Acid | | | | | |
| Lipid | | | | | |

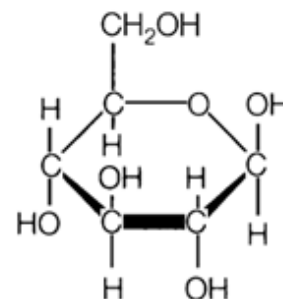
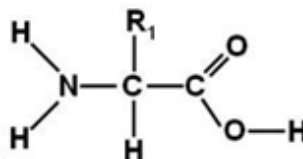
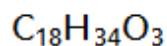
Structures of Organic Compounds

Study the rules and formulas below. Then, on the first line under each formula, tell whether the substance is organic (containing carbon) or inorganic (does not contain carbon). On the second line, indicate whether the substance is a carbohydrate, lipid, protein, nucleic acid or none of these.

Rules:

- All organic compounds contain carbon. Most inorganic compounds do not contain carbon. Carbon dioxide is an exception; it is not organic.
- In carbohydrates, the ratio of hydrogen to oxygen is 2:1.
- In lipids, the ratio of hydrogen to oxygen is much greater than 2:1.
- Amino acids contain an amino group (-NH₂) and a carboxyl group (-COOH)
- Nucleic acids are the only organic compounds which contain phosphorus.

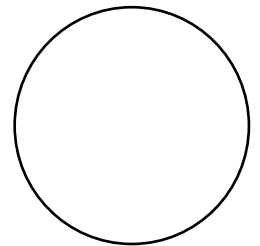
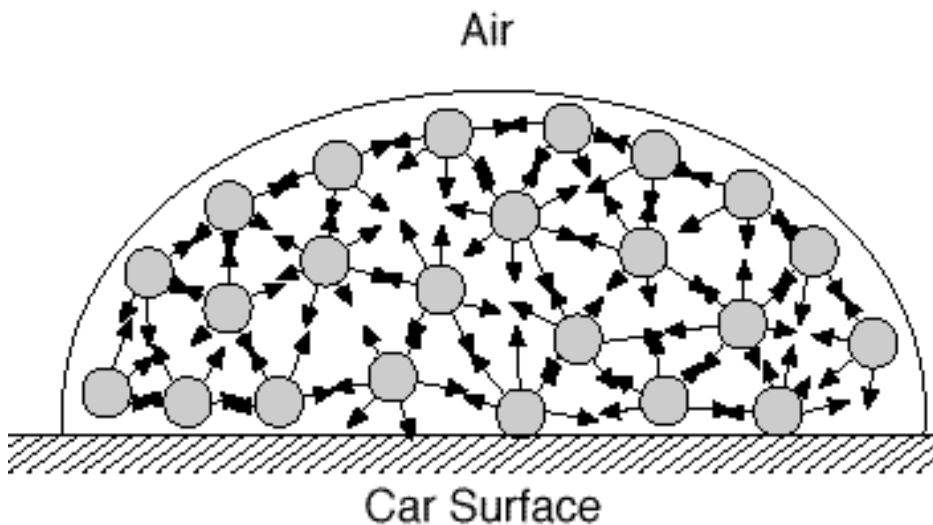




Match the properties of water with the correct examples. (adhesion, cohesion, capillary action, surface tension, pH, solvent, solute, and polarity)

1. _____ water forming a drop as the vapors connect
2. _____ water connecting to other substances
3. _____ the amount of H^+ and OH^- in a solution
4. _____ sugar in a sugar-water solution
5. _____ water is the universal
6. _____ allows insects to sit on top of water
7. _____ water movement up plant stems
8. _____ causes the water to hurt when you do a belly flop
9. _____ water moving up a tube
10. _____ scale from 0 to 14
11. _____ water sticking to a leaf
12. _____ water in a sugar-water solution
13. _____ gives water its negative and positive poles
14. _____ water sticking to water
15. _____ substance to be dissolved
16. _____ oxygen being slightly negative and hydrogen being slightly positive

17. In the water drop to the right, label the adhesion, cohesion, and surface tension.

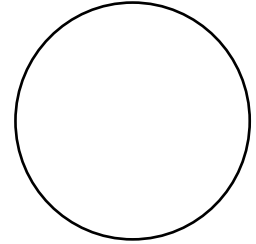


18. If a substance has a pH of 3, is it an acid or base?
19. Fill in the bubble with the correct amount of hydrogen and hydroxide for a pH of 3

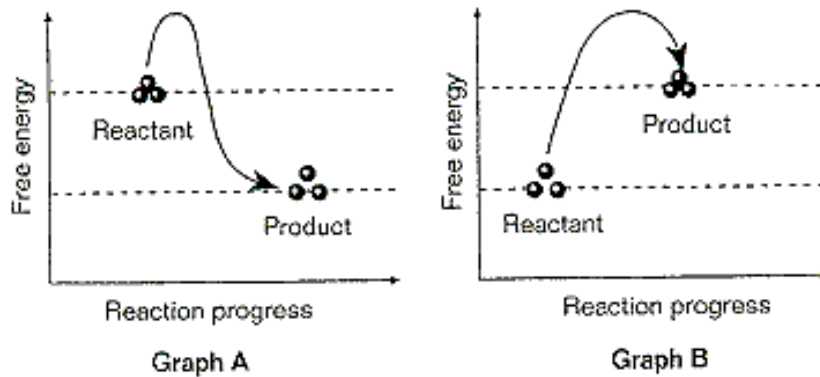
20. Water has a pH of _____.

21. If you mix an acid and a base, what will happen?

22. Bases have more hydrogen or hydroxide?



23. Fill in the bubble with the correct amount of hydrogen and hydroxide for a pH of 7



24. Which graph above is exergonic?

25. Label the activation energy in each graph above.

26. Is energy released or absorbed in Graph B?

27. Are reactants at the start or end of the reaction?

28. Does the activation energy increase or decrease with an enzyme?

29. Having an enzyme makes the reaction happen faster or slower?

30. Fill in the chart below with the correct monomers and polymers

| Polymers | Monomers |
|--------------|-------------|
| | |
| Polypeptides | |
| | |
| | Nucleotides |

Match the function with each organic compound. (carbohydrates, proteins, lipids, and nucleic acids)

31. _____ stores energy for long periods of time
 32. _____ DNA and RNA
 33. _____ stores energy for short periods of time
 34. _____ makes up enzymes
 35. _____ energy for the cell
 36. _____ used to make muscle
 37. _____ makes up the cell membrane
 38. _____ stores genetic information
 39. _____ only compound to contain phosphorous
 40. _____ two compounds that contain nitrogen
 41. _____ compound that has a hydrophilic and hydrophobic structure.

42. What type of organic compounds are these?

43. What is an example of the basic units of these compounds?

Figure B: Simple Sugars linked together



Figure A: Several Amino Acids linked together



Figure C: A glycerol molecule bonded to 3 fatty acids

