

# General Biology –Chapter 6 Review

## Mary Stangler Center for Academic Success

*This review is meant to highlight basic concepts from Chapter 6. It does not cover all concepts presented by your instructor. Refer back to your notes, unit objectives, labs, handouts, etc. to further prepare for your exam.*

1. Define the 1<sup>st</sup> and 2<sup>nd</sup> Laws of Thermodynamics and give an example of how each relates to living systems.
2. Describe the difference between an endergonic and exergonic reaction and give an example of each.
3. Define kinetic and potential energy and how they relate to the 1<sup>st</sup> Law of Thermodynamics.
4. Describe the structure and function of ATP. Describe the ATP cycle.

Fill in the blank/True or False

5. \_\_\_\_\_ is the term for the “extra” energy needed to get a chemical reaction started?
6. \_\_\_\_\_ are molecules that catalyze reactions.
7. An apple is an example of potential energy. True or false?
8. When chemical bonds are broken, energy is released; this is an example of an \_\_\_\_\_ reaction.
9. When chemical bonds are built, energy is required; this is an example of a \_\_\_\_\_ reaction.
10. Energy conversion is not 100% efficient, some energy is wasted which generally leads to an increase in disorder. True or false?
11. Entropy is an increase in the order of a system. True or false?
12. Entropy is another way of referring to the second law of thermodynamics. True or false?
13. \_\_\_\_\_ help make reactions more efficient by lowering the activation energy needed to start the reaction.
14. The part of an enzyme where a substrate binds is called the \_\_\_\_\_.
15. Enzymes are mostly composed of the following organic molecule: \_\_\_\_\_.
16. The \_\_\_\_\_ is the molecule that undergoes a reaction with the help of an enzyme.
17. An enzyme is used up during a reaction. True or false?
18. Increasing the amount of substrate and also the amount of enzyme can \_\_\_\_\_ the rate of reaction.
19. If the 3D-shape of an enzyme is changed due to increased temperature it is said to be \_\_\_\_\_, and it can no longer bind effectively to a substrate.
20. ATP is a nucleotide composed of the nitrogen-containing base guanine, a 5-carbon sugar, and 3 phosphates. True or false?
21. ATP breakdown is coupled to an endergonic reaction that requires energy. True or false?
22. A nonprotein organic molecule that helps an enzyme to work properly at the active site is a \_\_\_\_\_.
23. Vitamin deficiencies usually result in decreased enzymatic deficiency. True or false?
24. Decreased enzyme activity is called enzyme \_\_\_\_\_.

Matching:     A – endergonic or B -exergonic

- 25. \_\_\_\_\_ Release energy
- 26. \_\_\_\_\_ Absorb energy
- 27. \_\_\_\_\_ Has a negative  $\Delta G$  and occur spontaneously
- 28. \_\_\_\_\_ Has a positive  $\Delta G$  and occur nonspontaneously
- 29. \_\_\_\_\_ Energy is released
- 30. \_\_\_\_\_ Require an input of energy
- 31. \_\_\_\_\_ Reactants have less free energy than products
- 32. \_\_\_\_\_ Reactants have more free energy than products
- 33. \_\_\_\_\_ Catabolic reactions
- 34. \_\_\_\_\_ Anabolic reactions
- 35. \_\_\_\_\_ Photosynthesis
- 36. \_\_\_\_\_ Cellular Respiration