

RAVEN CHAPTER 6 GUIDED NOTES: ENERGY AND METABOLISM

Raven 9th edition

1. Define the following terms:

a) kinetic energy

b) potential energy

c) oxidation

d) reduction

2. Explain the First Law of Thermodynamics and its relationship to biological systems.

3. Explain the Second Law of Thermodynamics and its relationship to biological systems

4. What is meant by a change in free energy?

5. Compare reactions that are...

a. Exergonic

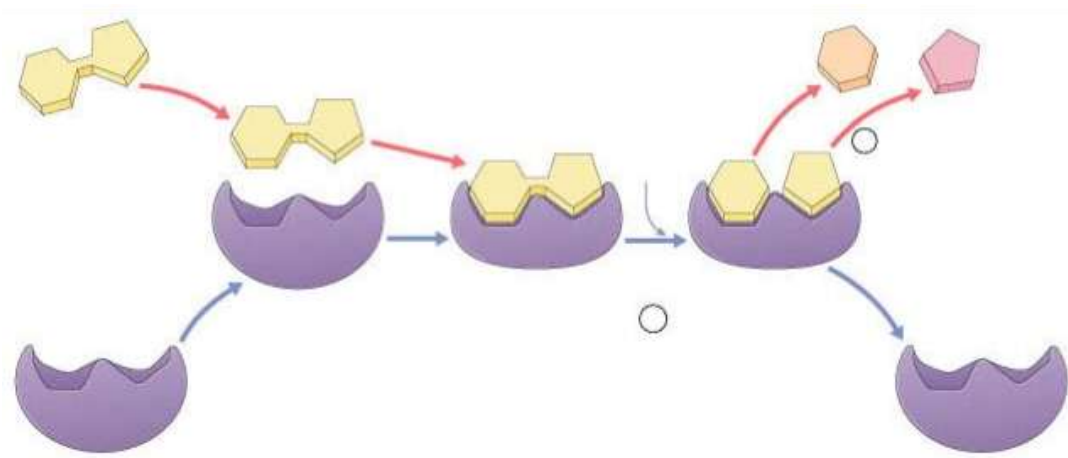
b. Endergonic

6. Sketch the profile of an exergonic reaction and sketch the profile of an endergonic reaction.

7. Define activation energy.

8. How do enzymes affect the energy profile?

9. Use the following diagram to explain the catalytic enzyme cycle



10. Explain the induced fit model of enzyme action.

11. Why are enzymes said to be specific?

12. What are the advantages of multi-enzyme complexes?

a. _____

b. _____

c. _____

13. How has the discovery of catalytic RNA changed our understanding of enzymes?

14. Explain how temperature and pH influence the rate of enzyme reactions.

a. temperature

b. pH

15. How do competitive and noncompetitive inhibitors differ in their enzyme interactions?

16. What happens during allosteric inhibition?

17. Explain the role of cofactors.

18. What is a coenzyme?

19. How does ATP “store energy”?

20. How does ATP “couple reactions”?

21. Define the following metabolic terms

a. anabolism

b. catabolism

22. Explain how biochemical pathways could have evolved.

23. Describe feedback inhibition.
