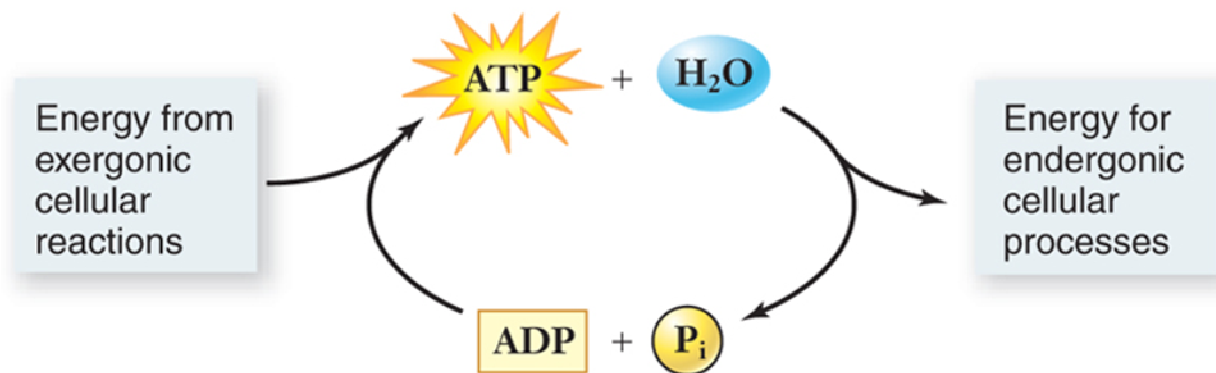


Chapter 6 – Energy & Metabolism



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 _____

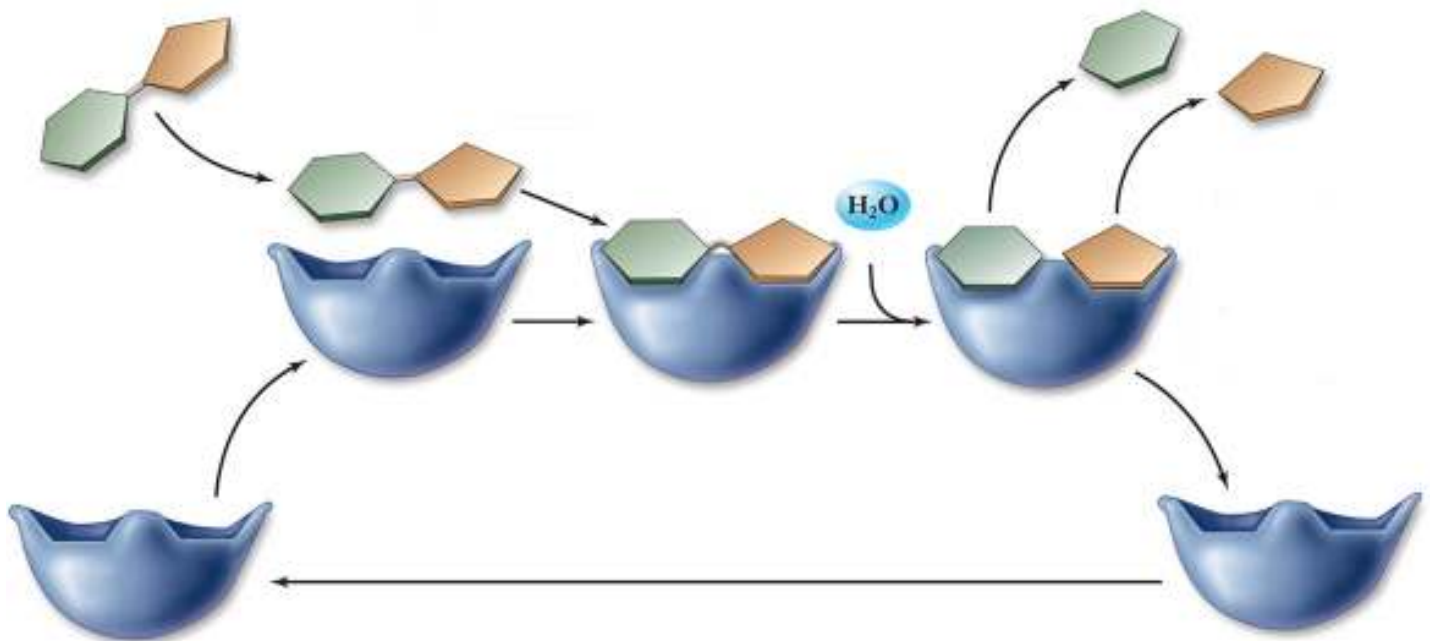
b. Endergonic _____

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. **LABEL** and 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 multienzyme 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 terms:
a. **metabolism** _____
b. **anabolism** _____
c. **catabolism** _____

22. Explain how biochemical pathways could have evolved.

23. Describe **feedback inhibition**.

