

Name _____

AP Biology

Period _____

Date _____

MADER CHAPTER 6 GUIDED NOTES: ENERGY AND METABOLISM

1. Define the following terms:

A. kinetic energy _____

B. potential energy _____

C. mechanical energy _____

D. oxidation _____

e. 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. Explain why the entropy of the universe is always increasing and why an organized system such as an organism requires a constant input of useful energy. _____

5. Define the following terms

A. metabolism _____

B. reactants _____

C. products _____

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

7. Compare reactions that are...

a. Exegetic _____

b. Endergonic _____

8. What is ATP and what are the advantages of using it as energy currency?

9. What are coupled reactions?

10. Write an equation that shows an endergonic reaction being coupled to ATP breakdown.

11. What are the three function of ATP in living things?

a. Chemical work _____

b. Transport work _____

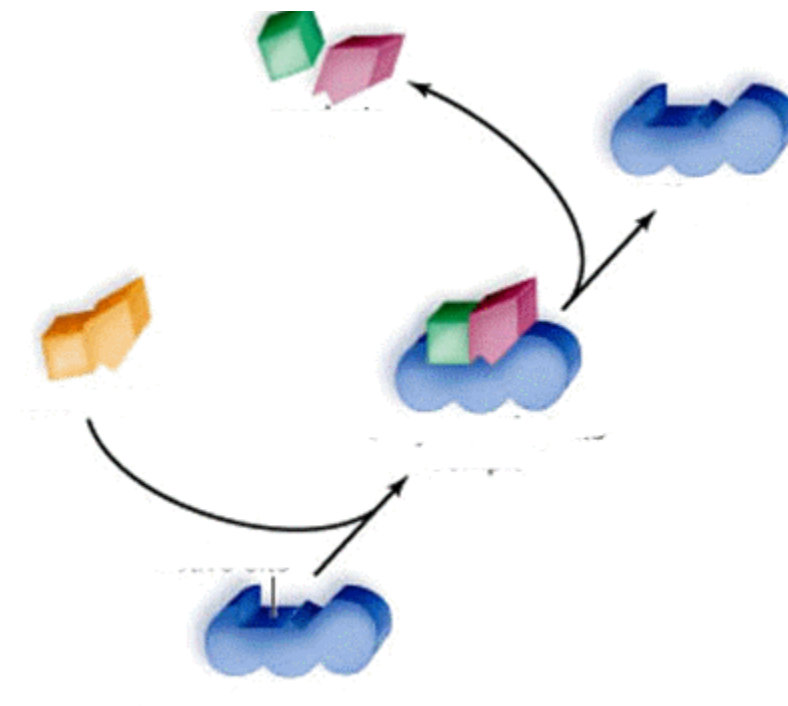
c. Mechanical work _____

12. Define energy of activation.

13. Why is less energy needed for a reaction to occur when an enzyme is present?

14. Explain the induced fit model of enzyme action.

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



16. Why are enzymes said to be specific?

17. Name and explain the manner in which at least three factors can influence the speed of an enzymatic reaction.

- a. _____
- b. _____
- c. _____

18. How do cells regulate the activity of enzymes?

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

20. What happens during noncompetitive inhibition?

21. Explain the role of cofactors. _____

22. What is a coenzyme?

23. How does ATP “store energy”?

24. Define the following metabolic terms

a. anabolism _____

b. catabolism _____

25. Describe feedback inhibition.

26. Describe how oxidation-reduction occurs in cells, and discuss the overall equations for photosynthesis and cellular respiration inter terms of oxidation –reduction.

27. Describe the electron transport chain.

28. Tell how cells form ATP during chemiosmosis.
