

Enzyme Review

1. Define enzyme, substrate, and active site.

Enzyme = biological catalyst that speeds up chemical reactions

Substrate = molecule that binds to an enzyme

Active site = place on an enzyme that the substrate attaches to

2. What type of macromolecule is an enzyme?

Protein

3. List the name of the energy that enzymes change and how the enzyme changes it (increase or decrease)

Activation energy / decreases

4. Would the substrates ever get broken down or put together without the enzyme? Explain.

Most reactions can happen without an enzyme, but it would take a lot of activation energy and a very long time for the reaction to occur

5. What are ALL the factors that can destroy an enzyme or prevent it from working? How does each affect the rate of an enzyme reaction?

Temperature – increase denatures and decrease slows the enzyme down, both will decrease the rate of the reaction

pH – acid or base will denature enzymes and decrease the rate of the reaction

Increase in substrate or enzyme concentration – increases rate of the reaction

Inhibitors – competitive (attach to active site) and non-competitive (attach somewhere other than the active site) and both will and decrease the rate of the reaction

Identify the following in #4-8: **Enzyme**, **Substrate**, and **Products**

6. **Catalase** reacts with **Hydrogen Peroxide** to form **Water** and **Oxygen**.

Lipase

7. **Lipid** → **fatty acid 1 + fatty acid 2**

8. **Amylase** reacts with **amylose** to form **maltose** and **simple sugars**.

ATPase

9. **ADP + P** → **ATP**

10. **Lactose** reacts with **Lactase** to form **glucose** and **galactose**.

11. In question #7 and 9, why doesn't the enzyme's name get written within the chemical equation?

It is the molecule that DOES the reaction and serves as a catalyst, not a reactant in the reaction

Food Web Review

12. What is energy? What does ATP stand for?

Energy = ability to do work

ATP = adenosine triphosphate

13. What is the difference between a food chain and a food web?

Food chain = linear feeding relationships from one trophic level to the next

Food web = interconnected food chains

14. What is the ultimate source of energy for most food webs?

Sun

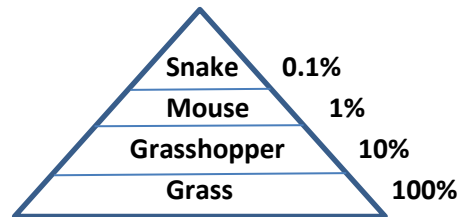
15. What happens to most of the energy in any given trophic level?

Lost as heat and used by the organism to survive

16. Label the following food chain with the correct trophic level names and connect with arrows.

a. Grass Grasshopper Mouse Snake
Producer → Primary consumer → Secondary consumer → Tertiary consumer

b. Next, draw an energy pyramid placing the organisms in the correct tiers of the pyramid including the amount of energy that is available at each level.



17. If organisms in the second trophic level were to decrease, how would the numbers of organisms in the first and third trophic levels be impacted? What term is giving to the second trophic level?

1st trophic level would increase and 3rd trophic level would decrease

Primary consumers (1st is producers and 3rd is secondary consumers)

18. What is the purpose of the decomposers in an ecosystem?

Break down matter to return nutrients to the soil – recycle matter NOT energy