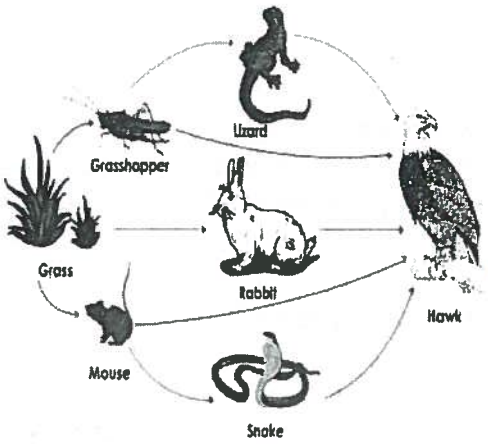
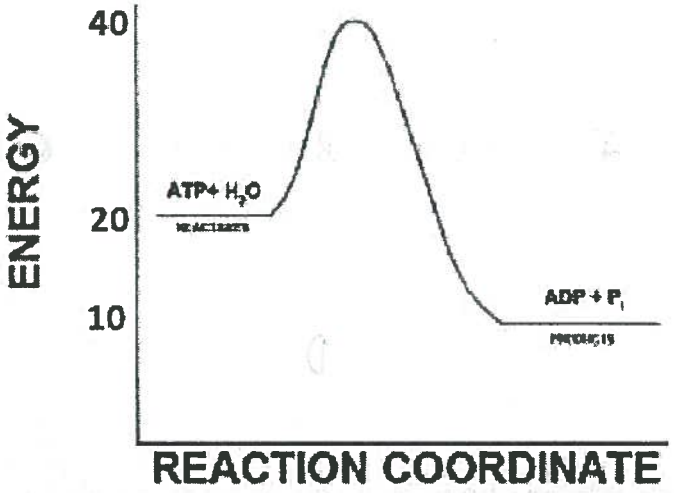
Key

Energy + Photosynthesis Practice Quiz



1. In the food web to the left, hawks are discovered to have the least biomass of any population and thus the least energy. Which of the following best explains this occurrence?
A. The hawks are the largest animals and thus lose the most energy
B. The hawks have the most competition for food
C. The majority of the energy from the community is lost before it reaches the eagles Hawks due to Entropy!
D. Hawks are endothermic and thus require less energy

2. According to the diagram to the right when 1 mol of ATP is hydrolyzed into ADP and Pi, how much net energy should be available for cellular work?
A. 30 B. 20 C. 10 D. Less than 10



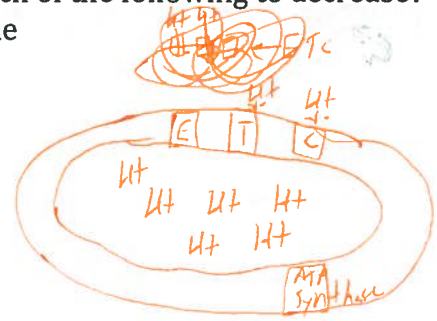
2b. Explain:

out of 10 released as heat by rxn but not all 10 can be used due to entropy

3. When plant cell is exposed to sunlight, we would expect the pH of which of the following to decrease?
A. Cytosol B. Thylakoid space C. Stroma D. Thylakoid membrane

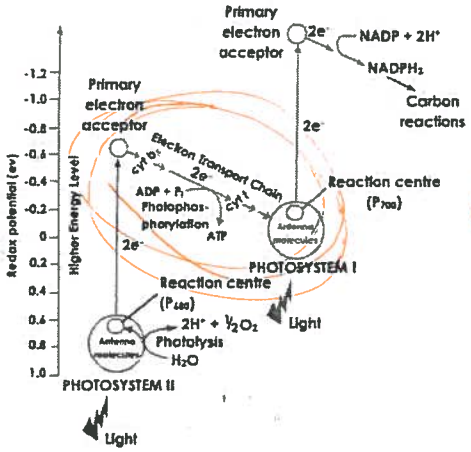
4. Briefly explain how light is absorbed by photoautotrophs

Light "excites" electrons in chloroplayll. Eventually enough to release the electron



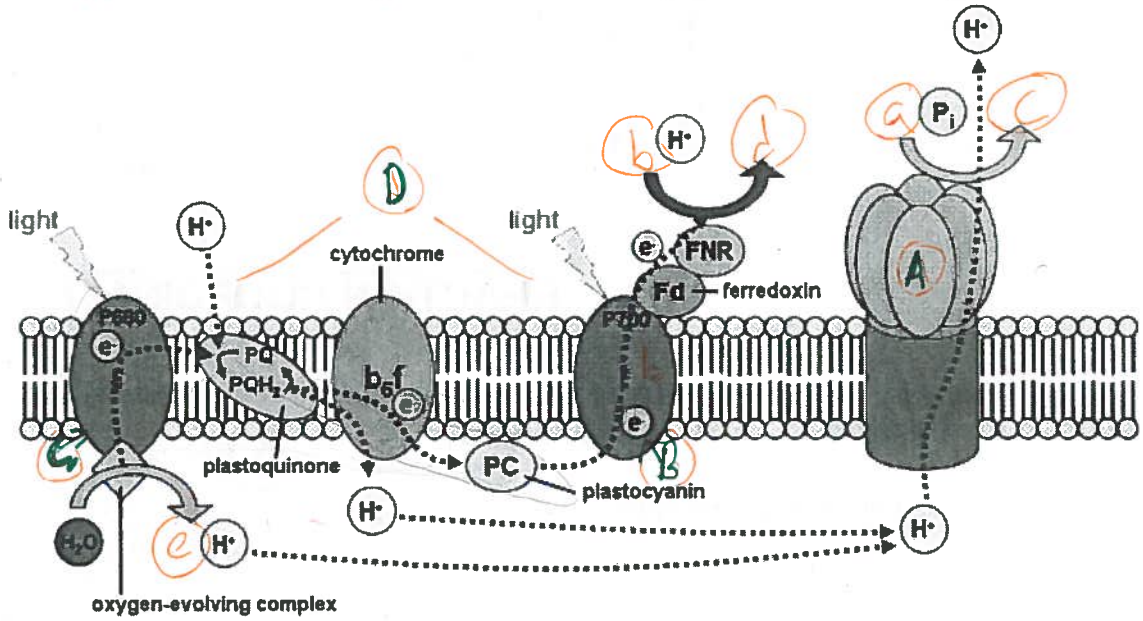
5. Oxygen gas is released in photosynthesis when
A. Water is split to release electrons
B. Carbon dioxide is split in the Calvin cycle
C. Electrons are excited in cyclic electron flow
D. Hydrogen ions diffuse through ATP synthase in chemiosmosis

6. The energy required to synthesize ATP from ADP and Pi in chemiosmosis comes most directly from
A. Light hitting ATP synthase no .
B. A passage of electrons yes, but not as direct as 2
C. Movement of hydrogen ions through a channel (ATP synthase)
D. Chemical energy in NADPH no . provides e⁻ for making sugar



7. The diagram to the left shows that the primary electron acceptor of Photosystem II has a higher energy level than the antenna molecules of Photosystem I. The energy released as electrons move is used to
A. Synthesize NADH
B. Pump hydrogen ions across the thylakoid membrane
C. Split water
D. Oxidize glucose

8. On the diagram below, label the following:
A. ATP Synthase B. Photosystem I C. Photosystem II D. Electron transport chain



9. On the graph above place the following in their appropriate positions:
a. ADP b. NADP+ c. ATP d. NADPH e. O_2

10. Briefly describe the 2 main processes/stages in photosynthesis

Light Rxns

H_2O + light + NADP+ + ADP + P → O_2 + ATP + NADPH (carries electrons)

Calvin Cycle

NADPH + ATP + CO_2 → Sugar