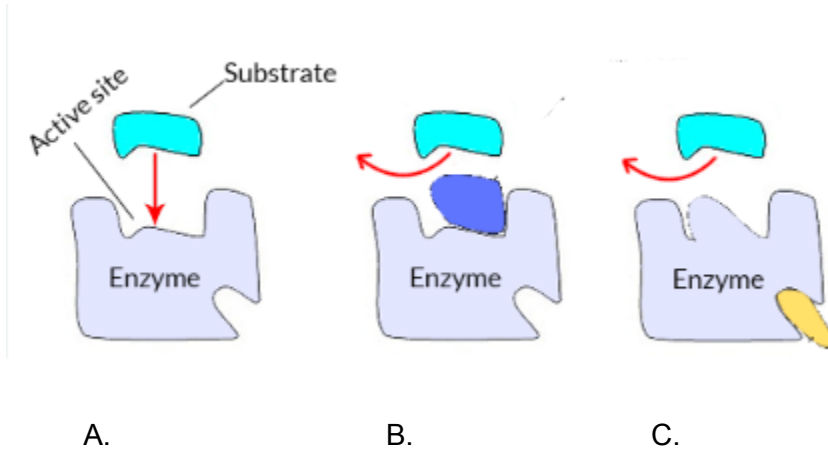


AP Biology; Unit 3 Cellular Energy Practice Quiz

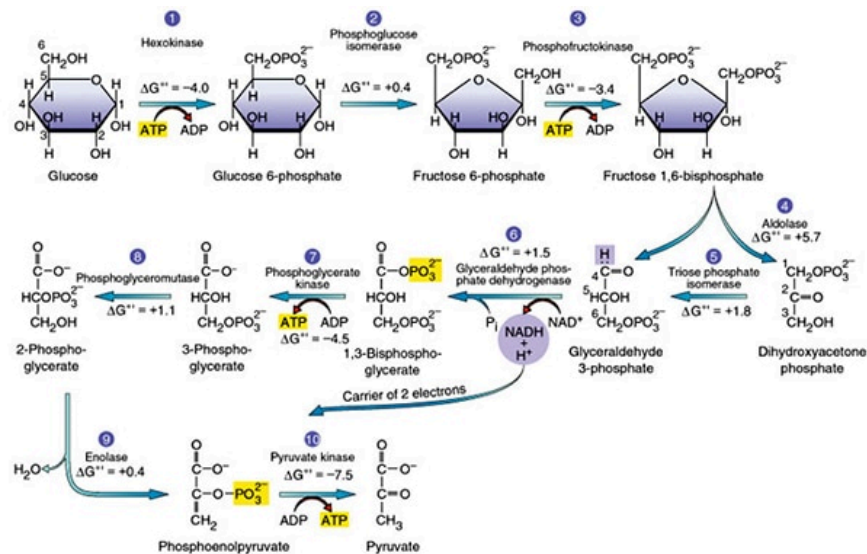
Question 1:



Which of the following statements most accurately describes the models above?

- a. A shows allosteric inhibition of an enzyme.
- b. B shows competitive inhibition of an enzyme
- c. C shows an uninhibited enzyme .
- d. None of the models shown show inhibition of an enzyme.

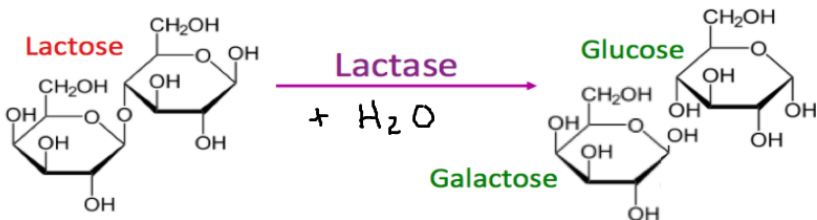
Question 2:



The diagram above shows the ten steps of glycolysis. What molecules are present at each of the chemical reactions taking place?

- ATP.
- NADH.
- Enzymes.
- Glucose.

Question 3

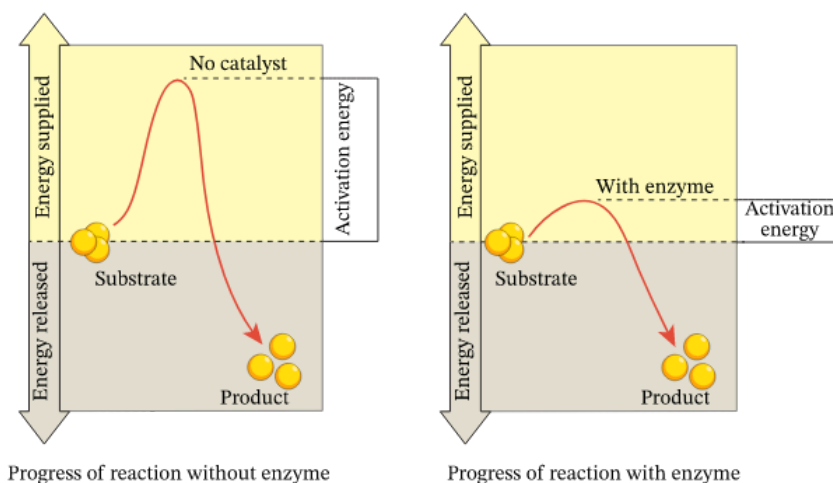


The reaction above is best described by which of the following?

- Lactase, a monosaccharide sugar, catalyzes the hydrolysis of a disaccharide to its monosaccharide constituents.

- b. Lactase, an enzyme protein, catalyzes the dehydration synthesis of the disaccharide lactose to its monosaccharide constituents.
- c. Lactase, an enzyme protein, catalyzes the hydrolysis of lactose (a disaccharide) to its monosaccharide constituents.
- d. Lactose is being built by lipase and water.
- e. Lactase is being hydrolyzed by lactose.

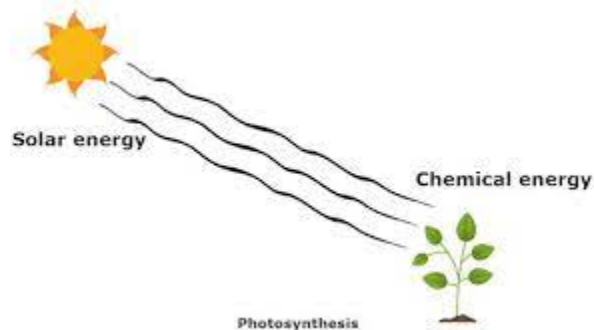
Question 4:



What is happening in the diagrams above?

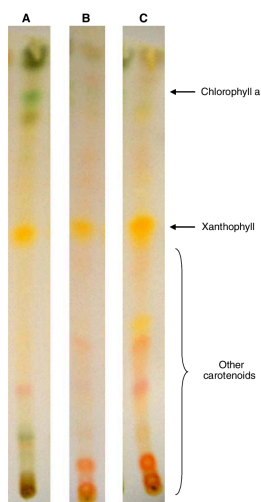
- a. An enzyme is inhibited therefore slowing down a chemical reaction.
- b. Adding an enzyme lowers the activation energy of a chemical reaction.
- c. Adding an enzyme increased the activation energy of a chemical reaction.
- d. The enzyme is blocking the active site of the reaction.

Question 5



Which of the following statements is true?

- a. The first law of thermodynamics dictates that the amount of energy stored in the leaves of plants can not exceed the amount of light energy absorbed.
- b. The second law of thermodynamics dictates that the energy absorbed by the leaves will be fully utilized when it is eaten by a herbivore.
- c. The first law of thermodynamics dictates that some of the energy transferred to the plant will be lost as heat.
- d. The second law of thermodynamics states that light energy is the only type of energy that can change forms, it can not be created or destroyed.

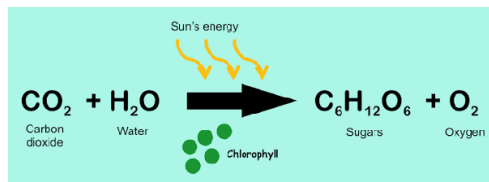


Question 6:

The photograph above shows the chromatography of different plant pigments. Why do plants contain more than one pigment?

- a. More than one pigment allows them to attract a variety of browsers to eat and disperse their seeds.
- b. More than one pigment allows them to change color in the fall.
- c. More than one pigment allows them to utilize a greater range of light wavelengths.
- d. More than one pigment allows them to respire more efficiently.

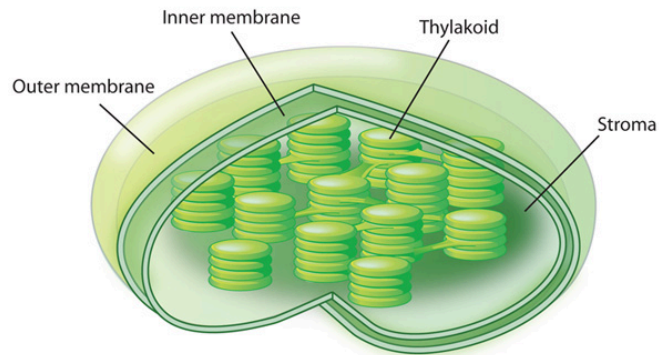
Question 7:



What is significant about the equation above?

- a. It creates an energy source for autotrophs which are consumed by heterotrophs.
- b. Almost all life on earth depends, directly or indirectly, on this process.
- c. It is the main source of oxygen on earth.
- d. All of the above.

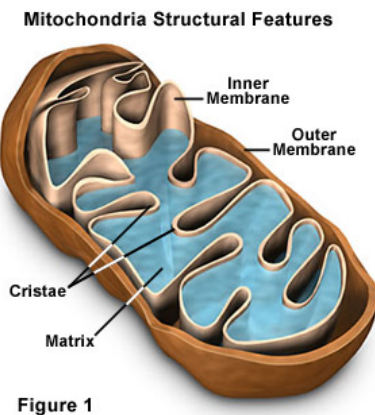
Question 8:



Which statement best describes where the important reactions of photosynthesis occur?

- a. Light dependent reactions in the stroma, Calvin cycle in the thylakoid membrane
- b. Light dependent reactions in the thylakoid membrane, Calvin cycle in the inner membrane
- c. Calvin cycle in the thylakoid, Light dependent reactions in the cytosol
- d. Light dependent reaction in the thylakoid membrane, Calvin cycle in the stroma

Question 9:



A

B

Where does oxidative phosphorylation occur in the mitochondria?

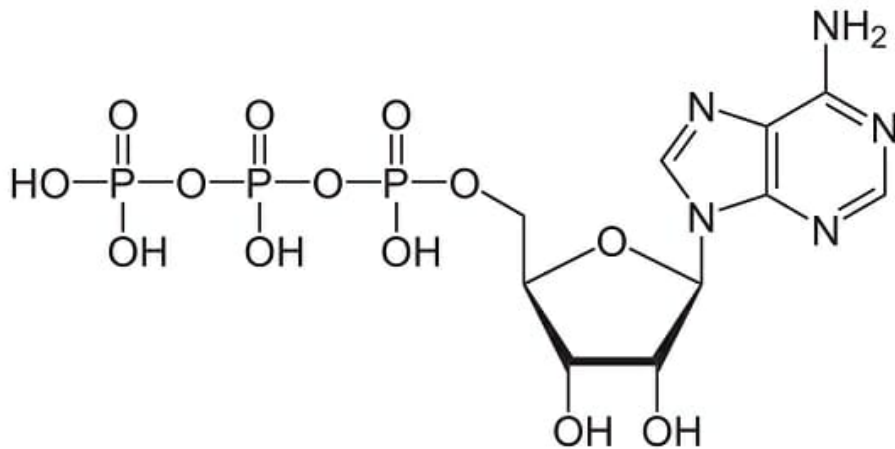
- a. Matrix
- b. Cytosol
- c. Outer cell membrane
- d. Inner membrane of the cristae

Question 10:

Which of the following statements is true regarding cellular respiration?

- a. All organisms conduct aerobic respiration, but some can conduct anaerobic respiration too.
- b. All organisms conduct some type of respiration to produce ATP
- c. All anaerobic organisms utilize oxygen
- d. Anaerobic respiration produces more ATP.

Question 11:



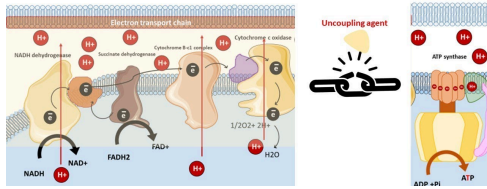
Which statement below most accurately describes the role of the molecule above?

- a. It donates a phosphate group to another molecule (called phosphorylation) which powers certain cellular processes.
- b. It donates hydrogen to another molecule (called electron transfer) which powers certain cellular processes..
- c. It is found in cell membranes and allows electrons to pass freely.
- d. It is required to decouple the electron transport chain.

Question 12:

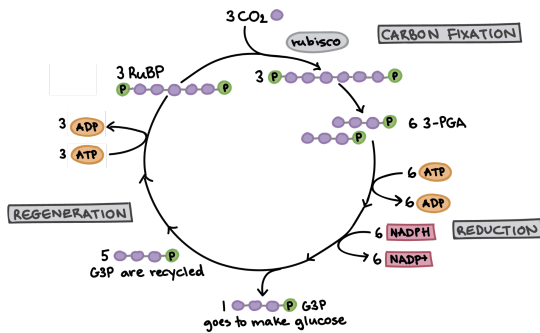
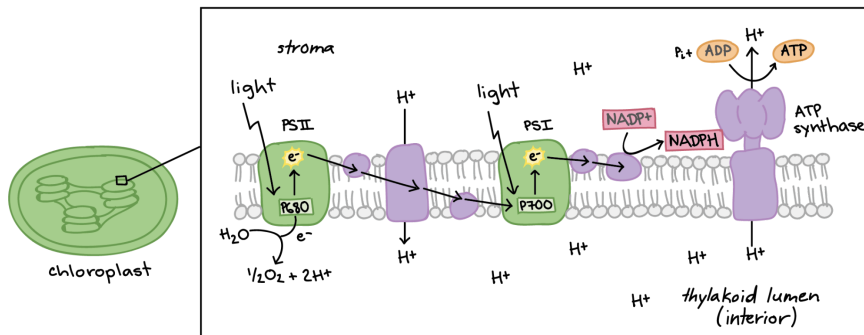
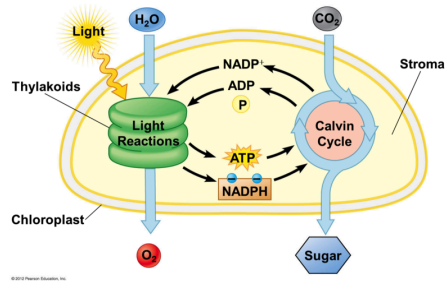
Uncoupling of ETC and OXPhos

Electron transport



What is a byproduct of uncoupling the electron transport chain?

- a. heat
- b. extra ATP
- c. more transfer of hydrogen ions
- e. more electron transport



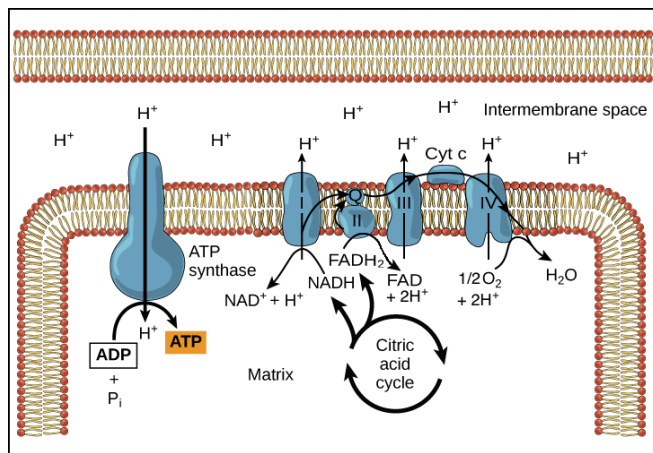
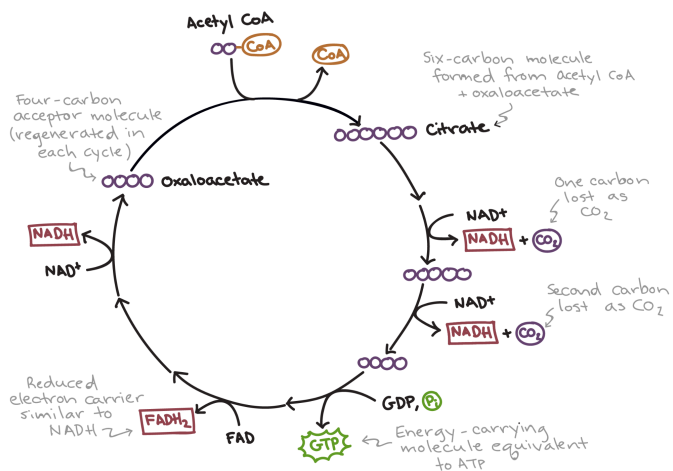
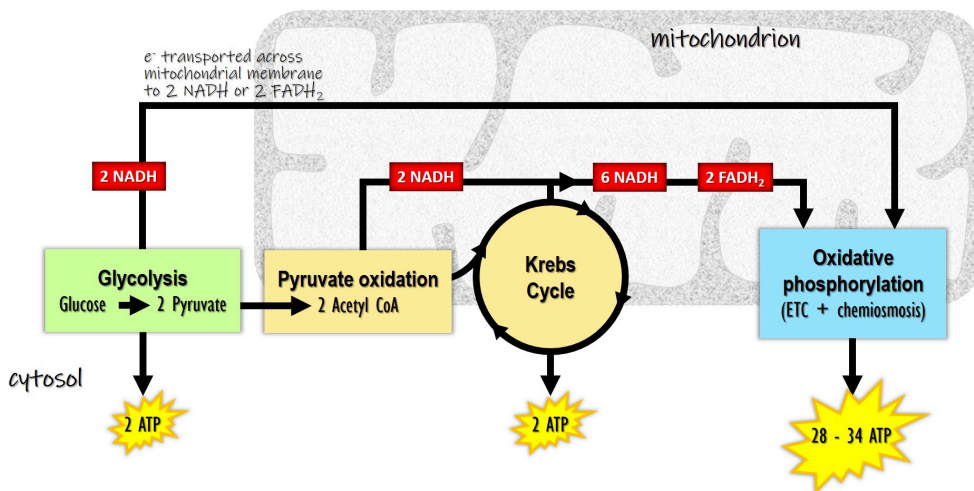
Use the diagrams above to answer the following:

Describe the role of light in the light dependent reactions.

Explain How the products of the light dependent reactions are used in the Calvin cycle.

Make a claim regarding what would happen if there was a mutation in Photosystem II that would not allow it to properly carry out its current function.

Provide **reasoning with evidence** based on the role of Photosystem II to support the claim made above.



Use the visuals above to help you answer the following questions:

1. **Explain** why utilizing oxygen allows organisms to produce much more ATP than not utilizing oxygen.
2. **Describe** the important outputs of the Krebs cycle that drive oxidative phosphorylation?
3. Cyanide interferes with proteins in the electron transport chain that contain iron. **Make a claim** regarding the impact on ATP production from cyanide poisoning.
4. Provide **reasoning with evidence** based on the function of the electron transport chain to support your claim.