

This print-out should have 86 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

EEM 02

001 10.0 points

Water held back by a dam represents what kind of energy?

1. Potential **correct**
2. Irrigation
3. Hydroelectric
4. Kinetic
5. At times, all of these

Explanation:

EEM 03

002 10.0 points

Which of the following represents potential energy?

1. Electric charge imbalance
2. Both Chemical bonds and Concentration gradient
3. Concentration gradient
4. Chemical bonds
5. All of these **correct**

Explanation:

EEM 06

003 10.0 points

The first law of thermodynamics states that the total energy in the universe is

1. increasing.
2. being converted to matter.
3. being converted to free energy.

4. decreasing.

5. constant. **correct**

Explanation:

EEM 07

004 10.0 points

In any system, the total energy includes usable and unusable energy. The unusable energy is a measure of the disorder of the system and is referred to as

1. free energy.
2. thermodynamics.
3. entropy. **correct**
4. equilibrium.
5. enthalpy.

Explanation:

EEM 10

005 10.0 points

The standard free energy change for the hydrolysis of ATP to ADP + P_i is -7.3 kcal/mol. From this information one can conclude that

1. the reaction will never reach equilibrium.
2. the reaction requires energy.
3. the reaction is exergonic. **correct**
4. the reaction is endergonic.
5. the free energy of ADP and phosphate is higher than the free energy of ATP.

Explanation:

EEM 14

006 10.0 points

How does the second law of thermodynamics apply to organisms?

1. The potential energy of ATP is converted to kinetic energy such as muscle contractions.

2. It does not apply to organisms; the complexity of organisms contradicts the second law.

3. As energy transformations occur, free energy increases and unusable energy decreases.

4. To maintain order, life requires a constant input of energy. **correct**

5. Reactions occur only with an input of energy.

Explanation:

EEM 19

007 10.0 points

In glycolysis, the exergonic reaction 1,3-diphosphoglycerate \rightarrow 3-phosphoglycerate is coupled to the reaction $\text{ADP} + \text{P}_i \rightarrow \text{ATP}$. Which of the following is most likely to be true about the reaction $\text{ADP} + \text{P}_i \rightarrow \text{ATP}$?

1. The reaction is endergonic. **correct**
2. The reaction never reaches equilibrium.
3. The reaction is spontaneous.
4. Temperature will not affect the rate constant of the reaction.
5. There is a large decrease in free energy.

Explanation:

EEM 21

008 10.0 points

Which of the following statements about ATP is true?

1. An active cell requires about 100 molecules of ATP per second.
2. ATP releases a relatively small amount of

energy when hydrolyzed.

3. The hydrolysis of ATP is exergonic. **correct**

4. ATP consists of adenine bonded to deoxyribose.

5. On average, ATP is consumed within one second of its formation.

Explanation:

Explanation

EEM 25

009 10.0 points

Which of the following is an example of an exergonic reaction?

1. The Na^+ - K^+ pump
2. The beating cilia of a protozoan
3. Receptor-mediated endocytosis
4. Cellular respiration **correct**
5. Phagocytosis

Explanation:

EEM 31

010 10.0 points

The hydrolysis of sucrose to glucose and fructose is exergonic. However, if sucrose is dissolved in water and the solution is kept overnight at room temperature, there is no detectable conversion to glucose and fructose. Why?

1. The change in free energy of the reaction is negative.
2. The free energy of the products is higher than the free energy of the reactants.
3. The change in free energy of the reaction is positive.
4. This is a condensation reaction.

5. The activation energy of the reaction is high. **correct**

Explanation:

Metabolism 07

011 10.0 points

Which of the following is the correct description of ATP (adenosine triphosphate)?

1. a phospholipid made of phosphate and diglyceride

2. a simple sugar with a nitrogenous base and phosphates attached **correct**

3. a simple sugar with an amino acid and phosphates attached

4. a steroid similar to cholesterol attached to phosphates

5. a protein made of three amino acids attached to phosphates

Explanation:

Factual recall

Metabolism 12

012 10.0 points

Which of the following form of energy is the most randomized?

1. electricity

2. chemical bond

3. light

4. thermal (heat) **correct**

5. kinetic

Explanation:

Comprehension and recall

Metabolism 13

013 10.0 points

Which of the following reactions would result in a decrease of the entropy within a system?

1. photosynthesis **correct**

2. respiration

3. catabolism

4. hydrolysis

5. digestion

Explanation:

Comprehension

Metabolism 15

014 10.0 points

Why are biological organisms complex and organized in spite of the energy transfer and transformation which normally increases randomness?

1. They use more efficient enzymes.

2. The organisms are open systems. **correct**

3. The organisms are closed systems.

4. They are exceptions to the first and second law of thermodynamics.

5. They have emergent properties different from other non-living things.

Explanation:

Comprehension

Metabolism 29

015 10.0 points

Why is ATP an important energy molecule?

1. It energizes other molecules by accepting phosphate groups.

2. Synthesis of APT releases energy the cell can use.

3. ATP is an essential part of DNA.

4. Hydrolysis of its phosphate groups re-

leases energy the cell can use. **correct**

5. ATP is readily available in the abiotic environment.

Explanation:

Comprehension

Raven8 25

016 10.0 points

The term oxidation is derived from the name of the element oxygen.

This is reasonable, because oxygen

1. is present everywhere.
2. attracts electrons very strongly. **correct**
3. contains more electrons than are needed.
4. can be oxidized by accepting electrons.
5. can react chemically readily in its gas state.

Explanation:

Oxygen is very electronegative.

Raven8 26

017 10.0 points

When an atom or molecule gains one or more electrons, it is said to be

1. energized.
2. oxidized.
3. polarized.
4. reduced. **correct**
5. activated.

Explanation:

Reduction is the gain of electrons.

Raven8 29

018 10.0 points

As energy is being reconverted through the many forms, it is continuously lost as

1. heat. **correct**
2. chemical energy.
3. light.
4. sound.
5. electricity.

Explanation:

Some energy is lost as heat in any transfer.

Raven8 43

019 10.0 points

ATP gives up energy when it is converted to

1. ADP and phosphate. **correct**
2. DNA.
3. NADH.
4. NADP.
5. RNA.

Explanation:

Recall

GA SB1 02

020 10.0 points

Scientists are trying to determine the function of an organelle in a plant cell. They observe that water and carbon dioxide enter the organelle, and oxygen and glucose exit the organelle. This organelle is most likely

1. a ribosome.
2. a mitochondria.
3. a chloroplast. **correct**
4. a nucleus.
5. an endoplasmic reticulum.

Explanation:

These chemicals are the ingredients for photosynthesis. Water and carbon dioxide are reactants, and oxygen and glucose are products. This chemical reaction takes place inside the chloroplast.

GA SB1 37

021 10.0 points

Which statement best explains why a tree may continue to carry out photosynthesis in the dark?

1. Products of the light-dependent reactions are still available for use. **correct**
2. Darkness is required for the light-independent reactions to occur.
3. Photosynthesis does not require sunlight to occur.
4. The tree is using different wavelengths of light for photosynthesis in the dark.

Explanation:

Sunlight is only required for the light-dependent half of photosynthesis – this part produces the ATP energy needed to power the second half. A plant can complete the light-independent half of photosynthesis during day or night as long as ATP is available.

GA SB1 48

022 10.0 points

Leaves contain openings known as stomata, which allow gas exchange with the outside environment. Which phrase best represents the net flow of gases involved in photosynthesis that would go through a leaf's stomata on a sunny day?

1. Carbon dioxide moves in while oxygen moves out. **correct**
2. Oxygen moves in while nitrogen moves out.
3. Carbon dioxide and oxygen move in while ozone moves out.

4. Water and ozone move in while carbon dioxide moves out.

Explanation:

Carbon dioxide is a reactant in photosynthesis, it needs to move into the plant. Oxygen is a byproduct of photosynthesis, so the plant would release it.

GA SB1 54

023 10.0 points

Which word equation represents the process of photosynthesis?

1. carbon dioxide + water → glucose + oxygen **correct**
2. maltose + water → glucose + glucose
3. glucose + oxygen → carbon dioxide + water
4. glucose → alcohol + carbon dioxide

Explanation:

Photosynthesis requires carbon dioxide and water in the presence of sunlight to produce glucose sugar and oxygen.

Photosynthesis-KS1

024 10.0 points

Why do plants use visible (light) part of the electromagnetic spectrum to do photosynthesis and not the areas of spectrum with shorter (UV and below) or longer wavelength (IR and above)?

1. UV light and IR spectrum are more damaging than visible light.
2. Visible spectrum is weaker than IR and safer than UV spectrum.
3. Visible light has the optimum level of energy and safety to perform photosynthesis. **correct**
4. Visible spectrum is preferred by the proteins in Calvin cycle.

Explanation:

Visible light spectrum is safer than UV and shorter wavelnegths and at the same time has more energy than IR and longer wavelength of the electromagnetic spectrum.

Photosynthesis 03

025 10.0 points

What are the products that result from the light reactions of photosynthesis?

1. ADP, P_i , and $NADP^+$
2. CO_2 and glucose
3. H_2O and O_2
4. ATP and NADPH **correct**
5. electrons and H^+

Explanation:

ATP and NADPH are the products that result from the light reactions of photosynthesis.

Photosynthesis 09

026 10.0 points

Name the color of light that is least effective in photosynthesis.

1. green **correct**
2. blue
3. yellow
4. orange
5. red

Explanation:

In the spectrum of light, green is least effective in driving photosynthesis.

Photosynthesis 55

027 10.0 points

The light reactions happen in/on _____ and the Calvin cycle happens in/on _____.

1. inner membrane, matrix
2. chloroplast, cytoplasm
3. stoma, thylakoid
4. thylakoid, stroma **correct**
5. thylakoid, stomata

Explanation:

Raven10 17

028 10.0 points

Flattened sacs of internal membranes which have proteins embedded in them and are associated with photosynthesis are called

1. thylakoids. **correct**
2. photosystems.
3. cristae.
4. the stroma.
5. chloroplasts.

Explanation:

Basic concept

Raven10 18

029 10.0 points

In green plant photosynthesis, the electron donor for the light-dependent reaction is

1. oxygen.
2. chlorophyll II.
3. carbon dioxide.
4. RuBP.
5. water. **correct**

Explanation:

H_2O donates electrons to the beginning of Photosystem II.

Raven10 47

030 10.0 points

Most atmospheric oxygen occurs as a result of photosynthesis.

From which molecule is the oxygen derived?

1. carbon dioxide
2. ATP
3. water **correct**
4. chlorophyll
5. glucose

Explanation:

P_{680}^+ extracts electrons from H_2O , leading to the formation of O_2 .

StarrC 06 16**031 10.0 points**

What is a photosystem?

1. a cluster of light-trapping pigments **correct**
2. a collection of membrane-bound carbohydrates
3. a collection of digestive enzymes
4. a collection of enzymes in a root cell.
5. a fluid-filled space

Explanation:

A photosystem is a collection of light-trapping pigments.

Sunlight 06**032 10.0 points**

When a suspension of algae is incubated in a flask in the presence of light and CO_2 and then transferred to the dark, the reduction of 3-phosphoglycerate to glyceraldehyde 3-phosphate is blocked. This reaction stops when the algae are placed in the dark because

1. the reaction requires ATP and $NADPH + H^+$. **correct**

2. the reaction requires CO_2 .

3. the reaction requires O_2 .

4. chlorophyll is not synthesized in the dark.

5. the reaction is exergonic.

Explanation:

Holt Bio 05 07**033 10.0 points**

Electrons in pigment molecules become excited

1. during light-independent reactions.
2. independent of any outside stimulus.
3. when light strikes a thylakoid. **correct**
4. during the Calvin cycle.
5. when water molecules are broken down.

Explanation:

Electrons in pigments become excited when light strikes them.

Photosynthesis 10**034 10.0 points**

Describe the main role of the antenna pigment molecules located in the thylakoid membranes.

1. to concentrate photons inside the stroma
2. to harvest photons and transfer light energy to the reaction-center chlorophyll **correct**
3. to synthesize ATP from ADP and Pi
4. to split water and release oxygen to the reaction-center chlorophyll
5. to pass electrons to ferredoxin and then NADPH

Explanation:

The main role of the antenna pigment molecules is to harvest photons and transfer light energy to the reaction-center chlorophyll.

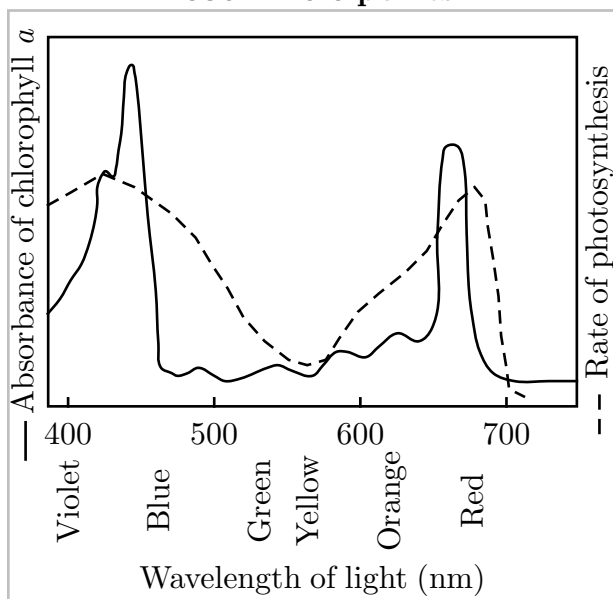
Photosynthesis 12**035 10.0 points**

Describe the primary function of the light reactions of photosynthesis.

1. production of ATP and NADPH **correct**
2. production of NADPH used in respiration
3. use of ATP to make glucose
4. production of energy-rich glucose from carbon dioxide and water
5. conversion of light energy to the chemical energy of PGAL

Explanation:

The primary function of the light reactions of photosynthesis is to produce ATP and NADPH.

Photosynthesis 42**036 10.0 points**

The solid line in the given figure shows the absorption spectrum for chlorophyll *a* and the

dashed line shows the action spectrum for photosynthesis.

Why the two curves are different?

1. Other pigments absorb light in addition to chlorophyll *a*. **correct**
2. Green and yellow wavelengths inhibit the absorption of red and blue wavelengths.
3. Bright sunlight destroys photosynthetic pigments.
4. Anaerobic bacteria probably interfered with light absorption.
5. The two lines are probably the result of inaccurate measurements.

Explanation:

There are other pigments (carotenoids, *etc.*) involved in photosynthesis.

Phototsynthesis 47**037 10.0 points**

Why is cyclic electron flow (at Photosystem I) important for photosynthesis?

1. Because non-cyclic electron flow produces ATP and NADPH in equal quantities, while the Calvin cycle consumes less ATP than NADPH.
2. Because light reactions cannot happen without Calvin cycle.
3. Because non-cyclic electron flow produces more NADPH than ATP, while the Calvin cycle consumes less ATP than NADPH.
4. Because non-cyclic electron flow produces no ATP while the Calvin cycle needs ATP.
5. Because non-cyclic electron flow produces ATP and NADPH in equal quantities, while the Calvin cycle consumes more ATP than NADPH. **correct**

Explanation:

Phototsynthesis 51**038 10.0 points**

Suppose a thylakoid is somehow punctured so that the interior of the thylakoid is no longer separated from the stroma. This damage will have the most direct effect on which of the following processes?

1. the synthesis of ATP due to chemiosmosis **correct**
2. the flow of electrons from photosystem II to photosystem I
3. the splitting of water
4. the absorption of light energy by chlorophyll
5. the reduction of NADP^+

Explanation:

Higher concentration of protons inside thylakoid relative to low proton concentration in stroma, is essential for chemiosmosis and ATP synthesis during photophosphorylation. Once this proton concentration gradient disappears ATP synthesis will stop.

Raven10 29**039 10.0 points**

What is common to both cellular respiration and the light reactions of photosynthesis?

1. Oxygen is one of the byproducts.
2. Mitochondria are essential organelles.
3. Light is required.
4. chemiosmotic formation of ATP **correct**
5. Electrons are transferred to glucose.

Explanation:

Both use a proton gradient to form ATP.

Raven10 51**040 10.0 points**

Carotenoids are important to many plants

because these pigments can

1. store electrons for use during the “dark” reaction of photosynthesis.
2. absorb water so that hydrolysis can be carried out in the chloroplasts.
3. capture UV radiation that is harmful to the DNA in the nucleus of plant cells.
4. remove carbon dioxide from the air.
5. absorb wavelengths of light that neither chlorophyll *a* nor *b* can absorb. **correct**

Explanation:

Carotenoids absorb light at wavelengths different than chlorophyll *a* or *b*.

Starr 07 06**041 10.0 points**

What is the role of NADPH in photosynthesis?

1. It carries hydrogen and electrons from one reaction site to another. **correct**
2. It fixes atmospheric carbon.
3. It produces ATP.
4. It forms ATP by phosphate group transfers.
5. It converts light energy to chemical energy.

Explanation:

NADPH transfers electrons and protons, eventually leading to the formation of a proton gradient.

Starr 07 11**042 10.0 points**

Oxygen is formed during

1. photorespiration.
2. the Calvin-Benson cycle.

3. the cyclic pathway of ATP formation.
4. the noncyclic pathway of ATP formation. **correct**
5. the dark reactions.

Explanation:

O₂ is formed by PS II. The cyclic pathway involves only PS I.

StarrC 06 11
043 10.0 points

According to the theory of chemiosmosis, ATP is synthesized with energy released by

1. the electric potential across an inner mitochondrial membrane.
2. the hydration of hydrogen ions.
3. pumping hydrogen ions against a concentration gradient.
4. the diffusion of hydrogen ions down a concentration gradient. **correct**
5. the cohesivity of water.

Explanation:

As per chemiosmotic theory, hydrogen ions are pumped across a cell membrane to a site of high concentration. When they diffuse down their concentration gradient through ATP synthase, the energy released is used to synthesize ATP.

Sunlight 08
044 10.0 points

When white light strikes a blue pigment, blue light is

1. used to synthesize ATP.
2. scattered or transmitted. **correct**
3. absorbed.
4. reduced.

5. converted to chemical energy.

Explanation:

Sunlight 10
045 10.0 points

Plants are green because

1. plants possess green pigment.
2. chloroplasts transmit green light.
3. chlorophylls absorb blue and orange-red wavelengths of light and reflect green light. **correct**
4. chlorophylls absorb green light.
5. energized chlorophyll a emits green light.

Explanation:

Sunlight 12
046 10.0 points

When a photon is absorbed by a molecule, the photon

1. causes a change in the velocity of the wavelengths.
2. None of these
3. raises the molecule from a ground state of low energy to an excited state. **correct**
4. loses its ability to generate any energy.
5. affects the molecule in ways that are not clearly understood.

Explanation:

Sunlight 16
047 10.0 points

How do red and blue light differ from one another?

1. Red is radiant, whereas blue is electromagnetic.

2. They have a different number of photons in each quantum.
3. They differ in intensity.
4. They differ in duration.
5. Their wavelengths are different. **correct**

Explanation:

Photosynthesis 20
048 10.0 points

How do you account for the fact that the number of ATP molecules consumed by the Calvin cycle is 30,000 compared to 20,000 of NADPH?

1. noncyclic electron flow
2. chlorophyll
3. photosystem II
4. photosystem I
5. cyclic electron flow **correct**

Explanation:

The number of ATP molecules consumed by the Calvin cycle is produced both by cyclic and noncyclic electron flow whereas NADPH comes from only noncyclic electric flow.

Photosynthesis 26
049 10.0 points

How are the light reactions related to the Calvin cycle?

1. There is no relationship between the light reactions and the Calvin cycle.
2. The light reactions provide the Calvin cycle with oxygen for electron flow, and the Calvin cycle provides the light reactions with water to split.
3. The light reactions provide ATP and NADPH to the Calvin cycle, and the cycle

returns ADP, P_i , and $NADP^+$ to the light reactions. **correct**

4. The light reactions supply the Calvin cycle with CO_2 to produce sugars, and the Calvin cycle supplies the light reactions with sugars to produce ATP.

5. The light reactions provide ATP and NADPH to the carbon fixation step of the Calvin cycle, and the cycle provides water and electrons to the light reactions.

Explanation:

The light reactions provide ATP and NADPH to the Calvin cycle, and the cycle returns ADP, P_i , and $NADP^+$ to the light reactions.

Photosynthesis 34
050 10.0 points

Which of the following statements describes the primary function of the Calvin cycle in green plants?

1. split water and release oxygen
2. synthesize simple sugars from carbon dioxide **correct**
3. use NADPH to release carbon dioxide
4. use ATP to release carbon dioxide
5. transport RuBP out of the chloroplast

Explanation:

The primary function of the Calvin cycle is to synthesize simple sugars from carbon dioxide.

Photosynthesis 41
051 10.0 points

In which of the following structures does the Calvin cycle of photosynthesis take place?

1. cytoplasm surrounding the chloroplast
2. stroma of the chloroplast **correct**

3. chlorophyll molecule
4. thylakoid membrane
5. outer membrane of the chloroplast

Explanation:

The Calvin Cycle of photosynthesis takes place inside the stroma of the chloroplast. It is in the Calvin Cycle that CO_2 is converted into a glucose molecule.

StarrC 06 08
052 10.0 points

Which of the following takes place during the light-independent reactions of photosynthesis?

1. photolysis
2. ATP formation
3. carbon dioxide fixation **correct**
4. NADPH formation
5. oxygen production

Explanation:

In the light-independent reactions, carbon dioxide becomes affixed to a carbon compound that can enter the Calvin-Benson cycle.

Sunlight 52
053 10.0 points

After the removal of carbon, the oxygen in CO_2 ends up

1. attached to hydrogen to form water.
2. as atmospheric oxygen.
3. attached to carbon and hydrogen to form sugar (G3P). **correct**
4. in the soil.
5. as rubisco.

Explanation:

GA SB1 36

054 10.0 points

In animal cells, the energy to convert ADP to ATP comes directly from

1. organic molecules (like sugar). **correct**
2. hormones (like testosterone).
3. inorganic molecules (like table salt).
4. sunlight.

Explanation:

The mitochondria produces ATP during cellular respiration by using organic molecules, usually glucose (although cells can also burn fats and even proteins if carbohydrates are not available).

GA SB1 43

055 10.0 points

Where do the final steps of aerobic cellular respiration occur?

1. along the endoplasmic reticulum
2. throughout the cytoplasm
3. inside the mitochondria **correct**
4. on the surface of the ribosomes

Explanation:

In the first step of respiration, glycolysis takes place in the cytoplasm. If oxygen is present, then aerobic respiration occurs and continues inside the mitochondria to produce more ATP.

GA SB1 46

056 10.0 points

Muscle cells in athletes often have more mitochondria than do muscle cells in nonathletes. Based on this observation, it can be inferred that the muscle cells in athletes

1. have nuclei that contain more DNA than do the muscle cells of non-athletes.

2. have a smaller demand for cell proteins than do the muscle cells of non-athletes.

3. reproduce less frequently than do the muscle cells of non-athletes.

4. have a greater demand for energy than do the muscle cells of non-athletes. **correct**

Explanation:

Mitochondria produce energy for the cell.

GA SB1 59

057 10.0 points

Cellular respiration occurs in which type of organism?

1. decomposers only

2. autotrophs only

3. all organisms **correct**

4. heterotrophs only

Explanation:

All organisms undergo respiration to convert sugar (and other organic molecules) into ATP needed by cells.

Harvest 01

058 10.0 points

ATP is

1. All of these **correct**

2. the cell's principal compound for energy transfers.

3. a short-term energy-storage compound.

4. synthesized within mitochondria.

5. the molecule all living cells rely on to do work.

Explanation:

Raven9 15

059 10.0 points

What electron carrier is used to harvest energy from glucose molecules in a series of gradual steps in the cytoplasm?

1. ATP

2. NADH

3. NAD⁺ **correct**

4. cyclic AMP

5. pyruvate

Explanation:

NAD⁺ is reduced to NADH during glycolysis.

Raven9 53

060 10.0 points

Which statement accurately reflects the process of glycolysis?

1. Glycolysis is most likely one of the earliest of all biochemical reaction to evolve. It uses molecular oxygen and occurs in the cytoplasm.

2. Glycolysis is most likely one of the earliest of all biochemical reactions to evolve. It uses molecular oxygen; however, it occurs in anaerobic environments.

3. Glycolysis is most likely one of the earliest of all biochemical reaction to evolve. It uses molecular oxygen and occurs in the mitochondria.

4. Glycolysis is most likely one of the earliest of all biochemical reaction to evolve. It uses molecular oxygen; however, it occurs in aerobic environments.

5. Glycolysis is most likely one of the earliest of all biochemical reaction to evolve. It does not use molecular oxygen, and all its reactions occur free in the cytoplasm. **correct**

Explanation:

Glycolysis does not use O₂ and occurs in

the cytoplasm.

Respiration 02
061 10.0 points

Which of the following describes the fate of oxygen utilized directly during cellular respiration?

1. the oxidation of pyruvate to acetyl CoA
2. the phosphorylation of ADP
3. the citric acid cycle
4. glycolysis
5. accepting electrons at the end of the electron transport chain **correct**

Explanation:

The process involves accepting electrons at the end of the electron transport chain.

Respiration 41
062 10.0 points

What is the fate of an extra 15 lbs of fat, recently lost by a person after switching over on to a rigorous diet?

1. It was converted to urine and eliminated from the body.
2. It was converted to ATP, which weighs much less than fat.
3. It was released as CO₂ and H₂O. **correct**
4. Chemical energy was converted to heat and then released.
5. It was broken down to amino acids and eliminated from the body.

Explanation:

The extra fat was released as CO₂ and H₂O.

Respiration 55
063 10.0 points

Mice were fed glucose (C₆H₁₂O₆) containing radioactive carbon, and then closely moni-

tored. Where would you eventually find radioactive carbon atoms after the mice completely oxidize the glucose in aerobic respiration?

1. ATP
2. oxygen gas
3. carbon dioxide **correct**
4. water
5. NADH

Explanation:

Harvest 07
064 10.0 points

Which of the following processes occurs when oxygen is unavailable?

1. An electron transport chain
2. The citric acid cycle
3. All of these
4. Fermentation **correct**
5. Pyruvate oxidation

Explanation:

Harvest 08
065 10.0 points

In all cells, glucose metabolism begins with

1. the citric acid cycle.
2. pyruvate oxidation.
3. fermentation.
4. chemiosmosis.
5. glycolysis. **correct**

Explanation:

066 10.0 points

In eukaryotes, where do the glycolytic reactions take place?

1. cytoplasm of the cell **correct**
2. mitochondria of the cell
3. endoplasmic reticulum of each cell
4. Golgi bodies of the cell
5. ribosomes of the cell

Explanation:

Glycolysis occurs in the cytoplasm.

Raven9 28
067 10.0 points

What is *not* an end product of glycolysis?

1. NAD^+ **correct**
2. NADH
3. pyruvate
4. energy
5. ATP

Explanation:

Recall

Respiration 07
068 10.0 points

Which of the following statements does *not* describe the role of glycolysis in respiration?

1. The end products of glycolysis are CO_2 and H_2O . **correct**
2. The enzymes of glycolysis are located in the cytosol of the cell.
3. Glycolysis can operate in the complete absence of O_2 .
4. Glycolysis makes ATP exclusively through substrate-level phosphorylation.

5. Glycolysis has steps involving oxidation-reduction reactions.

Explanation:

The end products of glycolysis are not CO_2 and H_2O .

Respiration 50
069 10.0 points

Which stage

I: glycolysis

II: oxidation of pyruvate to acetyl CoA

III: Krebs cycle

IV: oxidative phosphorylation (chemi osmosis)

of glucose oxidation produces the most ATP when glucose is completely oxidized to carbon dioxide and water?

1. stage I
2. stage IV **correct**
3. stage III
4. stage II

Explanation:

Recall

Respiration 69
070 10.0 points

How does the reduction of pyruvate to lactic acid during fermentation allow glycolysis to continue in the absence of oxygen?

1. Water is formed during this reaction.
2. This reaction is coupled to the formation of ATP.
3. This reaction is coupled to the reduction of FAD to FADH_2 .
4. This reaction is coupled to the oxidation of NADH to NAD^+ . **correct**
5. This reaction is a Kinase reaction.

Explanation:

Starr 07 20

071 10.0 points

ATP synthase

1. attaches carbon to RuBP.
2. pumps hydrogen ions into the thylakoid compartment.
3. consumes ATP
4. splits water.
5. catalyzes the attachment of phosphate to ADP. **correct**

Explanation:

Recall

Starr 08 18

072 10.0 points

Most of the carbon dioxide you exhale is released during

1. glycolysis.
2. lactate fermentation.
3. the Krebs cycle. **correct**
4. alcoholic fermentation.
5. electron transfer phosphorylation.

Explanation:

Most respirational CO₂ is produced during the Krebs cycle.

StarrC 07 18

073 10.0 points

In the final stage of aerobic respiration, which of the following deliver hydrogen ions and electrons to the electron transport system?

1. NADH and ATP
2. NADPH and FADH₂

3. NADPH and ATP

4. NADH and FADH₂ **correct**

5. NADH and NADPH

Explanation:

Ten NADH and two FADH₂ deliver the hydrogen ions and electrons they picked up in the preceding stages.

StarrC 07 20

074 10.0 points

In the final stage of aerobic respiration, energy associated with the flow of which of the following through an ATP synthase drives the formation of ATP?

1. NADH
2. electrons
3. hydrogen ions **correct**
4. pyruvate
5. water

Explanation:

Energy associated with the movement of hydrogen ions from the outer to the inner compartment drives the formation of ATP from ADP and inorganic phosphate.

Harvest 51

075 10.0 points

Which of the following statements about the electron transport chain is true?

1. Electrons are passed from donor to recipient carrier molecules in a series of oxidation-reduction reactions.
2. Electrons are received from NADH and FADH₂.
3. All of these **correct**
4. Most of the enzymes are part of the inner mitochondrial membrane.

5. Usually the terminal electron acceptor is oxygen.

Explanation:

Holt Bio 05 11

076 10.0 points

If oxygen is NOT available to accept electrons during aerobic respiration,

1. aerobic processes stops.
2. fermentation proceeds.
3. All of these **correct**
4. only small amounts of ATP can be produced.

Explanation:

Raven9 22

077 10.0 points

Chemiosmotic generation of ATP is driven by

1. osmosis of macromolecules.
2. phosphate transfer through the plasma membrane.
3. large quantities of ADP.
4. a difference in H^+ concentration on the two sides of the mitochondrial membrane. **correct**
5. sodium, potassium pumps.

Explanation:

H^+ flow down their gradient through ATP synthase.

Respiration 17

078 10.0 points

By which process does cellular respiration derive most of its chemical energy?

1. generating carbon dioxide and oxygen in the electron transport chain

2. transferring electrons from organic molecules to oxygen **correct**

3. converting oxygen to ATP

4. forming lactate from pyruvate

5. substrate-level phosphorylation

Explanation:

Cellular respiration derives most of its chemical energy by transferring electrons from organic molecules to oxygen.

Respiration 18

079 10.0 points

Choose the sequence in which electrons move downhill during aerobic respiration.

1. glucose \rightarrow ATP \rightarrow oxygen
2. food \rightarrow glycolysis \rightarrow Krebs cycle \rightarrow NADH \rightarrow ATP
3. glucose \rightarrow ATP \rightarrow electron transport chain \rightarrow NADH
4. food \rightarrow Krebs cycle \rightarrow ATP \rightarrow NAD^+
5. food \rightarrow NADH \rightarrow electron transport chain \rightarrow oxygen **correct**

Explanation:

The direction of flow of electrons during aerobic respiration is as follows:

food \rightarrow NADH \rightarrow electron transport chain \rightarrow oxygen.

GA SB1 50

080 10.0 points

You have been jogging for two hours and you get painful cramps in your legs. The cramps are caused by a buildup of lactic acid from the process called

1. glycolysis.
2. fermentation. **correct**
3. aerobics.

4. phosphorylation.

Explanation:

When cells run out oxygen to fully break down glucose (aerobic respiration), they switch to anaerobic respiration (or fermentation). This allows the cell to finish the current cycle of respiration and go back to break down more glucose in glycolysis. Anaerobic respiration is less efficient – it yields ATP and also produces lactic acid that causes the burning, cramping sensation (and eventually, muscle failure).

GA SB1 53

081 10.0 points

A cell that is in the process of aerobic respiration

1. uses less carbon dioxide than in anaerobic respiration.

2. uses less oxygen than in anaerobic respiration.

3. produces more alcohol than in anaerobic respiration.

4. produces more ATP than during anaerobic respiration. **correct**

Explanation:

Aerobic respiration uses oxygen to further break down glucose, and therefore can produce more energy in the form of ATP. Anaerobic respiration occurs when oxygen is not present, and produces less ATP because glucose cannot be broken down after the initial step of glycolysis.

Harvest 45

082 10.0 points

Many species derive their energy from fermentation. The function of fermentation is to

1. reduce NAD^+ .

2. oxidize $\text{NADH} + \text{H}^+$, ensuring a contin-

ued supply of ATP. **correct**

3. oxidize CO_2 .

4. produce acetyl CoA.

5. None of these

Explanation:

Harvest 69

083 10.0 points

When acetyl CoA builds up in the cell, it increases the activity of the enzyme that synthesizes oxaloacetate from pyruvate and carbon dioxide. Acetyl CoA is acting as a(n)

1. electron carrier.

2. acetate donor.

3. substrate.

4. allosteric activator. **correct**

5. proton pump.

Explanation:

Harvest 72

084 10.0 points

In yeast, if the citric acid cycle is shut down because of a lack of oxygen, glycolysis will probably

1. produce more NADH per mole of glucose.

2. increase. **correct**

3. produce acetyl CoA for fatty acid synthesis.

4. shut down.

5. produce more ATP per mole of glucose.

Explanation:

Raven9 43

085 10.0 points

Regardless of the electron or hydrogen acceptor used, one of the products of fermentation is always

1. ATP.
2. NAD^+ . **correct**
3. pyruvate.
4. alcohol.
5. ADP.

Explanation:

NAD^+ is regenerated by fermentation.

Respiration 74

086 10.0 points

Conversion of corn sugar to ethanol is an inefficient process of energy conversion. Louis Pasteur proved that yeast grown under anaerobic conditions to make ethanol consumed 100 times more sugar than those under aerobic conditions did, because _____

1. corn sugar is not a good source for making ethanol or ATP.
2. no Krebs cycle nor oxidative phosphorylation would occur in such fermentation. **correct**
3. Krebs cycle happens in fermentation but no ATP is produced.
4. lactate fermentation is more efficient than ethanol fermentation.
5. glycolysis does not happen under anaerobic condition.

Explanation: