This print-out should have 92 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Life Chemistry 33
001 10.0 points

Which of the following molecules have polar covalent bonds

1. O_2

2. CH_4

3. CO_2

4. CH_3OH

5. C_2H_6

LifeChem 15
002 10.0 points

The four elements most common in organisms are

1. calcium, iron, hydrogen, and oxygen.

2. water, carbon, hydrogen, and oxygen.

3. phosphorus, water, carbon, and oxygen.

4. nitrogen, carbon, iron, and hydrogen.

5. carbon, oxygen, hydrogen, and nitrogen.

LifeChem 33
003 10.0 points

All of the following are nonpolar except

1. O_2.

2. N_2.

3. NaCl.

4. CH_4.

5. H_2.

LifeChem 72
004 10.0 points

The notation $[H^+]$ refers to the

1. concentration of H^+ ions in moles per liter.

2. chemical reactivity of H^+ ions.

3. number of H^+ ions present in a solution.

4. number of protons in an H^+ ion.

5. charge of an H^+ ion.

Chemistry life 54 CH2 Sec2
005 10.0 points

Your friend is having some difficulty understanding the nature of covalent bonding, especially single, double, and triple bonds.

Your best explanation would be that covalent bonds are bonds between atoms

1. that share electrons; for example, a single bond involves one electron, a double bond two electrons, and a triple bond three electrons.

2. with polar sides; for example, a single bond involves one electron and one proton, a double bond two electrons and two protons, and a triple bond three electrons and three protons.

3. which contain equal numbers of electrons.

4. in which the atoms share pairs of electrons; for example, a single bond involves one pair of electrons, a double bond two pairs, and a triple bond three pairs of electrons.

5. in which the atoms receive electrons; for example, a single bond involves removing one electron, a double bond two electrons, and a triple bond three electrons.

Holt Bio 02 10
006 10.0 points

The concentration of hydrogen ions in a solution with a pH of 4 is how many times that of a solution with a pH of 2?

1. 1,000

2. 10

3. 2

4. 100

5. 20

Holt Bio 02 12
007 10.0 points

A catalyst

1. inhibits a reaction.

2. provides extra energy for a reaction.

3. lowers the activation energy of a reaction.

4. only allows irreversible reactions to occur.

5. eliminates the activation energy of a reaction.

Life Chemistry 06
008 10.0 points

Which of the following six elements make up 96% of living material?

1. C, H, O, Fe, Mg, P

2. C, H, N, O, Fe, S

3. C, H, O, S, Fe, Co

4. C, H, N, S, P, O

5. C, H. Mg, O, N, S

Life Chemistry 10
009 10.0 points

The reactivity of an atom arises from

1. the sum of the potential energies of all of the electronic shells.

2. the average distance of the outermost electron shell from the nucleus.

3. the potential energy of the valence shell.

4. the energy difference between the s and p orbitals.

5. the existence of unpaired electrons in the valence shell.

Life Chemistry 11
010 10.0 points

Which of the following terms includes all others in the list?

1. carbohydrate

2. polysaccharide

3. disaccharide

4. monosaccharide

5. starch

Life Chemistry 27
011 10.0 points

A covalent bond is likely to be polar when

1. it is between two atoms that are both very strong electron acceptors.

2. the two atoms sharing electrons are different elements.

3. the two atoms sharing electrons are of the same element.

4. the two atoms sharing electrons are equally electronegative.

5. one of the atoms sharing electrons is much more electronegative than the other atom.

Life Chemistry 28

012 (part 1 of 3) 10.0 points

The phosphate group of DNA interacts with a positively charged amino acid side chain through

1. an H-bond.

2. a covalent bond.

3. an ionic bond.

4. hydrophobic interactions.

5. hydrophylic interactions.

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013 (part 2 of 3) 10.0 points

When two amino acids with only —SH groups in their side chains interact, they would form

1. an ionic bond.

2. an H-bond.

3. hydrophylic interactions.

4. a covalent bond.

5. hydrophobic interactions.

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014 (part 3 of 3) 10.0 points

Two amino acid side chains with only $-CH_3$ in their side chains will interact to form

1. an ionic bond.

2. an H-bond.

3. a covalent bond.

4. hydrophylic interactions.

5. hydrophobic interactions.

LifeChem 31

015 10.0 points

What determines if a molecule is polar, non-polar, or ionic?

1. The bond distances

2. The number of protons

3. The ionic charges

4. The differences in the electronegativities of the atoms

5. The distance of the electrons from the nucleus

LifeChem 36

016 10.0 points

Which of the following atoms usually has the greatest number of covalent bonds with other atoms?

1. Oxygen

2. Hydrogen

3. Nitrogen

4. Sulfur

5. Carbon

LifeChem 44

017 10.0 points

Cholesterol is composed primarily of carbon and hydrogen atoms. Therefore, one would expect cholesterol to be

1. an acid.

2. soluble in water.

3. insoluble in water.

4. a base.

5. a buffer.

GA SB1 56

018 10.0 points

Which of the macromolecules are built from carbon atoms that living organisms obtain

from the carbon cycle?

1. proteins

2. lipids

3. nucleic acids

4. carbohydrates

5. all four macromolecules

GA SB1 57
019 10.0 points

Of the four macromolecules, only proteins and nucleic acids contain this important element.

1. nitrogen

2. oxygen

3. hydrogen

4. carbon

LifeOrigin 03
020 10.0 points

The bonds that form between the units of polymeric macromolecules are _____ bonds.

1. peptide

2. hydrogen

3. covalent

4. ionic

5. disulfide

Carbohydrate 01
021 10.0 points

The molecular formula for glucose is $C_6H_{12}O_6$.

What would be the molecular formula for a polymer by linking ten glucose molecules together by dehydration reactions?

1. $C_{60}H_{120}O_{60}$

2. $C_{60}H_{111}O_{51}$

3. $C_{60}H_{102}O_{51}$

4. $C_{60}H_{100}O_{50}$

5. $C_6H_{12}O_6$

GA SB1 20
022 10.0 points

Glycogen is an example of a

1. monosaccharide.

2. polysaccharide.

3. plant starch.

4. disaccharide.

Fatty acids
023 10.0 points

Which of the following statements concerning *unsaturated* fats is correct?

1. They contain more hydrogen than saturated fats having the same number of carbon atoms.

2. They generally solidify at room temperature.

3. They have double bonds in the carbon chains of their fatty acids.

4. They have fewer fatty acid molecules per fat molecule.

5. They are more common in animals than in plants.

LifeOrigin 45
024 10.0 points

Lipids are

1. important for energy storage.

2. All of these

3. hydrophobic.

4. important constituents of biological membranes.

5. insoluble in water.

LifeOrigin 51
025 10.0 points

Lipids form the barriers surrounding various compartments within an organism. Which property of lipids makes them a good barrier?

1. Many biologically important molecules are not soluble in lipids.

2. Lipids release large amounts of energy when broken down.

3. Triglycerides are lipids.

4. Lipids store energy.

5. Lipids are polymers.

LifeOrigin 52
026 10.0 points

You look at the label on a container of shortening and see "hydrogenated vegetable oil." This means that during processing the number of carbon-carbon double bonds in the oil was decreased. What is the result of decreasing the number of double bonds?

1. The oil is now a derivative carbohydrate.

2. The oil now has a lower melting point.

3. There are more "kinks" in the fatty acid chains.

4. The fatty acid is now a triglyceride.

5. The oil is now a solid at room temperature.

LifeOrigin 53
027 10.0 points

The portion of a phospholipid that contains the phosphorous group has one or more electric charges. That makes this region of the molecule

1. unsaturated.

2. nonpolar.

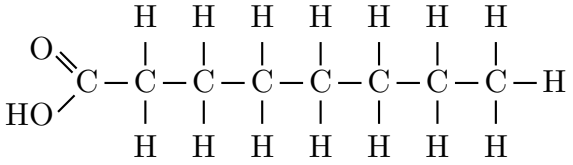
3. saturated.

4. hydrophilic.

5. hydrophobic.

Macromolecules 16
028 10.0 points

The molecule



is

1. a steroid.

2. a saturated fatty acid.

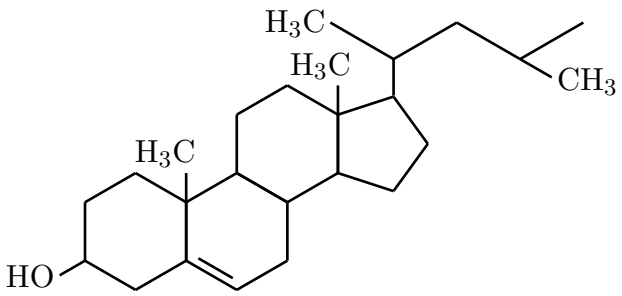
3. a polyunsaturated triglyceride.

4. an unsaturated fatty acid.

5. a common component of plant oils.

Macromolecules 20
029 10.0 points

Consider the structure



What is it?

1. a starch molecule

2. a nucleotide

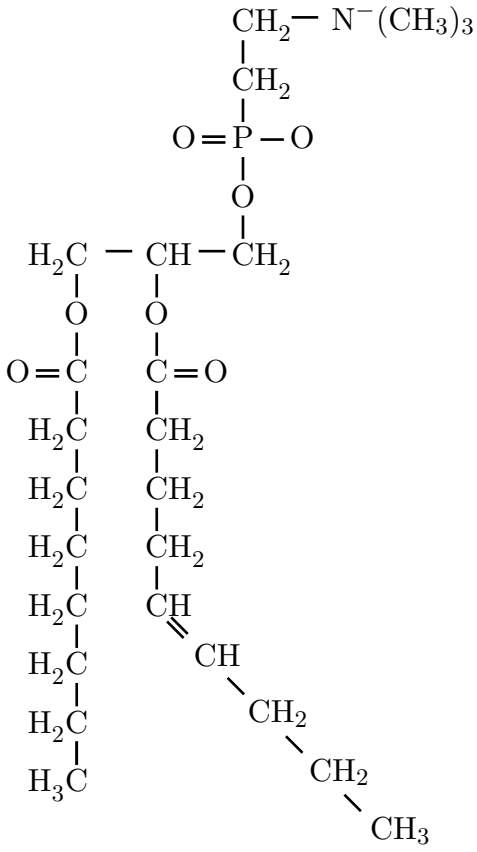
3. a steroid

4. a protein

5. a cellulose molecule

Macromolecules 22
030 (part 1 of 2) 10.0 points

The molecule



is a

1. triglyceride.

2. protein.

3. monoglyceride.

4. phospholipid.

5. steroid.

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031 (part 2 of 2) 10.0 points

Which part of a cell will contain this molecule as its main component?

1. cell membrane

2. cell wall

3. nucleus

4. cytoskeleton

5. cytoplasm

GA SB1 18
032 10.0 points

Amino acids differ from one another because of their

1. central carbon.

2. amino group.

3. carboxyl group.

4. R group.

5. glucose group.

Holt Bio 02 11
033 10.0 points

Protein folding is determined by

1. the sequence of the amino acids.

2. None of these

3. how amino acids interact with water.

4. All of these

5. how amino acids interact with each other.

LifeOrigin 12
034 10.0 points

The side chain of leucine is a hydrocarbon. In a folded protein, where would you expect to

find this residue?

1. In the interior of a cytoplasmic enzyme

2. Both in the interior of a cytoplasmic enzyme and on the exterior of a cytoplasmic enzyme

3. On the exterior of a cytoplasmic enzyme

4. Both in the interior of a cytoplasmic enzyme and on the exterior of a protein embedded in a membrane

5. On the exterior of a protein embedded in a membrane

LifeOrigin 19
035 10.0 points

The tertiary structure of a protein is determined by its

1. right-handed coil.

2. glycosidic linkages.

3. interactions among R groups.

4. hydrogen bonding.

5. branching.

LifeOrigin 23
036 10.0 points

When a protein loses its three-dimensional structure and becomes nonfunctional it is

1. permanent.

2. denatured.

3. reversible.

4. hydrolyzed.

5. environmentalized.

Macromolecules 29
037 10.0 points

How many water molecules were released during the synthesis of a protein that contains 500 amino acids ?

1. 500

2. 499

3. countless

4. unknown

5. 501

Macromolecules 40
038 10.0 points

The DNA encoding a protein will be mainly responsible in determining the

1. primary structure of a protein.

2. twisting of a fatty acid chain.

3. double helix of protein.

4. beta 1-4 linkages in cellulose.

5. secondary structure of a polysaccharide.

Macromolecules 85
039 10.0 points

Which biological molecule can be an acid or a base, polar or non-polar, and charged or uncharged?

1. cellulose

2. steroid

3. phospholipid

4. protein

5. starch

Raven3 38
040 10.0 points

Proteins offer all of the following functions *except*

1. cell recognition.

2. encoding genetic information.

3. metabolism.

4. membrane transport.

5. structure.

StarrW 03 06
041 10.0 points

A denatured protein or DNA molecule has lost its

1. shape.

2. None of these

3. hydrogen bonds.

4. All of these

5. function.

EEM 32
042 10.0 points

Trypsin and elastase are both enzymes that catalyze hydrolysis of peptide bonds. But trypsin only cuts next to lysine and elastase only cuts next to alanine. Why?

1. ΔG for the two reactions is different.

2. One of the reactions is endergonic and the other is exergonic.

3. Hydrolysis of lysine bonds requires water; hydrolysis of alanine bonds does not.

4. Trypsin is a protein, and elastase is not.

5. The shape of the active site for the two enzymes is different.

EEM 35
043 10.0 points

In some cases, a substrate-enzyme complex is stabilized by

1. covalent bonds.

2. hydrogen bonds.

3. ionic attractions.

4. All of these

5. hydrophobic interactions.

EEM 37
044 10.0 points

The enzyme sucrase increases the rate at which sucrose is broken down into glucose and fructose. Sucrase works by

1. increasing the amount of free energy of the reaction.

2. lowering the activation energy of the reaction.

3. supplying energy to speed up the reaction.

4. changing the shape of the active site.

5. decreasing the equilibrium constant of the reaction.

EEM 38
045 10.0 points

Which of the following statements about enzymes is true?

1. Enzymes lower the energy barrier.

2. Enzymes are proteins.

3. Enzymes have a specific amino acid sequence.

4. All of these

5. Enzymes are highly specific.

EEM 41

046 10.0 points

The enzyme glucose oxidase binds the six-carbon sugar glucose and catalyzes its conversion to glucono-1,4-actone. Mannose is also a six-carbon sugar, but glucose oxidase cannot bind mannose. The specificity of glucose oxidase is based on the

1. free energy of the transition state.

2. three-dimensional shape and structure of the active site.

3. activation energy of the reaction.

4. change in free energy of the reaction.

5. rate constant of the reaction.

EEM 48

047 10.0 points

In the presence of alcohol dehydrogenase, the rate of reduction of acetaldehyde to ethanol increases as the concentration of acetaldehyde is increased. Eventually, the rate of the reaction reaches a maximum, at which point further increases in the concentration of acetaldehyde have no effect. Why?

1. The enzyme is no longer specific for acetaldehyde.

2. At high concentrations of acetaldehyde, the change in free energy of the reaction decreases.

3. All of the alcohol dehydrogenase molecules are bound to acetaldehyde molecules.

4. At high concentrations of acetaldehyde, the activation energy of the reaction increases.

5. At high concentrations of acetaldehyde, the activation energy of the reaction decreases.

EEM 53

048 10.0 points

How do competitive and noncompetitive enzyme inhibitors differ?

1. Competitive inhibitors have a higher energy of activation than noncompetitive inhibitors have.

2. Noncompetitive enzyme inhibitors are reversible, whereas competitive inhibitors are irreversible.

3. Competitive inhibitors bind to the active site, whereas noncompetitive inhibitors change the shape of the active site.

4. Noncompetitive enzyme inhibitors contain magnesium, whereas competitive inhibitors contain iron.

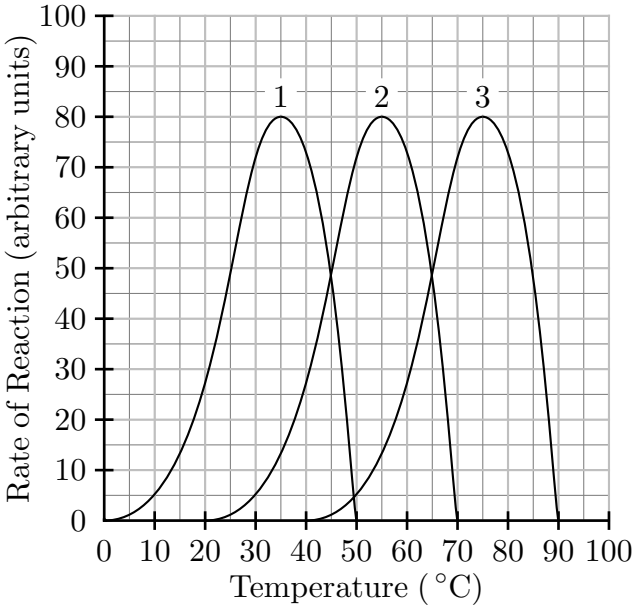
5. They function at different pH values.

Metabolism 40

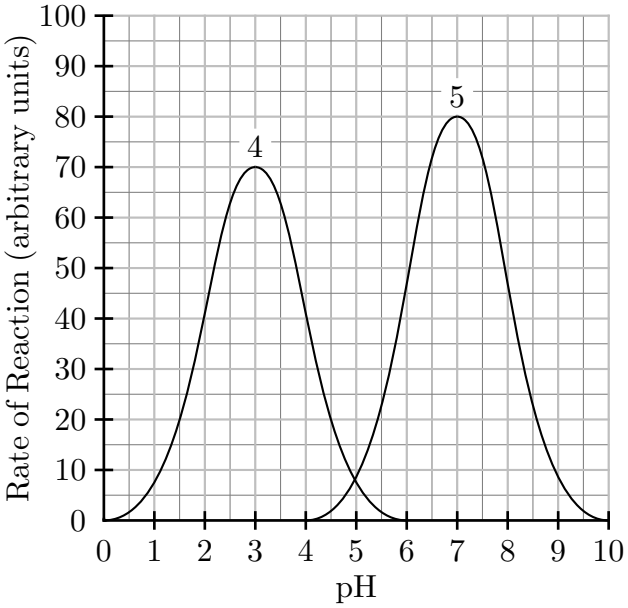
049 (part 1 of 2) 10.0 points

Five different enzymes were used in the following study to generate these two figures. The enzyme numbers are marked above each curve.

Enzymes (1, 2, & 3)



Enzymes (4 & 5)



Which enzyme works the best in a hot springs with a temperature of 70°C or higher?

1. Enzyme 4

2. Enzyme 1

3. Enzyme 3

4. Enzyme 5

5. Enzyme 2

---

050 (part 2 of 2) 10.0 points

What is the optimum temperature for enzyme 2?

1. 45°C

2. 35°C

3. 55°C

4. 0°C

5. 75°C

Metabolism 44

051 10.0 points

Which of the following could be reduced by increasing the substrate concentration in an enzymatic reaction?

1. competitive inhibition

2. concentration of the enzyme

3. non-competitive inhibition

4. organic cofactors

5. inorganic cofactors

Metabolism 49

052 10.0 points

Consider the multistep reaction

$$\text{Reactant A} \xrightarrow[\text{Enz 1}]{} \text{intermediate B} \xrightarrow[\text{Enz 2}]{} \text{end product D}$$
$$\text{intermediate C} \xrightarrow[\text{Enz 3}]{} \text{end product D}$$

This binding of D decreases the activity of the exzyme 1. Compound X binds to the active site of enzyme 1 and blocks its activity.

Substance X is

1. the product.

2. an intermediate.

3. a substrate.

4. a competitive inhibitor.

5. a non-competitive inhibitor.

Metabolism 52

053 10.0 points

Consider the multistep reaction

$$\text{Reactant A} \xrightarrow[\text{Enz 1}]{} \text{intermediate B} \xrightarrow[\text{Enz 2}]{} \text{end product D}$$
$$\text{intermediate C} \xrightarrow[\text{Enz 3}]{} \text{end product D}$$

This binding of D decreases the activity of the enzyme 1. Compound X binds to the active site of enzyme 1 and block its activity.

Which of the following will reduce or overcome the inhibition of enzyme 1 by compound

X?

1. Lower the activation energy needed.

2. Increase the concentration of reactant A.

3. Increase the activation energy needed.

4. Decrease the concentration of all the reactants.

5. Decrease the concentration of reactant A.

Metabolism 53
054 10.0 points

Which of the following is *correct* regarding cooperativity of an allosteric enzyme?

1. A molecule bound to one subunit of a complex enzyme affects the binding affinity of the rest of the subunits.

2. A product binds to an active site and inhibits enzyme activity.

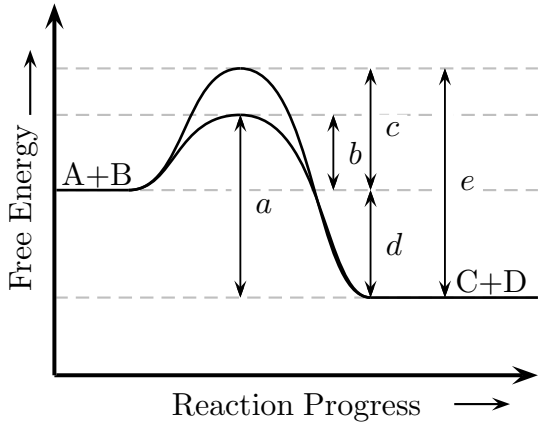
3. A substrate binds to an active site and inhibits enzyme activity.

4. Several reactants can be catalyzed by the same enzyme.

5. An enzyme complex contains all of the things needed for the pathway.

Metabolism 54
055 10.0 points

Consider the reaction A + B → C + D below.



Which of the following will have the highest level of free energy?

1. Both reactants and products have the same level.

2. Cannot say anything about this without temperature information.

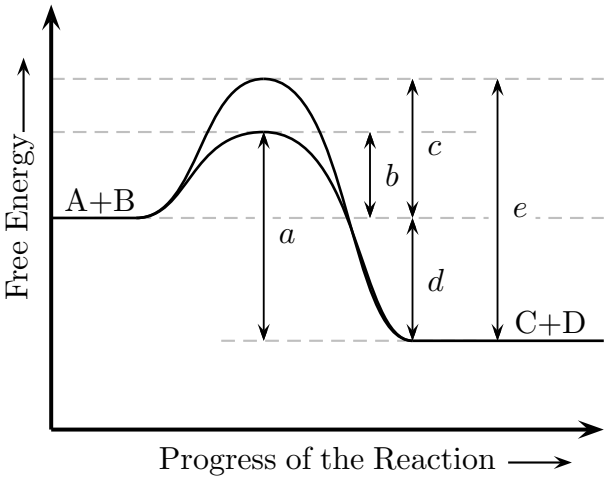
3. products C+D

4. transition states (not shown)

5. reactants A+B

Metabolism 57
056 10.0 points

Consider the reaction A + B → C + D below.



Which of the following would remain the same with or without an enzyme?

1. *d*

2. *c*

3. *e*

4. *b*

5. *a*

Metabolism 73
057 10.0 points

What is true regardng the induced fit of enzymes?

1. Enzymes bind to its substrate and change its shape accordingly.

2. The binding of the substrate does not depend on the active site.

3. Some enzymes are rigid in their structure and nothing changes them.

4. The active site creates a hydrophobic condition ideal for the reaction.

5. Enzymes are like locks and the substrate is like a key; they fit exactly.

Metabolism 76
058 10.0 points

Enzymes involved in a particular metabolic pathway are located near each other on a membrane.

How does this benefit the cells?

1. It is restricted to membranes because the enzymes are hydrophilic.

2. It provides order and promotes efficiency in metabolic process.

3. It protects the enzyme from competitive inhibition.

4. It allows the use of ATP and cofactors by the enzyme.

5. It helps to follow the first law of thermodynamics.

Raven5 16
059 10.0 points

Small cells function more effectively, because as cells become larger their surface area to volume ratio

1. is squared.

2. stays the same.

3. is cubed.

4. decreases.

5. increases.

CellMembrane 03
060 10.0 points

Which of the following statements about the proteins of the plasma membrane and the proteins of the inner mitochondrial membrane is true?

1. The two membranes differ in their lipid composition.

2. Both membranes have only peripheral proteins.

3. Only the mitochondrial membrane has integral proteins.

4. Only the mitochondrial membrane has peripheral proteins.

5. All of the proteins from both membranes are hydrophilic.

CellMembrane 04
061 10.0 points

The plasma membrane of animals contains carbohydrates

1. on both sides of the membrane.

2. within the membrane.

3. on the inner side of the membrane, facing

the cytosol.

4. on neither side of the membrane.

5. on the outer side of the membrane, protruding into the environment.

CellMembrane 05
062 10.0 points

In biological membranes, the phospholipids are arranged in a

1. single layer, with the fatty acids facing the interior of the cell.

2. bilayer, with the fatty acids facing outward.

3. bilayer, with the phosphorus groups in the interior of the membrane.

4. bilayer, with the fatty acids pointing toward each other.

5. single layer, with the phosphorus-containing region facing the interior of the cell.

CellMembrane 06
063 10.0 points

Cholesterol molecules in animal cell membranes act to

1. maintain the fluidity of the membrane.

2. attach to carbohydrates.

3. disrupt membrane function.

4. block enzyme activity.

5. transport ions across membranes.

CellMembrane 12
064 10.0 points

A characteristic of plasma membranes that helps them fuse during vesicle formation and phagocytosis is the

1. constant fatty acid chain length and degree of saturation.

2. ability of phospholipid molecules to flip over and trade places with other phospholipid molecules.

3. asymmetrical distribution of membrane proteins.

4. ratio of one protein molecule for every 25 phospholipid molecules.

5. capacity of lipids to associate and maintain a bilayer organization.

CellMembrane 13
065 10.0 points

The plasma membranes of winter wheat are able to remain fluid when it is extremely cold by

1. decreasing the number of hydrophobic proteins present.

2. increasing the number of cholesterol molecules present.

3. replacing saturated fatty acids with unsaturated fatty acids.

4. using fatty acids with longer tails.

5. closing protein channels.

CellMembrane 16
066 10.0 points

The LDL receptor is an integral protein that crosses the plasma membrane, with portions of the protein extending both outside and into the interior of the cell. The amino acid side chains (R groups) in the region of the protein that crosses the membrane are most likely

1. lipids.

2. hydrophobic.

3. hydrophilic.

4. charged.

5. carbohydrates.

CellMembrane 33
067 10.0 points

A concentration gradient of glucose across a membrane means that

1. there are more moles of glucose on one side of the membrane than on the other.

2. glucose molecules are more crowded on one side of the membrane than on the other.

3. there is less water on one side of the membrane than on the other.

4. there are more glucose molecules within the membrane than outside the membrane.

5. the glucose molecules are chemically more tightly bonded on one side than on the other.

CellMembrane 34
068 10.0 points

When placed in water, wilted plants lose their limpness because of

1. diffusion of water from the plant cells.

2. osmosis of water into the plant cells.

3. osmosis of water from the plant cells.

4. active transport of salts into the water from the plant cells.

5. active transport of salts from the water into the plant cells.

CellMembrane 40
069 10.0 points

When a severely dehydrated patient is brought to the hospital, an IV of normal saline is started immediately. Distilled water is not used because

1. normal saline is more economical.

2. the distilled water might be contaminated by bacteria.

3. it would cause blood cells to swell and eventually burst.

4. it would cause water to leave the cells and the cells would collapse.

5. nutrients are provided by the saline.

CellMembrane 43
070 10.0 points

If a red blood cell is placed in an isotonic solution,

1. the cell will shrivel and then return to normal.

2. the cell will swell and burst.

3. the cell will swell and then return to normal.

4. the cell will shrivel.

5. water moves into and out of the cell at an equal rate.

CellMembrane 45
071 10.0 points

Which of the following statements about channel proteins is true?

1. They are anchored in the hydrophobic bilayer of the plasma membrane.

2. They are surrounded by nonpolar amino acids.

3. They have a central pore of polar amino acids and water.

4. All of these

5. They are usually gated.

Membrane 01
072 10.0 points

Which of the following functions of glycoproteins and glycolipids of animal cell membranes are most important?

1. maintaining membrane fluidity at low temperatures

2. maintaining the integrity of a fluid mosaic membrane

3. facilitating the diffusion of molecules down their concentration gradients

4. assisting the active transport of molecules against their concentration gradients

5. the ability of cells to recognize like and different cells

Membrane 02
073 10.0 points

Which of the following about membrane structure and function is *not* true?

1. Both sides of a membrane are identical in structure and function.

2. Voltage across a membrane depends on an unequal distribution of ions across the plasma membrane.

3. Diffusion, osmosis, and facilitated diffusion do not require any energy input from the cell.

4. Special membrane proteins can cotransport two solutes by coupling diffusion with active transport.

5. Diffusion of gases is faster in air than across membranes.

Membrane 07
074 10.0 points

Some elements can pass through the lipid bilayer rather quickly, while others take some time.

Of the following, which would move through the lipid bilayer of a plasma membrane most rapidly?

1. CO_2

2. K^+

3. starch

4. an amino acid

5. glucose

CellMembrane 18
075 10.0 points

When vesicles from the Golgi apparatus deliver their contents to the exterior of the cell, they add their membranes to the plasma membrane. The plasma membrane does not increase in size, because

1. the phospholipids become more tightly packed together in the membrane.

2. some vesicles from the Golgi apparatus fuse with the lysosomes.

3. new phospholipids are synthesized in the endoplasmic reticulum.

4. membrane vesicles carry proteins from the endoplasmic reticulum to the Golgi apparatus.

5. membrane is continually being lost from the plasma membrane by endocytosis.

CellMembrane 37
076 10.0 points

Osmosis is a specific form of

1. diffusion.

2. active transport.

3. secondary active transport.

4. movement of water by carrier proteins.

5. facilitated transport.

CellMembrane 38
077 10.0 points

Osmosis moves water from a region of _____ to a region of _____.

1. high concentration of dissolved material; low concentration of dissolved material

2. low concentration of water; high concentration of water

3. negative osmotic potential; positive osmotic potential

4. low concentration of dissolved material; high concentration of dissolved material

5. hyperosmotic solution; hyposmotic solution

CellMembrane 39
078 10.0 points

Which of the following molecules is the most likely to diffuse across a cell membrane?

1. Cl^-

2. Na^+

3. A steroid

4. A common amino acid

5. Glucose

CellMembrane 49
079 10.0 points

In a hypothetical study, cells are placed in a solution of glucose in which the concentration of glucose is gradually increased. At first, the rate at which glucose enters the cells is found to increase as the concentration of the glucose solution is increased. But when the glucose concentration of the solution is increased above 10 M, the rate no longer increases. Which of the following is the likely mechanism for glucose transport into these cells?

1. Facilitated diffusion via a carrier protein

2. Symport

3. Secondary active transport

4. Facilitated diffusion via a channel protein

5. Pinocytosis

CellMembrane 51
080 10.0 points

Active transport usually moves molecules

1. toward higher pH.

2. down the concentration gradient.

3. toward higher osmotic potential.

4. against concentration gradient.

5. in a direction that tends to bring about equilibrium.

GA SB1 12
081 10.0 points

Which statement is true about facilitated diffusion?

1. Transport proteins are required to move molecules down a concentration gradient.

2. Transport proteins are required to move molecules against a concentration gradient.

3. Energy is required to move molecules against a concentration gradient.

4. Transport proteins and energy are required to move molecules against a concentration gradient.

GA SB1 13

082 10.0 points

Placing a plant cell in a hypotonic solution will cause the cell to

1. divide.

2. not change at all.

3. shrivel.

4. swell.

5. burst.

GA SB1 30

083 10.0 points

A red blood cell is placed in a hypertonic sodium chloride solution. Its cell membrane is impermeable to sodium and chlorine ions; thus, the blood cell will probably

1. shrink when water leaves the cell.

2. lose all of its hemoglobin molecules.

3. burst when water enters the cell.

4. remain unaffected by the solution.

Holt Bio 04 06

084 10.0 points

Which of the following is NOT a characteristic of an ion channel?

1. It may or may not have a gate.

2. It is polar, so charged substances such as ions can pass through the nonpolar lipid bilayer.

3. It allows only certain ions to come in.

4. It extends from one side of the cell membrane to the other.

5. It allows ions to move against their concentration gradient.

Membrane 19

085 10.0 points

Of the following, which would indicate that facilitated diffusion is taking place?

1. Substances move against the diffusion gradient.

2. A substance moves from a region of low concentration into that of higher concentration.

3. ATP is rapidly consumed as the substance moves.

4. A substance diffuses much faster than the physical condition allows.

5. A substance slows as it moves down its concentration gradient.

Membrane 47

086 (part 1 of 2) 10.0 points

Five dialysis bags (synthetic membranes with pores large enough to allow glucose to pass through but not starch) with various contents are placed in beakers containing aqueous solutions. The bags are weighed before and after being placed in their respective beaker for 2 hours. The contents of the bags and the beakers are as follows:

Bag	Bag Content	Beaker content
A	10% glucose	10% glucose
B	10% glucose	water
C	40% glucose	water
D	1% starch	water
E	1% starch	10% starch

Which bag will gain the most weight after several hours in the beaker?

1. A

2. B

3. E

4. C

5. D

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087 (part 2 of 2) 10.0 points

Which bag will lose the most weight after several hours in the beaker?

1. C

2. E

3. B

4. D

5. A

Circulation 46

088 10.0 points

A hemoglobin molecule has all of the following characteristics *except* that

1. it contains iron.

2. it is found only in humans.

3. it contains amino acids.

4. binds four O_2 molecules.

5. it is composed of four polypeptide chains.

Evolution of Genes 45

089 10.0 points

Which of the following is false?

1. All of these are true

2. Oxygen has a tetrameric structure that allows it to carry more oxygen molecules than does myoglobin.

3. Hemoglobin has a higher affinity for oxygen than does myoglobin.

4. Myoglobin is the primary oxygen storage molecule in the muscles.

5. Hemoglobin and myoglobin have evolved to have somewhat different functions.

LifeChem 71

090 10.0 points

Carbonic acid and sodium bicarbonate act as buffers in the blood. When a small amount of acid is added to this buffer, the H^+ ions are used up as they combine with the bicarbonate ions. When this happens, the pH of the blood

1. is reversible.

2. becomes acidic.

3. ionizes.

4. becomes basic.

5. does not change.

StarrC 02 14

091 10.0 points

Which of the following statements correctly describes the action of bicarbonate, a buffer in your blood?

1. Bicarbonate consumes hydrogen ions when the pH is too high.

2. Bicarbonate releases hydrogen ions when blood is too acidic.

3. Bicarbonate helps to stabilize blood pH at about 5.

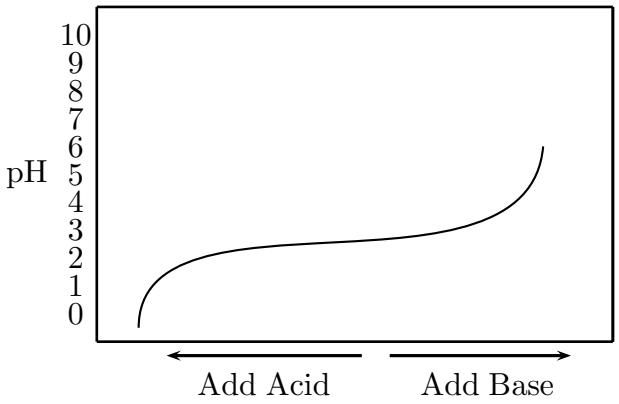
4. Bicarbonate combines with hydrogen ions when the pH is low.

5. Bicarbonate releases hydrogen ions when the pH is low.

WATER 45

092 10.0 points

The figure below was generated by measuring the pH change in a solution buffered with acetic acid, after adding either 1 M HCl (acid) or 1 M NaOH (base).



This acetic acid buffer will be effective in maintaining pH in the range of approximately

1. from 4 to 6.

2. from 0 to 6.

3. from 2 to 4.

4. from 3 to 10.

5. from 6 to 8.