Chapter 02
The Chemical Basis of Life

Multiple Choice Questions

1. The amount of matter in an object is its
A. element.
B. mass.
C. ionic charge.
D. atomic number.
E. weight.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01A. Define matter, mass, and weight.
Section: 02.01
Topic: Atoms and molecules
Type: Study Guide

2. The three forms of matter are:
A. air, water, and solids.
B. solids, liquids, and gases.
C. blood, bone, and air.
D. vapor, water, and solid.

Bloom's Level: 1. Remember
HAPS Objective: C01.01a With respect to the structure of an atom: Describe the charge, mass, and relative location of electrons, protons and neutrons.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01A. Define matter, mass, and weight.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

3. The four most abundant elements in the human body are
A. calcium, hydrogen, sodium, and potassium.
B. carbon, oxygen, magnesium, and zinc.
C. carbon, hydrogen, oxygen, and iron.
D. carbon, hydrogen, oxygen, and nitrogen.
E. carbon, sulfur, calcium, and potassium.

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01B. Distinguish between an element and an atom and state the four most abundant elements in the body.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

4. The smallest particle of an element that still exhibits the chemical characteristics of that element is a(n)
A. proton.
B. atom.
C. orbital.
D. chemical bond.
E. electron.

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01B. Distinguish between an element and an atom and state the four most abundant elements in the body.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

5. Subatomic particles located around the nucleus of an atom are
A. electrons.
B. neutrons.
C. photons.
D. protons.
E. neutrinos.

Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

6. Electrons
A. are the subatomic particles most involved in bonding behavior of atoms.
B. have a positive charge of one.
C. comprise the majority of the mass of an atom.
D. do not participate in the bonding of atoms.
E. are located in the nucleus of an atom.

Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology

7. X-rays can be used to view bones because
A. x-rays can not pass through bone.
B. x-rays pass through bone.
C. x-rays react with bone.
D. bones are less dense than soft tissue.

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology

8.

Which of the following is not a use of X-ray imaging?

A.

breast cancer screening in mammography

B.

upper digestive tract abnormalities following barium ingestion

C.

brain tumor progression

D.

vertebrae fractures

Bloom's Level: 3. Apply
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology

9.

In an x-ray film of the skeletal system, the dense tissue areas appear _____ because they _____ the x-rays; and the less dense tissues appear _____ because they _____ the x-rays.

A.

light, absorb; dark, do not absorb

B.

dark, absorb; light, do not absorb

C.

dark, do not absorb; light, do absorb

D.

light, do not absorb; dark, aborb

Bloom's Level: 4. Analyze
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology

10. A neutral atom contains
A. more protons than electrons.
B. more electrons than protons.
C. the same number of electrons and protons.
D. only neutrons.
E. None of these choices is correct.

Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

11. Which of the following best describes a proton?
A. one negative charge, no mass, found in orbitals
B. no charge, mass of one, found in nucleus
C. one positive charge, mass of one, found in nucleus
D. subatomic particle with no electric charge
E. None of these choices is correct.

Bloom's Level: 2. Understand
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

12. The mass number of an atom is the number of
A. electrons plus neutrons in the atom.
B. neutrons in the atom.
C. neutrons plus protons in the atom.
D. protons in the atom.
E. protons plus electrons in the atom.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01D. Define atomic number, mass number, isotope, atomic mass and mole.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

13. An atom has an atomic number of 19 and a mass number of 39. This atom will have
A. 19 neutrons.
B. 39 neutrons.
C. 20 electrons.
D. 20 neutrons.
E. 58 neutrons.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01D. Define atomic number, mass number, isotope, atomic mass and mole.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

14. An atom of chlorine has 17 protons and 18 neutrons. Which of the following statements is true?
A. Chlorine has an atomic number of 18.
B. Chlorine atoms have 18 electrons.
C. Chlorine has an atomic number of 35.
D. Chlorine has 35 electrons.
E. Chlorine has a mass number of 35.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01D. Define atomic number, mass number, isotope, atomic mass and mole.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

15. Isotopes of the same element have
A. no mass number.
B. the same mass number.
C. the same number of neutrons but different numbers of protons.
D. different numbers of protons and electrons.
E. the same atomic number but differ in their mass numbers.

Bloom's Level: 1. Remember
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01D. Define atomic number, mass number, isotope, atomic mass and mole.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

16. The amount of matter in an object is its
A. size.
B. weight.
C. density.
D. volume.
E. mass.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01D. Define atomic number, mass number, isotope, atomic mass and mole.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

17. The number of atoms in exactly 12 grams of carbon-12 is called
A. Socrates's number.
B. Le Chatelier's number.
C. Dalton's number.
D. Avogadro's number.
E. Pasteur's number.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01D. Define atomic number, mass number, isotope, atomic mass and mole.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

18. A neutral atom will become a cation if it
A. gains neutrons.
B. gains electrons.
C. loses protons.
D. gains protons.
E. loses electrons.

Bloom's Level: 1. Remember
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01C. Name the subatomic particles of an atom, and indicate their mass, charge and location in an atom.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology
Type: Study Guide

19. In ionic bonding,
A. electrons are transferred from one atom to another.
B. the charge of the ion does not play a role in the bond.
C. only non-polar molecules are involved.
D. two hydrogen atoms share one pair of electrons.
E. a "sea of electrons" forms.

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

20. Covalent bonds form when
A. atomic nuclei fuse.
B. electrons are shared between two atoms.
C. neutrons are transferred from one atom to another.
D. molecules become ionized.
E. protons are lost from atoms.

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

21. When ionic compounds dissolve in water, their ions
A. dissociate or separate from one another.
B. get lost in the solvent.
C. cling tightly together.
D. lose their charge.
E. settle to the bottom of the container.

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

22. Molecules that form when electrons are shared unequally between atoms are called
A. salt molecules.
B. polar molecules.
C. nonpolar molecules.
D. lopsided molecules.
E. None of these choices are correct.

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

23. A substance composed of two or more different types of atoms is a(n)
A. element.
B. compound and a molecule.
C. compound.
D. molecule.
E. ion.

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01F. Differentiate between a molecule and a compound.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

24. Sodium chloride is considered a(n)
A. molecule.
B. element.
C. compound.
D. molecule and a compound.
E. ion.

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01F. Differentiate between a molecule and a compound.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

25. A molecule is
A. a substance that conducts electricity when placed in solution.
B. a positively charged ion.
C. an alteration in the three-dimensional structure of a protein.
D. a combination of atoms held together by chemical bonds.
E. a negatively charged ion.

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01F. Differentiate between a molecule and a compound.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

26. Carbon dioxide is considered a(n)
A. compound.
B. molecule.
C. ion.
D. element.
E. molecule and a compound.

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01F. Differentiate between a molecule and a compound.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

27. When the hydrogen bonds that maintain a protein's three-dimensional shape are broken, the protein becomes nonfunctional, and is said to be
A. unsaturated.
B. essential.
C. saturated.
D. denatured.
E. structural.

Bloom's Level: 2. Understand
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

28. Hydrogen bonds form between molecules containing _____ bonds; the hydrogen bond is between a hydrogen atom of one molecule and a partially _____ charged atom of another.
A. polar covalent; negatively
B. nonpolar covalent; negatively
C. nonpolar covalent; positively
D. polar covalent; positively
E. ionic; positively

Bloom's Level: 1. Remember
HAPS Objective: C02.01b With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Explain the mechanism of each type of bond.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

29. An individual hydrogen bond in a sample of water would be described as:
A. strong and intramolecular.
B. weak and intramolecular.
C. weak and intermolecular.
D. strong and intermolecular.

Bloom's Level: 1. Remember
HAPS Objective: C02.01a With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: List each type of bond in order by relative strength.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

30. Cations and anions that dissociate in water are sometimes called
A. molecules
B. nonelectrolytes and solutes.
C. electrolytes, because they can conduct an electrical current.
D. nonelectrolytes, because they do not conduct an electrical current.
E. molecules and electrolytes.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

31. Electrolytes are substances that
A. are NOT found in the human body in any appreciable amounts.
B. form covalent bonds with water.
C. cannot conduct electricity in solution.
D. are NOT charged particles.
E. conduct electricity when dissolved in water.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

32. Chemical substances that dissolve in water or react with water to release ions are known as
A. buffers.
B. electrolytes.
C. bases.
D. inorganic compounds.
E. enzymes.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

33. Intermolecular forces
A. separate atoms and ions from one another.
B. are electrostatic attractions between different molecules.
C. are found within molecules.
D. evenly distribute electrical charge among all atoms in a sample.
E. form dissociated ions.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

34. A cation is
A. a molecule that conducts electricity when placed in solution.
B. an alteration in the three-dimensional structure of a protein.
C. a positively charged ion.
D. a combination of atoms held together by chemical bonds.
E. a negatively charged ion.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

35. An anion is
A. a molecule that conducts electricity when placed in solution.
B. a negatively charged ion.
C. a combination of atoms held together by chemical bonds.
D. an alteration in the three-dimensional structure of a protein.
E. a positively charged ion.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

36. An electrolyte is
A. a positively charged ion.
B. a negatively charged ion.
C. the alteration in the three-dimensional structure of a protein.
D. a combination of atoms held together by chemical bonds.
E. a substance that conducts electricity when placed in solution.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

37. Solubility refers to the ability of one substance to _____ in another.
A. react
B. dissolve
C. precipitate
D. conduct
E. None of these choices are correct.

Bloom's Level: 1. Remember
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

38. All of the synthesis reactions in the body are called
A. oxidation-reduction.
B. hydrolysis.
C. dissociation.
D. anabolism.
E. catabolism.

Bloom's Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02A. Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

39. Which of the following is a synthesis reaction?
A. Two amino acids are bonded together to form a dipeptide.
B. Sodium chloride is dissolved in water.
C. ATP is converted to ADP.
D. Sucrose is chemically separated to form one molecule of glucose and one molecule of fructose.
E. Several dipeptide chains are formed from digestion of a long polypeptide chain.

Bloom's Level: 3. Apply
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02A. Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology

40. Which of the following pairs is mismatched?
A. hydrolysis - water is used in decomposition reaction
B. synthesis reaction - two reactants combine to form a larger product
C. decomposition reaction - large reactant broken into smaller products
D. dehydration reaction - water is a product of the reaction
E. oxidation - gain of electrons

Bloom's Level: 2. Understand
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02A. Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

41. In the reversible reaction, $CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow H^+ + HCO_3^-$, a decrease in respiration rate will increase the concentration of CO_2 in the blood. What will this do to the amount of H^+ in the blood?
A. H^+ will decrease.
B. H^+ will increase.
C. H^+ will be unchanged.

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02A. Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

42. Reactions that use water to split molecules apart are called _____ reactions.
A. reversible
B. synthesis
C. oxidation
D. dehydration
E. hydrolysis

Bloom's Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02B. Illustrate what occurs in dehydration and hydrolysis reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

43. In a reversible reaction, when the rate of product formation is equal to the rate of reactant formation, the reaction is
A. in danger of exploding.
B. a net decomposition reaction.
C. a net synthesis reaction.
D. stopped.
E. at equilibrium.

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02C. Explain how reversible reactions produce chemical equilibrium.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

44. Chemical reactions with the property of being able to proceed from reactants to products and from products to reactants are called
A. synthesis reactions.
B. decomposition reactions.
C. exchange reactions.
D. reversible reactions.
E. net reaction rates.

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02C. Explain how reversible reactions produce chemical equilibrium.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

45. Why are cyanide compounds lethal to humans?
A. They interfere with protein synthesis.
B. They interfere with nerve impulses.
C. They interfere with the production of ATP.
D. They interfere with muscle contraction.
E. All of these occur with cyanide poisoning.

Bloom's Level: 1. Remember
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02A. Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Topic: Energy transfer using ATP

46.

Potential energy stored in bonds of molecules is _____ energy.

A.

mechanical

B.

thermal

C.

chemical

D.

molecular

E.

None of the above

Bloom's Level: 3. Apply
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

47. Chemical energy
A. moves matter.
B. results from the position or movement of objects.
C. is a form of potential energy within chemical bonds.
D. comes from the sun.
E. is not important in physiological processes.

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: Study Guide

48. If the potential energy in the chemical bonds of the reactants is greater than the potential energy in the chemical bonds of the product,
A. energy must be supplied for the reaction to occur.
B. the chemical reaction equalizes the potential energy levels.
C. energy is not a factor in the reaction.
D. energy has not been gained or lost.
E. energy is released by the reaction.

Bloom's Level: 3. Apply
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: Study Guide

49. The energy stored in ATP is a form of _____ energy.
A. mechanical
B. heat
C. electrical
D. chemical
E. kinetic

Bloom's Level: 1. Remember
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Topic: Energy transfer using ATP
Type: Study Guide

50. Potential energy is
A. stored energy that could do work but is not doing so.
B. movement of ions or electrons.
C. the form of energy that actually does work.
D. energy that flows between objects with different temperatures.
E. energy that moves in waves.

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: Study Guide

51. Kinetic energy is
A. movement of ions or electrons.
B. energy that moves in waves.
C. energy that flows between objects with different temperatures.
D. the form of energy that actually does work.
E. stored energy that could do work but is not doing so.

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: Study Guide

52. Heat energy is
A. energy that flows between objects with different temperatures.
B. movement of ions or electrons.
C. stored energy that could do work but is not doing so.
D. energy that moves in waves.
E. the form of energy that actually does work.

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02D. Contrast potential and kinetic energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: Study Guide

53. The minimum amount of energy that reactants must have to start a chemical reaction is called
A. potential energy.
B. mechanical energy.
C. kinetic energy.
D. activation energy.
E. electromagnetic energy.

Bloom's Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02E. Distinguish between chemical reactions that release energy and those that take in energy.
Section: 02.02
Topic: Chemistry and cell biology
Type: Study Guide

54. The conversion between different states of energy (e.g. potential energy to kinetic energy):
A. is not 100% efficent
B. is 100% efficent
C. typically generates heat
D. is not possible, energy can not change its state.
E.

is not 100% efficient and typically generates heat

Bloom's Level: 3. Apply
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02E. Distinguish between chemical reactions that release energy and those that take in energy.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology

55. If the products of a chemical reaction contain less potential energy than the reactants,
A. energy has been stored in the molecular bonds of the product.
B. energy has been released by the breaking of molecular bonds.
C. the reaction will be reversible without additional energy input.
D. a synthesis reaction is likely to have occurred.
E. All of these choices are correct.

Bloom's Level: 3. Apply
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02E. Distinguish between chemical reactions that release energy and those that take in energy.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology

56. Enzymes are proteins that increase the rate of chemical reactions by
A. increasing the activation energy of the reaction.
B. increasing the concentration of the reactants.
C. decreasing the activation energy of the reaction.
D. adjusting the temperature of the reaction.

Bloom's Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02F. Describe the factors that can affect the rate of chemical reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

57. A substance that will increase the rate of a chemical reaction without being permanently changed is called a/an
A. oxidator.
B. reducing agent.
C. catalyst.
D. solute.

Bloom's Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02F. Describe the factors that can affect the rate of chemical reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

58. For most chemical reactions, an increase in temperature will cause the reaction rate to
A. remain unchanged.
B. increase.
C. decrease.

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02F. Describe the factors that can affect the rate of chemical reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

59. Which of the following factors will influence the rate of chemical reactions?
A. temperature
B. concentration of reactants
C. presence of catalysts
D. presence of enzymes
E. All of these factors will influence the rate of chemical reactions.

Bloom's Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.02F. Describe the factors that can affect the rate of chemical reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: Study Guide

60. Which of the following is an organic compound?
A. hydrochloric acid (HCl)
B. salt (NaCl)
C. sucrose ($C_{12}H_{22}O_{11}$)
D. water (H_2O)
E. None of these choices are correct.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Topic: Organic compounds
Type: Study Guide

61. The hydrogen and oxygen atoms in a molecule of water are held together by
A. peptide bonds.
B. ionic bonds.
C. nonpolar bonds.
D. savings bonds.
E. polar covalent bonds.

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

62. A group of water molecules are held together by
A. salt.
B. double covalent bonds.
C. polar covalent bonds.
D. ionic bonds.
E. hydrogen bonds.

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

63. The molecular formula H_2O means
A. 1 hydrogen atom and 2 oxygen atoms.
B. 1 hydrogen atom and 1 oxygen atom.
C. 2 hydrogen atoms and 1 oxygen atom.
D. 2 hydrogen atoms and 2 oxygen atoms.
E. None of these choices is correct.

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

64. The presence of water in our bodies allows us to
A. cool the body with sweat.
B. maintain a fairly constant body temperature.
C. provide an environment for chemical reactions.
D. keep tissues moist and reduce friction.
E. All of these choices are correct.

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

65. Which of the following statements is false?
A. Water transports nutrients in the body.
B. Water evaporation heats the body.
C. Water evaporation cools the body.
D. Water serves as an effective lubricant in our bodies.
E. Water allows the body to resist sudden temperature changes.

Bloom's Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions

66. Substances dissolved in the liquid portion of a solution are called
A. solvents.
B. insoluble.
C. catalysts.
D. osmoles.
E. solutes.

Bloom's Level: 1. Remember
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

67. A solution that contains one osmole of solute in one kilogram (kg) of water is called a
A. 1% solution.
B. 1 molar solution.
C. 10% solution.
D. 1 osmolal solution.
E. None of these choices are correct.

Bloom's Level: 1. Remember
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

68. Two solutions, A and B, have the same osmolality.
A. Both solutions have the same number of solute particles.
B. Solution A is pure water and solution B is water and salt.
C. Solution A is water and sugar, solution B is water and salt.
D. Solution A has more solute particles than solution B.
E. Solution B has more solute particles than solution A.

Bloom's Level: 2. Understand
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

69. Why is water involved in most metabolic reactions in the human body?
A. It has a high surface tension.
B. It is a solute.
C. Its bonds are nonpolar.
D. It can dissolve many chemical compounds.
E. It can absorb and release heat without changing temperature very much.

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03B. Describe how the properties of water contribute to its physiological functions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

70. Hyperventilation causes the loss of large amounts of carbon dioxide from the body, decreasing the amount of hydrogen ions in solution. As a result,
A. the pH of body fluids will rise.
B. the pH of body fluids will fall.
C. the pH of body fluids will become neutral.
D. the pH of body fluids will not be affected.
E. None of these choices is correct.

Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

71. A base is a proton
A. donor.
B. converter.
C. acceptor.
D. creator.
E. Both acceptor and creator.

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

72. Which of the following is a proton donor?
A. a salt
B. a base
C. a neutral substance
D. an acid
E. glucose

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

73. Solution A increases its acidity. This means that the
A. pH of the solution has increased.
B. number of hydrogen ions has increased.
C. solution is closer to neutrality.
D. solution will now accept more protons.
E. number of hydrogen ions has decreased.

Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

74. The pH value
A. is determined by the concentration of hydrogen ions.
B. decreases with alkalinity.
C. is measured on a scale from 0 to 10.
D. reflects the sodium content of body fluids.
E. increases with acidity.

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

75. What particle is formed when an acid loses a proton (H+)?
A. conjugate base
B. buffer
C. conjugate acid
D. salt

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

76. Solution A has a pH of 10 and solution B has a pH of 2. Which of the following statements about these solutions is true?
A. Solution A is acidic.
B. Solution B has a higher hydrogen ion concentration than solution A.
C. Solution A and solution B are both basic.
D. Solution A has a higher hydrogen ion concentration than solution B.
E. Solution B is basic.

Bloom's Level: 3. Apply
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03C. Describe the pH scale and its relationship to acidic, basic and neutral solutions.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions

77. A buffer will
A. enhance changes in the pH of the solutions.
B. make a solution more acidic.
C. make a solution more basic.
D. have no effect on the pH of the solutions.
E. resist drastic changes in the pH of the solutions.

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03D. Explain the importance of buffers in organisms.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

78. Normal blood pH is maintained within a range of
A. 6.5 - 9.5.
B. 4.5 - 5.5.
C. 1.0 - 14.0.
D. 7.35 - 7.45.
E. 7.35 - 8.5.

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03D. Explain the importance of buffers in organisms.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

79. Normal pH range for blood is 7.35 to 7.45. If blood pH falls below 7.35,
A. the number of red blood cells decreases.
B. the blood becomes saltier.
C. an imbalance called acidosis results.
D. an imbalance called alkalosis results.
E. nothing happens as this is an acceptable deviation.

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03D. Explain the importance of buffers in organisms.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

80. Normal pH for blood is 7.35 to 7.45. Maintenance of the pH in this range is
A. critical because enzymes work best within narrow ranges of pH.
B. not critical because extreme pH values do not affect enzyme function.
C. called denaturation.
D. not required.
E. None of these choices is correct.

Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03D. Explain the importance of buffers in organisms.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

81. What molecule is produced as a waste product of the metabolism of glucose by cells?
A. water
B. oxygen
C. carbon monoxide
D. nitrogen
E. carbon dioxide

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03E. Compare the roles of oxygen and carbon dioxide in the body.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: Study Guide

82. Large carbohydrates are formed from smaller units called
A. lipids.
B. phosphate groups.
C. amino acids.
D. monosaccharides.
E. steroids.

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

83. Which of the following is a carbohydrate?
A. animal fat
B. triglyceride
C. sucrose
D. cholesterol
E. hemoglobin

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

84. Polysaccharides
A. are the smallest carbohydrates.
B. contain carbon, hydrogen, and phosphate atoms.
C. are not found in plants.
D. contain long chains of monosaccharides.
E. are formed when sucrose and glucose combine.

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

85. Consider the following five terms. Which term does not belong with the other four terms?
A. glucose
B. lactose
C. disaccharide
D. sucrose
E. maltose

Bloom's Level: 3. Apply
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

86. Which of the following lists includes only monosaccharides that are isomers of one another?
A. starch, glycogen, cellulose
B. glucose, fructose, galactose
C. ribose, glycogen, glucose
D. glycogen, glucose, sucrose
E. deoxyribose, glycogen, starch

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

87. The molecule used most frequently by cells as a fuel belongs to which of the following groups?
A. carbohydrates
B. nucleic acids
C. prostaglandins
D. phospholipids
E. steroids

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

88. Glucose is the
A. sugar found in RNA.
B. nondigestible plant polysaccharide.
C. storage carbohydrate in animals.
D. storage carbohydrate in plants.
E. major nutrient for most body cells.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

89. Glycogen is the
A. storage carbohydrate in animals.
B. storage carbohydrate in plants.
C. sugar found in RNA.
D. major nutrient for most body cells.
E. nondigestible plant polysaccharide.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

90. Ribose is the
A. storage carbohydrate in animals.
B. storage carbohydrate in plants.
C. major nutrient for most body cells.
D. nondigestible plant polysaccharide.
E. sugar found in RNA and ATP.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

91. Starch is the
A. storage carbohydrate in animals.
B. sugar found in RNA.
C. major nutrient for most body cells.
D. nondigestible plant polysaccharide.
E. storage carbohydrate in plants.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

92. Cellulose is the
A. storage carbohydrate in animals.
B. nondigestible plant polysaccharide.
C. major nutrient for most body cells.
D. sugar found in RNA.
E. storage carbohydrate in plants.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

93. Deoxyribose is a sugar found in
A. RNA.
B. DNA.
C. glycogen.
D. starch.
E. ATP.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

94. Which of the following is NOT a function of carbohydrates in the body?
A. structural component of RNA
B. bulk in feces
C. structural component of DNA
D. protection
E. energy

Bloom's Level: 2. Understand
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

95. Lipids
A. serve as buffers.
B. are polarized.
C. are an important component of cell membranes.
D. tend to be water soluble.
E. are subunits of carbohydrates.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

96. Triglycerides are composed of
A. monosaccharides.
B. amino acids.
C. nucleotides.
D. glycerol and fatty acids.
E. None of these choices are correct.

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

97. Fatty acid A has 10 double covalent bonds scattered throughout its carbon chain while fatty acid B has only single covalent bonds between the carbons in its chain.
A. Fatty acid A is saturated.
B. Both fatty acids are saturated.
C. Both fatty acids are unsaturated.
D. Fatty acid B is saturated.
E. Fatty acid B is unsaturated.

Bloom's Level: 2. Understand
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

98. Which of the following would be classified as a lipid?
A. catalase-an enzyme
B. alanine-an amino acid
C. starch-a polysaccharide
D. cholesterol-a steroid
E. sucrose-a disaccharide

Bloom's Level: 2. Understand
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

99. All of the following terms relate to lipids. Which does not belong with the other four?
A. steroid
B. cholesterol
C. estrogen
D. bile salts
E. triglyceride

Bloom's Level: 2. Understand
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

100. Phospholipids
A. are fat-soluble vitamins.
B. are found in cell membranes.
C. contain subunits called amino acids.
D. are water-soluble.
E. are a type of steroid.

Bloom's Level: 2. Understand
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

101. Lipids
A. function as enzymes.
B. yield little energy per unit of weight.
C. comprise the genetic material of cells.
D. are all water soluble.
E. can insulate and help prevent heat loss.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

102. Eicosanoids
A. are structural proteins.
B. comprise the genetic material.
C. are components of the plasma membrane.
D. play a role in the response of tissues to injuries.
E. are fat-soluble vitamins.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

103. An example of a fat-soluble vitamin is
A. vitamin F.
B. vitamin H.
C. vitamin C.
D. vitamin D.
E. vitamin B.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

104. Which of the following molecules is NOT made from cholesterol?
A. testosterone
B. progesterone
C. bile salts
D. estrogen
E. prostaglandins

Bloom's Level: 2. Understand
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

105. Phospholipids have a hydrophilic end which is
A. polar and water-soluble.
B. nonpolar and water-soluble.
C. polar and water-insoluble.
D. nonpolar and water -insoluble.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

106. Which function of proteins is NOT correctly matched with the example?
A. structure – collagen and keratin
B. regulation – enzymes and hormones
C. transport – hemoglobin
D. contraction – actin and myosin in muscles
E. protection – packing around organs and glands

Bloom's Level: 2. Understand
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

107. An organic molecule consists of carbon, hydrogen, oxygen, nitrogen, and sulfur; the molecule is probably
A. an amino acid.
B. a triglyceride (fat).
C. carbon dioxide.
D. a phospholipid.
E. a monosaccharide.

Bloom's Level: 2. Understand
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

108. The building blocks of proteins are
A. eicosanoids.
B. amino acids.
C. triglycerides.
D. phospholipids.
E. monosaccharides.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

109. Proteins
A. insulate and cushion the body.
B. are the body's source of immediate energy.
C. are the building blocks of nucleotides.
D. contain the genetic information of the cell.
E. provide much of the structure of body cells and tissues.

Bloom's Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

110. Adjacent amino acids in a polypeptide chain are held together by
A. hydrogen bonds.
B. high energy bonds.
C. peptide bonds.
D. Van der Waals bonds.
E. ionic bonds.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

111. Which of the following is a source of nitrogen for the body?
A. proteins
B. water
C. carbohydrates
D. lipids
E. glucose

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

112. The primary structure of a protein is
A. the hydrogen bonds between amino acids.
B. the folded, helical nature of the molecule.
C. represented by multiple polypeptide chains.
D. the sequence of amino acids in the polypeptide chain.
E. the number of polypeptide chains in the molecule.

Bloom's Level: 3. Apply
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

113. Denaturation is
A. a change in the three-dimensional structure of a protein.
B. a negatively charged ion.
C. a substance that conducts electricity when placed in solution.
D. a positively charged ion.
E. a combination of atoms held together by chemical bonds.

Bloom's Level: 1. Remember
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

114.

Which of the following is the correct sequence from smallest to largest?

A. amino acid, cell, protein, atom
B. protein, cell, amino acid, atom
C. amino acid, atom, cell, protein
D. atom, amino acid, protein, cell
E. cell, protein, amino acid, atom

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

115. Which of the following is determined by sequence of amino acids bound by peptide bonds?
A. primary structure of protein
B. secondary structure of protein
C. amino acid
D. denaturation
E. peptide bond

Bloom's Level: 1. Remember
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

116. Which of the following means a change in shape of a protein?
A. primary structure of protein
B. peptide bond
C. denaturation
D. amino acid
E. secondary structure of protein

Bloom's Level: 1. Remember
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

117. What type of covalent bond is formed between amino acid molecules during protein synthesis?
A. electrovalent bond
B. amino bond
C. peptide bond
D. hydrogen bond
E. primary bond

Bloom's Level: 2. Understand
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

118. What is the building block molecule of a protein?
A. monosaccharide
B. amino acid
C. nucleic acid
D. fatty acid
E. glycerol

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

119. What protein structure results from folding or coiling of a polypeptide chain caused by hydrogen bonds between amino acids?
A. secondary structure
B. tertiary structure
C. quaternary structure
D. primary structure
E. peptide structure

Bloom's Level: 1. Remember
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

120. Which of the following is mismatched?
A. triglyceride--fat
B. eicosanoid--prostaglandin
C. ribose--RNA
D. enzyme--protein
E. cholesterol--nucleic acid

Bloom's Level: 2. Understand
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

121. Which of the following organic groups does an enzyme belong to?
A. nucleic acid
B. lipid
C. vitamin
D. carbohydrate
E. protein

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04B. Explain how enzymes work.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

122. Which of the following organic groups does DNA belong to?
A. protein
B. lipid
C. nucleic acid
D. carbohydrate
E. vitamin

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

123. Which of the following organic groups does lactose belong to?
A. protein
B. nucleic acid
C. carbohydrate
D. lipid
E. vitamin

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

124. Which of the following organic groups does a steroid belong to?
A. carbohydrate
B. nucleic acid
C. protein
D. lipid
E. vitamin

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

125. Which of the following organic groups does hemoglobin belong to?
A. nucleic acid
B. vitamin
C. lipid
D. protein
E. carbohydrate

Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

126. An organic molecule such as a vitamin that makes an enzyme functional is called a/an
A. coenzyme.
B. buffer.
C. catalyst.
D. coactivator.

Bloom's Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04B. Explain how enzymes work.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

127. The minimum energy required to start a chemical reaction
A. can be lowered by enzymes.
B. is elevated by a catalyst.
C. moves in energy surges.
D. comes from ionic energy motion.
E. results from random molecular movement.

Bloom's Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04B. Explain how enzymes work.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

128. An enzyme
A. has a two-dimensional shape.
B. is a protein catalyst.
C. increases the activation energy needed in a chemical reaction.
D. cannot be denatured.
E. is permanently changed in a chemical reaction.

Bloom's Level: 2. Understand
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04B. Explain how enzymes work.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

129. Which of the following is NOT true of enzymes?
A. They are catalysts that increase the rate of a reaction.
B. One enzyme can have many reactions.
C. The active site has a specific shape to match the reactant(s).
D. A slight change in shape can effect function.
E. They may need a cofactor to be functional.

Bloom's Level: 2. Understand
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04B. Explain how enzymes work.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

130. The model that helps explain how an enzyme works is the
A. three-dimensional model.
B. denaturation model.
C. activation model.
D. lock-and-key model.

Bloom's Level: 2. Understand
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme- catalyzed reactions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04B. Explain how enzymes work.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

131. Nucleotides
A. hold the nucleus together.
B. are proteins that function as enzymes.
C. have nothing to do with the genetic information in the nucleus.
D. are the building blocks of nucleic acids.
E. are part of DNA molecules but not RNA molecules.

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

132. Which of the following is a component of a nucleotide?
A. adenine--a nitrogen base
B. calcium ions
C. cholesterol--a steroid
D. ATP
E. glucose--a monosaccharide

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

133. DNA
A. contains the sugar deoxyribose.
B. assembles amino acids to make proteins..
C. is one of several amino acids.
D. must travel to ribosomes to function.
E. is a single-stranded molecule.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

134. Which of the following nitrogen bases is found in RNA but not DNA?
A. cytosine
B. adenine
C. thymine
D. uracil
E. guanine

Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

135. Arrange the following from largest to smallest:
(1) nucleus
(2) DNA molecule
(3) skin cell
(4) chicken eggs
A. 1, 2, 3, 4
B. 4, 2, 3, 1
C. 4, 3, 1, 2
D. 3, 4, 2, 1
E. 2, 3, 1, 4

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

136. Which of the following statements best describes RNA?
A. RNA is a double helix.
B. RNA is a single-stranded molecule.
C. RNA molecules are antiparallel.
D. RNA contains the base thymine.
E. RNA is found outside a cell.

Bloom's Level: 2. Understand
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

137. Which of the following lists the components of a nucleotide?
A. phosphate—sucrose—amino acid
B. phosphate—lipid—organic base
C. monosaccharide—organic base—sucrose
D. monosaccharide—amino acid—phosphate
E. phosphate—monosaccharide—organic base

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

138. Which of the following is the correct complementary strand to CATGTC?
A. GUACAG
B. TCGTAT
C. CATGTC
D. GTACAG
E. AGCACA

Bloom's Level: 3. Apply
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

139. ATP
A. serves as the energy currency of the cell.
B. can store, but cannot release energy in the cell.
C. is a sugar found in transfer RNA.
D. stores genetic information.
E. is a nucleotide found in DNA.

Bloom's Level: 1. Remember
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

140. ATP
A. can be synthesized from ADP.
B. stores and releases energy in the cell.
C. is associated with a reversible reaction.
D. is associated with anabolism and catabolism.
E. All of these choices are correct.

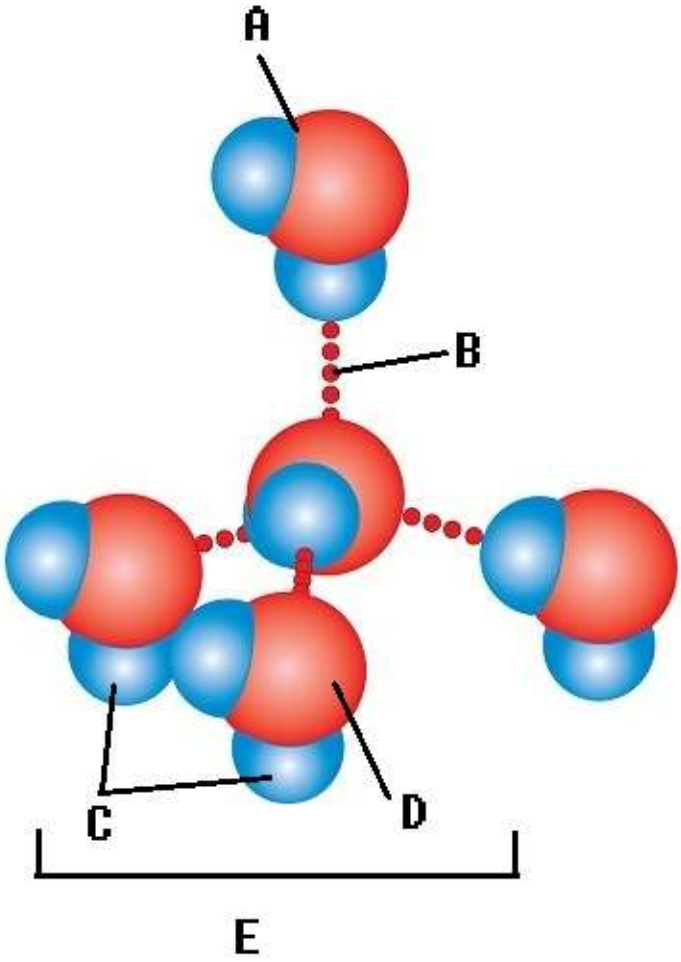
Bloom's Level: 1. Remember
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

141. Which of the following chemical reactions best represents the decomposition of ATP?
A. $ATP + ADP \rightarrow ATP$
B. $ATP + energy \rightarrow ADP + H_2O$
C. $ATP + H_2O \rightarrow ADP + P_i + energy$
D. $ADP + ADP + ADP \rightarrow ATP$
E. $ADP + P_i + energy \rightarrow ATP + H_2O$

Bloom's Level: 2. Understand
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide

142. Which of the following chemical reactions best represents the synthesis of ATP?
A. $ATP + H_2O \rightarrow ADP + P_i + energy$
B. $ATP + energy \rightarrow ADP + H_2O$
C. $ADP + P_i + energy \rightarrow ATP + H_2O$
D. $ATP + ADP \rightarrow ATP$
E. $ADP + ADP + ADP \rightarrow ATP + energy$

Bloom's Level: 2. Understand
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04C. Describe the roles of nucleotides in the structures and functions of DNA, RNA, and ATP.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds
Type: Study Guide



Bloom's Level: 1. Remember
Section: 02.01

143. Water accounts for 50% of the weight of a young adult female and 60% of a young adult male. What kind of bond is found at "A"?
A. hydrogen bond
B. water molecule
C. oxygen atom
D. hydrogen atom
E. polar covalent bond

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology

144. Water accounts for 50% of the weight of a young adult female and 60% of a young adult male. What kind of bond is found at "B"?
A. oxygen atom
B. polar covalent bond
C. water molecule
D. hydrogen atom
E. hydrogen bond

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology

145. Water accounts for 50% of the weight of a young adult female and 60% of a young adult male. What kind of atom is found at "C"?
A. polar covalent bond
B. water molecule
C. hydrogen bond
D. hydrogen atom
E. oxygen atom

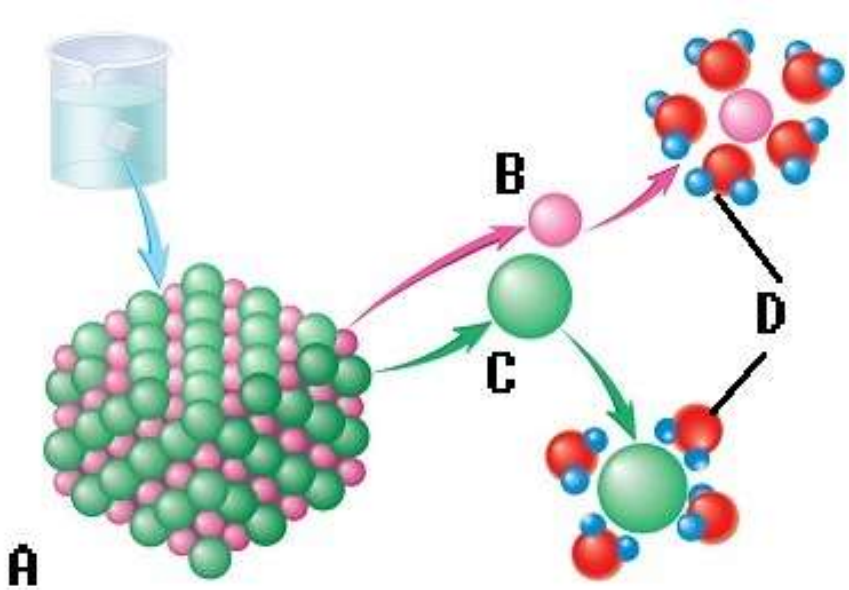
Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01B. Distinguish between an element and an atom and state the four most abundant elements in the body.
Section: 02.01
Topic: Chemistry and cell biology

146. Water accounts for 50% of the weight of a young adult female and 60% of a young adult male. What kind of atom is found at "D"?
A. oxygen atom
B. water molecule
C. polar covalent bond
D. hydrogen atom
E. hydrogen bond

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01B. Distinguish between an element and an atom and state the four most abundant elements in the body.
Section: 02.01
Topic: Chemistry and cell biology

147. Water accounts for 50% of the weight of a young adult female and 60% of a young adult male. What kind of molecule is found at "E"?
A. water molecule
B. polar covalent bond
C. hydrogen atom
D. oxygen atom
E. hydrogen bond

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01F. Differentiate between a molecule and a compound.
Section: 02.01
Topic: Chemistry and cell biology



Bloom's Level: 1. Remember
Section: 02.01

148. The sodium chloride molecule breaks apart in water. What does "A" represent?
A. chloride ion
B. dissociation
C. water molecule
D. sodium ion
E. salt crystal

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01B. Distinguish between an element and an atom and state the four most abundant elements in the body.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology

149. The sodium chloride molecule breaks apart in water. What does "B" represent?
A. chloride ion
B. dissociation
C. water molecule
D. sodium ion
E. salt crystal

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology

150. The sodium chloride molecule breaks apart in water. What does "C" represent?
A. chloride ion
B. dissociation
C. water molecule
D. sodium ion
E. salt crystal

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology

151. The sodium chloride molecule breaks apart in water. What does "D" represent?
A. chloride ion
B. dissociation
C. water molecule
D. sodium ion
E. salt crystal

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
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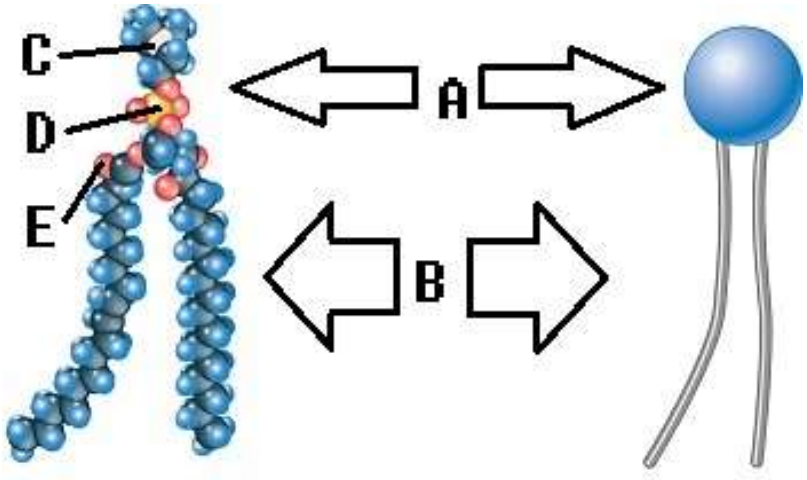
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01E. Compare and contrast ionic and covalent bonds.
Learning Outcome: 02.01G. Explain what creates a hydrogen bond and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology

152. The sodium chloride molecule breaks apart in water. What does "E" represent (the process)?
A. chloride ion
B. dissociation
C. water molecule
D. sodium ion
E. salt crystal

Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.01B. Distinguish between an element and an atom and state the four most abundant elements in the body.
Learning Outcome: 02.01H. Describe solubility and the process of dissociation, and predict if a compound or molecule is an electrolyte or a nonelectrolyte.
Section: 02.01
Topic: Atoms and molecules
Topic: Chemistry and cell biology



Bloom's Level: 1. Remember
Section: 02.04

153. Phospholipids are important components of the plasma membrane. What does "A" represent on the diagram?
A. phosphorus
B. oxygen
C. nitrogen
D. polar (hydrophilic) region
E. nonpolar (hydrophobic) region

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

154. Phospholipids are important components of the plasma membrane. What does "B" represent on the diagram?
A. phosphorus
B. oxygen
C. nitrogen
D. polar (hydrophilic) region
E. nonpolar (hydrophobic) region

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

155. Phospholipids are important components of the plasma membrane. What does "C" represent on the diagram?
A. phosphorus
B. oxygen
C. nitrogen
D. polar (hydrophilic) region
E. nonpolar (hydrophobic) region

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

156. Phospholipids are important components of the plasma membrane. What does "D" represent on the diagram?
A. phosphorus
B. oxygen
C. nitrogen
D. polar (hydrophilic) region
E. nonpolar (hydrophobic) region

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

157. Phospholipids are important components of the plasma membrane. What does "E" represent on the diagram?
A. phosphorus
B. oxygen
C. nitrogen
D. polar (hydrophilic) region
E. nonpolar (hydrophobic) region

Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.04A. Describe the structural organization and major functions of carbohydrates, lipids, proteins, and nucleic acids.
Section: 02.04
Topic: Chemistry and cell biology
Topic: Organic compounds

158.

The mass of a chemical equal to its molecular weight in grams, containing 6.023×10^{23} molecules is a(n)

A.

atomic mass unit

B.

ion

C.

mole

D.

molarity

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.01 A: Define matter, mass, and weight.
Section: 02.01
Topic: Atoms and molecules
Topic: Cellular respiration
Type: LearnSmart
Type: Study Guide

True / False Questions

159.

True or false? The term *mass* describes the material that makes up all living and nonliving things.

FALSE

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.01 A: Define matter, mass, and weight.
Section: 02.01
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

Multiple Choice Questions

160.

Intermolecular forces are weak electrostatic attractions that exist between

A.

two atoms

B.

two molecules

C.

two protons

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.01 G: Explain what creates a hydrogen bond, and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

161.

Hydrogen bonds are important for all of the following *except*:

A.

producing surface tension in water

B.

helping hold DNA strands together

C.

helping atoms give up or receive electrons

D.

helping hold a protein structure together

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.01 G: Explain what creates a hydrogen bond, and relate its importance.
Section: 02.01
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

True / False Questions

162.

True or false? Synthesis reactions are also called catabolic reactions.

FALSE

Bloom's Level: 1. Remember
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.02 A: Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

Multiple Choice Questions

163.

In an oxidation-reduction reaction, _____ are transferred between molecules

A.

oxygen

B.

electrons

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.02 A: Summarize the characteristics of synthesis, decomposition, reversible reactions, and oxidation-reduction reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

164.

Sucrose is formed when the simple sugars fructose and glucose are covalently bonded. This reaction releases water. What type of reaction is this?

A.

monomeric

B.

hydrolysis

C.

catabolic

D.

dehydration

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.02 B: Illustrate what occurs in dehydration and hydrolysis reactions.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

165.

If the ratio of products and reactants are stable, the system is in _____.

A.

activation

B.

steady state

C.

equilibrium

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.02 C: Explain how reversible reactions produce chemical equilibrium.
Section: 02.02
Topic: Chemical bonding
Topic: Chemistry and cell biology
Type: LearnSmart
Type: Study Guide

166.

Identify the material that would NOT be considered an important inorganic substances in our bodies.

A.

carbon

B.

iron

C.

calcium

D.

oxygen

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.03 A: Distinguish between inorganic and organic compounds.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Topic: Organic compounds
Type: LearnSmart

167.

From the following list, select the one organic substance found in the human body.

A.

water

B.

glucose

C.

oxygen

D.

calcium

Bloom's Level: 3. Apply
Learning Outcome: 2.03 A: Distinguish between inorganic and organic compounds.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: LearnSmart

168.

Inorganic chemists study substances _____ carbon, while organic chemists study substances _____ carbon.

A.

lacking; containing

B.

containing more than 1 mole of; with less than a mole of

C.

containing; lacking

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.03 A: Distinguish between inorganic and organic compounds.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Topic: Organic compounds
Type: LearnSmart
Type: Study Guide

169.

In order to get energy (ATP) from food molecules in the final stage of respiration, humans require _____.

A.

carbon dioxide

B.

oxygen

C.

sodium

Bloom's Level: 2. Understand
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.03 E: Compare the roles of oxygen and carbon dioxide in the body.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: LearnSmart
Type: Study Guide

170.

How does a buffer help a solution maintain pH?

A.

A buffer releases acid to maintain proper pH.

B.

A buffer forms both cations and anions to counteract acids.

C.

A buffer can act like a base if pH is acidic, and it can act like an acid if pH is basic.

D.

A buffer release base to neutralize acid.

Bloom's Level: 3. Apply
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 02.03D. Explain the importance of buffers in organisms.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions

True / False Questions

171.

True or False? The importance of O_2 in the human body is to extract energy (ATP) from food molecules.

TRUE

Bloom's Level: 3. Apply
HAPS Topic: Module C Chemistry and Cell Biology Review
Learning Outcome: 2.03 E: Compare the roles of oxygen and carbon dioxide in the body.
Section: 02.03
Topic: Chemistry and cell biology
Topic: Inorganic compounds and solutions
Type: LearnSmart