Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

SKU: 9780078024283-TEST-BANK

Chapter 02
Atoms, Ions, and Molecules

Fill in the Blank Questions

1. Anything that has mass and occupies space is considered to be _____.
matter

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 C01 Atoms & molecules.
Learning Objective: 02.01.01 Define matter, and list its three forms.
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

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 C01 Atoms & molecules.
Learning Objective: 02.01.01 Define matter, and list its three forms.
Section: 02.01
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

3. Which of the following has the smallest mass?
A. An electron
B. An atomic nucleus
C. A proton
D. A neutron

Bloom's Level: 2. Understand
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 C01 Atoms & molecules.
Learning Objective: 02.01.02 Describe and differentiate among the subatomic particles that compose atoms.
Section: 02.01
Topic: Atoms and molecules

True / False Questions

4. An atomic nucleus consists of protons and neutrons and is positively charged.
TRUE

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 C01 Atoms & molecules.
Learning Objective: 02.01.02 Describe and differentiate among the subatomic particles that compose atoms.
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

5. Which of the following statements accurately describes electrons?
A. They are found inside the nucleus and have a positive charge.
B. They are in orbitals outside the nucleus and have a positive charge.
C. They are found inside the nucleus and have a negative charge.
D. They are in orbitals outside the nucleus and have a negative charge.

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 C01 Atoms & molecules.
Learning Objective: 02.01.02 Describe and differentiate among the subatomic particles that compose atoms.
Section: 02.01
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

6. An element's atomic number is determined by the number of _____ in one atom of that element.
A. protons
B. nuclei
C. electrons
D. neutrons
E. atomic mass units

Bloom's Level: 1. Remember
HAPS Objective: C01.01d With respect to the structure of an atom: Distinguish among the terms atomic number, mass number and atomic weight.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.03 Explain the arrangement of elements in the periodic table based on atomic number.
Section: 02.01
Topic: Atoms and molecules

7.

Within the periodic table, elements are organized consecutively by

A. atomic mass within columns.
B. atomic mass within rows.
C. atomic number within columns.
D. atomic number within rows.

Bloom's Level: 1. Remember
HAPS Objective: C01.01d With respect to the structure of an atom: Distinguish among the terms atomic number, mass number and atomic weight.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.03 Explain the arrangement of elements in the periodic table based on atomic number.
Section: 02.01
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

8.

The number of neutrons in an atom can be determined by

A. subtracting the atomic number from the atomic mass.
B. subtracting the atomic mass from the atomic number.
C. adding the atomic mass to the atomic number.
D. adding the number of protons to the number of electrons.
E. adding the number of protons to the atomic number.

Bloom's Level: 2. Understand
HAPS Objective: C01.01d With respect to the structure of an atom: Distinguish among the terms atomic number, mass number and atomic weight.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.03 Explain the arrangement of elements in the periodic table based on atomic number.
Section: 02.01
Topic: Atoms and molecules

9. When diagramming an atom, the innermost shell is filled with _____ electrons.
A. two
B. six
C. eight
D. ten

Bloom's Level: 1. Remember
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.04 Diagram the structure of an atom.
Section: 02.01
Topic: Atoms and molecules

Short Answer Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

10. Explain how the structure of an oxygen atom with an atomic mass of sixteen would be diagrammed. Include the number of subatomic particles in each part of the atom.

The nucleus would consist of eight protons and eight neutrons. There would be two electron shells; the innermost would contain two electrons and the outer one would hold six.

Bloom's Level: 3. Apply
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 C01 Atoms & molecules.
Learning Objective: 02.01.04 Diagram the structure of an atom.
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

11. When diagramming an atom, how many electrons can fit in each of the shells beyond the innermost shell?
A. Two
B. Six
C. Eight
D. Ten

Bloom's Level: 1. Remember
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.04 Diagram the structure of an atom.
Section: 02.01
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

12.

Two atoms that differ only in the number of neutrons they contain are known as

A. anions.
B. isomers.
C. isotopes.
D. ions.

Bloom's Level: 1. Remember
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.05 Describe an isotope.
Section: 02.01
Topic: Atoms and molecules

True / False Questions

13. All isotopes of a given element have the same atomic mass.
FALSE

Bloom's Level: 1. Remember
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.05 Describe an isotope.
Section: 02.01
Topic: Atoms and molecules

Fill in the Blank Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

14. Two atoms that have the same chemical characteristics but different atomic masses are considered _____.
isotopes *or*
isotope

Bloom's Level: 1. Remember
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.05 Describe an isotope.
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

15.

Radioisotopes contain

A. an insufficient number of neutrons.
B. an insufficient number of electrons.
C. an insufficient number of protons.
D. an excess of protons.
E. an excess of neutrons.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.06 Explain how radioisotopes differ from other types of isotopes.
Section: 02.01
Topic: Atoms and molecules

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

16.

The half-life of a radioisotope is at least one day and at most ten years.

FALSE

Bloom's Level: 3. Apply
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.06 Explain how radioisotopes differ from other types of isotopes.
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

17.

Biological half-life is the time required for

A. half of an ionic compound to ionize.
B. half of a radioactive material to be eliminated from the body.
C.

radioactivity levels of organic compounds to stabilize at one-half their original value.

D. radiation exposure that is lethal for half of a biological population.

Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.06 Explain how radioisotopes differ from other types of isotopes.
Topic: Atoms and molecules

Fill in the Blank Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

18. Another name for the outer electron shell of an atom is the _____ shell.
valence

Bloom's Level: 1. Remember
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.07 Describe how elements are organized in the periodic table based on the valence electron number.
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

19. On the periodic table, beryllium sits above magnesium and to the right of lithium. Given that magnesium has two electrons in its outer shell and lithium has one, how many electrons would you predict beryllium has in its outer shell?
A. One
B. Two
C. Three
D. Four

Bloom's Level: 3. Apply
HAPS Objective: C01.01d With respect to the structure of an atom: Distinguish among the terms atomic number, mass number and atomic weight.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.07 Describe how elements are organized in the periodic table based on the valence electron number.
Section: 02.01
Topic: Atoms and molecules

Fill in the Blank Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

20. In general, the number of electrons that would fill an atom's outer shell and make it nonreactive is _____.
eight *or*
8 *or*
octet

Bloom's Level: 1. Remember
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.08 State the octet rule.
Section: 02.01
Topic: Atoms and molecules

True / False Questions

21. Elements in the first column of the periodic table contain one electron in their outer shell.

TRUE

Bloom's Level: 1. Remember
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.01.07 Describe how elements are organized in the periodic table based on the valence electron number.
Section: 02.01
Topic: Atoms and molecules

Fill in the Blank Questions

22. An atom with a positive or negative charge is known as a(n) _____.
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 C01 Atoms & molecules.
Learning Objective: 02.02.01 Define an ion.
Section: 02.02
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

Multiple Choice Questions

23.

An ion is an atom or group of atoms that has

A. a different number of neutrons than most atoms of that element.
B. lost or gained a proton.
C. lost or gained an electron.
D.

a biological half-life due to radioactive decay.

Bloom's Level: 1. Remember
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.02.01 Define an ion.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

24. The most common extracellular cation is _____.
sodium *or*
Na *or*
Na+

Bloom's Level: 1. Remember
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.02.02 List some common ions in the body.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

25. Positively charged ions are called cations.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.02.03 Differentiate between cations and anions.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

26.

The molecular formula for bicarbonate ion is HCO_3^-. It is therefore a

A. polyatomic anion.
B. polyatomic cation.
C. radioactive isotope.
D. cationic compound.

Bloom's Level: 3. Apply
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.02.03 Differentiate between cations and anions.
Section: 02.02
Topic: Atoms and molecules

Essay Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

27. Describe the ionic form of calcium (what is its charge)? Then describe how three physiological systems would malfunction if calcium levels were not maintained homeostatically.

Calcium is a divalent cation. If calcium levels are abnormal: 1) bones may weaken, 2) excitable tissues might malfunction (e.g., skeletal and cardiac muscle contractions are impaired), and 3) blood clotting might be inadequate.

Bloom's Level: 3. Apply
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.02.02 List some common ions in the body.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

28.

When atoms of elements on the left side of the periodic table ionize, they tend to

A. gain electrons and therefore become anions.
B. gain protons and therefore become anions.
C. lose electrons and therefore become cations.
D. lose protons and therefore become cations.
E. add neutrons and therefore become megaions.

Bloom's Level: 3. Apply
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.02.04 Describe how charges are assigned to ions.
Section: 02.02
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

29.

When elements found in column VIA of the periodic table become ions, they usually have a charge of

A. –2.
B. –1.
C. +1.
D. +2.
E. +3.

Bloom's Level: 2. Understand
HAPS Objective: C01.01c With respect to the structure of an atom: Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.02.04 Describe how charges are assigned to ions.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

30. Phosphate ions are common cations within the body.
FALSE

Bloom's Level: 1. Remember
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.02.02 List some common ions in the body.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

31.

If an ionic compound formed between an element from the first column of the periodic table and another from the sixth column, you would expect the compound to include

A. one atom from each of the two elements.
B.

one atom from the first-column element and two atoms from the sixth-column element.

C.

two atoms from the first-column element and one atom from the sixth-column element.

D.

three atoms from the first-column element and two from the sixth-column element.

Bloom's Level: 5. Evaluate
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.02.05 Define an ionic bond.
Section: 02.02
Topic: Chemical bonding

32. Ionic bonds involve:
A. electrostatic interactions between anions and cations.
B. the sharing of electrons between two atoms of the same element.
C. the attraction between water and salts.
D. the release of protons by negatively charged particles.

Bloom's Level: 2. Understand
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 C02 Chemical bonding.
Learning Objective: 02.02.05 Define an ionic bond.
Section: 02.02
Topic: Chemical bonding

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

33.

In the formation of a compound of sodium chloride,

A. a chlorine atom donates an electron to a sodium atom.
B. a chloride ion donates two protons to a sodium ion.
C. a sodium atom donates an electron to a chlorine atom.
D. a sodium ion donates two electrons to a chlorine atom.
E. the sodium and chlorine atoms share a pair of electrons equally.

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 C02 Chemical bonding.
Learning Objective: 02.02.06 Describe an ionic compound of NaCl.
Section: 02.02
Topic: Chemical bonding

True / False Questions

34. Sodium bicarbonate ($NaHCO_3$) is considered an ionic compound.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C02.01c With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Provide biologically significant examples of each.
HAPS Topic: Module C02 Chemical bonding.
Learning Objective: 02.02.07 List other examples of ionic compounds.
Section: 02.02
Topic: Chemical bonding

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

35.

Water contains two hydrogen atoms bound to one oxygen atom; "H_2O" is therefore water's

A. molecular formula.
B. ionic compound.
C. isotope ratio.
D. stochastic isomer.

Bloom's Level: 3. Apply
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.01 Define a molecular formula.
Section: 02.03
Topic: Atoms and molecules

36. Which statement accurately describes isomers?
A. They possess differing numbers of neutrons in their nuclei.
B. They have the same molecular shape but involve different elements.
C. They have the same structural formula but different molecular formulas.
D. They have the same molecular formula but different structural formulas.
E. They have gained or lost electrons at their outer shell.

Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.02 Describe a structural formula, and explain its use in differentiating isomers.
Section: 02.03
Topic: Atoms and molecules

Fill in the Blank Questions

37. The numbers and types of atoms in a molecule as well as the spatial arrangement of those atoms is provided by the _____ formula.
structural

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.02 Describe a structural formula, and explain its use in differentiating isomers.
Section: 02.03
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

True / False Questions

38. Isomers of the same molecule have identical chemical properties.
FALSE

Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.02 Describe a structural formula, and explain its use in differentiating isomers.
Section: 02.03
Topic: Atoms and molecules

Multiple Choice Questions

39.

What is the number of covalent bonds that an atom of nitrogen can form within a molecule?

A. 1
B. 2
C. 3
D. 4

Bloom's Level: 1. Remember
HAPS Objective: C02.01c With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Provide biologically significant examples of each.
HAPS Topic: Module C02 Chemical bonding.
Learning Objective: 02.03.03 Describe a covalent bond and explain its formation based on the octet rule.
Section: 02.03
Topic: Chemical bonding

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

40. Which of the following is not one of the four most common elements in the body?
A. Oxygen
B. Nitrogen
C. Hydrogen
D. Carbon
E. Calcium

Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.04 List the four most common elements in the human body.
Section: 02.03
Topic: Atoms and molecules

41.

A double covalent bond involves

A. the sharing of one pair of electrons.
B. the sharing of two pairs of electrons.
C. the donation of one pair of electrons.
D. the donation of two pairs of electrons.

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 C02 Chemical bonding.
Learning Objective: 02.03.05 Distinguish between single, double, and triple covalent bonds.
Section: 02.03
Topic: Chemical bonding

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

42.

Consider an atom with four electrons in its outer shell. If that atom is covalently bound to three other atoms within a molecule, then it is

A. in a double bond with one atom and in single bonds with two atoms.
B. in a single bond with one atom and in double bonds with two atoms.
C. in a triple bond with one atom and in single bonds with two atoms.
D. in double bonds with all three atoms.
E. in single bonds with all three atoms.

Bloom's Level: 3. Apply
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.05 Distinguish between single, double, and triple covalent bonds.
Section: 02.03
Topic: Chemical bonding

43.

If an element from the first column of the periodic table entered into a covalent bond with one from the sixth column, then the bond would be a

A. polar bond, with the element from the first column developing a partial negative charge.
B. polar bond, with the element from the sixth column developing a partial negative charge.
C. nonpolar bond, with the element from the first column developing a partial positive charge.
D. nonpolar bond, with the element from the sixth column developing a partial positive charge.
E. nonpolar bond, with neither element developing any partial charges at all.

Bloom's Level: 3. Apply
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 C02 Chemical bonding.
Learning Objective: 02.03.06 Explain polar and nonpolar covalent bonds.
Section: 02.03
Topic: Chemical bonding

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

44. When two atoms with very different electronegativity share electrons a polar covalent bond is formed.
TRUE

Bloom's Level: 2. Understand
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 C02 Chemical bonding.
Learning Objective: 02.03.06 Explain polar and nonpolar covalent bonds.
Section: 02.03
Topic: Chemical bonding

45. Oxygen is more electronegative than carbon.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C01.01b With respect to the structure of an atom: Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds.
HAPS Topic: Module C01 Atoms & molecules.
Learning Objective: 02.03.06 Explain polar and nonpolar covalent bonds.
Section: 02.03
Topic: Chemical bonding

46. Any molecule that contains a polar bond within it is a polar molecule.
FALSE

Bloom's Level: 2. Understand
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 C02 Chemical bonding.
Learning Objective: 02.03.07 Describe the difference between a nonpolar molecule and a polar molecule.
Section: 02.03
Topic: Chemical bonding

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

47.

Fatty acids consist mainly of carbon and hydrogen, and so fatty acids are

A. nonpolar and do not dissolve in water.
B. nonpolar and dissolve in water.
C. polar and do not dissolve in water.
D. polar and dissolve in water.

Bloom's Level: 3. Apply
HAPS Objective: C02.01c With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Provide biologically significant examples of each.
HAPS Topic: Module C02 Chemical bonding.
Learning Objective: 02.03.07 Describe the difference between a nonpolar molecule and a polar molecule.
Section: 02.03
Topic: Atoms and molecules

48.

Phospholipids are described as

A. polar.
B. nonpolar.
C. amphipathic.
D. amphiprotic.

Bloom's Level: 1. Remember
HAPS Objective: C02.01c With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Provide biologically significant examples of each.
HAPS Topic: Module C02 Chemical bonding.
Learning Objective: 02.03.08 Define an amphipathic molecule.
Section: 02.03
Topic: Atoms and molecules

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

49.

An individual hydrogen bond in a sample of water would be described as

A. strong and intramolecular.
B. strong and intermolecular.
C. weak and intramolecular.
D. weak 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 C02 Chemical bonding.
Learning Objective: 02.03.09 Describe hydrogen bonding between polar molecules.
Section: 02.03
Topic: Chemical bonding

50. 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. polar covalent; positively
C. nonpolar covalent; positively
D. nonpolar covalent; negatively
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 C02 Chemical bonding.
Learning Objective: 02.03.09 Describe hydrogen bonding between polar molecules.
Section: 02.03
Topic: Chemical bonding

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

51. Van der Waals forces occur between nonpolar molecules and are weaker attractions than covalent bonds.
TRUE

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 C02 Chemical bonding.
Learning Objective: 02.03.10 List and define the intermolecular attractions between nonpolar molecules.
Section: 02.03
Topic: Chemical bonding

Multiple Choice Questions

52.

The molecular formula of chlorine gas is Cl_2. One molecule of this gas would be attracted to another by

A. polar covalent bonds.
B. van der Waals forces.
C. ionic bonds.
D. hydrogen bonds.
E. intramolecular forces.

Bloom's Level: 3. Apply
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 C02 Chemical bonding.
Learning Objective: 02.03.10 List and define the intermolecular attractions between nonpolar molecules.
Section: 02.03
Topic: Chemical bonding

Essay Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

53. Explain the attractive forces within and between molecules. In your answer, distinguish between polar and nonpolar bonds, and distinguish between single, double, and triple bonds. Also be sure to explain three types of intermolecular attractions.

A complete answer should describe the sharing of electrons in different types of covalent bonds, and should explain the basic nature of hydrogen bonds, van der Waals forces, and hydrophobic interactions.

Bloom's Level: 2. Understand
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 C02 Chemical bonding.
Learning Objective: 02.03.10 List and define the intermolecular attractions between nonpolar molecules.
Section: 02.03
Topic: Chemical bonding

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

54. An individual water molecule contains _____ atoms and enters into _____ hydrogen bonds with other water molecules.

A.

two; two

B.

three; two

C.

three; three

D.

three; four

E.

three; six

Bloom's Level: 1. Remember
HAPS Objective: C02.01c With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Provide biologically significant examples of each.
HAPS Topic: Module C02 Chemical bonding.
Learning Objective: 02.04.01 Describe the molecular structure of water and how water molecules form four hydrogen bonds.
Section: 02.04
Topic: Chemical bonding

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

55.

Water has a

A. high specific heat, and this tends to cause large amounts of sweating.
B. high specific heat, and this tends to keep body temperature relatively constant.
C. low specific heat, and this tends to lead to variability in body temperature.
D. low specific heat, and this tends to minimize sweating.
E. low specific heat, and this tends to result in chills and shivering.

Bloom's Level: 2. Understand
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.02 List the different properties of water and provide an example of the importance of each property within the body.
Section: 02.04
Topic: Inorganic compounds and solutions

56. The hydrogen bonds in a sample of water result in _____ cohesion and a _____ heat of vaporization.
A.

increased; high

B.

increased; low

C.

decreased; high

D.

decreased; low

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.02 List the different properties of water and provide an example of the importance of each property within the body.
Section: 02.04
Topic: Inorganic compounds and solutions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

57.

Surfactant is necessary to prevent collapse of the alveoli in the lung because in its absence water molecules

A. vaporize and take up much less space.
B. are more strongly attracted to each other by van der Waals forces.
C. are more strongly attracted to each other by cohesive forces.
D. congregate around nearby proteins to which they adhere.

Bloom's Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.02 List the different properties of water and provide an example of the importance of each property within the body.
Section: 02.04
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

58. The amount of energy (measured in calories) required to increase the temperature of 1 gram of a substance by 1 degree Celsius is known as _____.
specific heat

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.02 List the different properties of water and provide an example of the importance of each property within the body.
Section: 02.04
Topic: Inorganic compounds and solutions

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

59. Water is the main solute of the body.
FALSE

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.03 Compare substances that dissolve in water with those that both dissolve and dissociate in water. Distinguish between electrolytes and nonelectrolytes.
Section: 02.04
Topic: Inorganic compounds and solutions

Multiple Choice Questions

60.

When a strong acid is placed in water, it

A. does not dissolve or dissociate.
B. dissolves but does not dissociate.
C. dissolves and dissociates.
D. dissociates, but does not dissolve.

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.04.03 Compare substances that dissolve in water with those that both dissolve and dissociate in water. Distinguish between electrolytes and nonelectrolytes.
Section: 02.04
Topic: Inorganic compounds and solutions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

61.

When a nonpolar molecule is placed in water, it will

A. neither dissolve nor carry electrical current.
B. dissolve and carry electrical current.
C. dissociate and carry electrical current.
D.

carry electrical current but not dissolve or dissociate.

Bloom's Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.03 Compare substances that dissolve in water with those that both dissolve and dissociate in water. Distinguish between electrolytes and nonelectrolytes.
Section: 02.04
Topic: Inorganic compounds and solutions

True / False Questions

62.

"Hydrophobic exclusion" refers to the chemical interactions that prevent nonpolar molecules from dissolving in water.

TRUE

Bloom's Level: 2. Understand
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.04 Describe the chemical interactions of nonpolar substances and water.
Section: 02.04
Topic: Inorganic compounds and solutions

Short Answer Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

63. Steroid hormones are nonpolar molecules that travel in the blood. Explain how such molecules interact with the water of the plasma.

Because they are nonpolar, steroids are hydrophobic and are excluded from dissolving within the watery plasma. Like other nonpolar plasma solutes, they require carrier proteins to be transported through the blood.

Bloom's Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.04.04 Describe the chemical interactions of nonpolar substances and water.
Section: 02.04
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

64. A molecule with polar and nonpolar parts that only partially dissolves in water is described as _____.
amphipathic

Bloom's Level: 1. Remember
Learning Objective: 02.03.08 Define an amphipathic molecule.
Section: 02.04
Topic: Inorganic compounds and solutions

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

65.

Chemical barriers composed of phospholipid bilayers form within biological systems because

A. cells expend ATP to position the phospholipid tails close together.
B. hydrophobic exclusion results in the close positioning of the nonpolar tails.
C. van der Waals forces attract the polar heads to the water inside the cell.
D. the inability of the polar heads to dissolve in water causes the heads to adhere to one another.

Bloom's Level: 3. Apply
HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
HAPS Topic: Module C07 Membrane structure & function.
Learning Objective: 02.04.05 Explain how amphipathic molecules interact in water to form chemical barriers.
Section: 02.04
Topic: Inorganic compounds and solutions

66.

In a sample of distilled water, a water molecule that has picked up an extra hydrogen ion is called a(n)

A. amphipathic macromolecule.
B. hydroxide ion.
C. hydronium ion.
D. proteinaceous water molecule.

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.05.01 Describe what is formed when water dissociates.
Section: 02.05
Topic: Inorganic compounds and solutions

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

67. A hydroxide ion carries a negative charge.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C02.01c With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds: Provide biologically significant examples of each.
HAPS Topic: Module C02 Chemical bonding.
Learning Objective: 02.05.01 Describe what is formed when water dissociates.
Section: 02.05
Topic: Inorganic compounds and solutions

68. A base is described as a proton donor.
FALSE

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.05.02 Explain the difference between an acid and a base.
Section: 02.05
Topic: Inorganic compounds and solutions

Multiple Choice Questions

69.

Bicarbonate (HCO_3^-) is a

A. strong proton donor.
B. strong proton acceptor.
C. weak proton donor.
D. weak proton acceptor.

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.05.02 Explain the difference between an acid and a base.
Section: 02.05
Topic: Inorganic compounds and solutions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

70.

Given a watery solution in which 1/1,000,000 particles are free H^+ ions, what will the pH be?

A. 2
B. 5
C. 6
D. 7
E. 10

Bloom's Level: 4. Analyze
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.05.03 Define pH and explain the relative pH values of both acids and bases.
Section: 02.05
Topic: Inorganic compounds and solutions

True / False Questions

71. The higher the concentration of H^+ is, the lower the pH is.
TRUE

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.05.03 Define pH and explain the relative pH values of both acids and bases.
Section: 02.05
Topic: Inorganic compounds and solutions

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

72.

Compared to a solution with a pH of 7, a solution with a pH of 4 is

A. more acidic and has a 1,000-fold increase in $[H^+]$.
B. more acidic and has a 300-fold increase in $[H^+]$.
C. more basic and has a 1,000-fold increase in $[H^+]$.
D. more basic and has a 300-fold increase in $[H^+]$.
E. more basic and has a 300-fold decrease in $[H^+]$.

Bloom's Level: 3. Apply
HAPS Objective: C03.05 State acidic, neutral, and alkaline pH values.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.05.03 Define pH and explain the relative pH values of both acids and bases.
Section: 02.05
Topic: Inorganic compounds and solutions

True / False Questions

73. The addition of a buffer to liquid such as blood with a pH of 7.4 causes the pH to drop to 7.0 (chemically neutral).
FALSE

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.05.05 Describe the action of a buffer.
Section: 02.05
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

74. When the pH of an acidic solution is brought to 7.0, that change is called _____.
neutralization

Bloom's Level: 1. Remember
HAPS Objective: C03.05 State acidic, neutral, and alkaline pH values.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.05.04 Explain the term neutralization, and describe how the neutralization of both an acid and a base occur.
Section: 02.05
Topic: Inorganic compounds and solutions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

Multiple Choice Questions

75. To neutralize a base, a(n) _____ must be added.
A. acid
B. buffer
C. weak base
D. hydroxide ion

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.05.04 Explain the term neutralization, and describe how the neutralization of both an acid and a base occur.
Section: 02.05
Topic: Inorganic compounds and solutions

76.

Generally, a chemical buffer is described as

A.

a strong acid or strong base that brings the pH of a solution to 7.0.

B. a weak acid and weak base that help prevent big changes in pH.
C. a neutral molecule that does not influence the pH in any way.
D. a weak acid that makes a solution slightly more basic by its presence.

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 C03 Inorganic compounds & solutions.
Learning Objective: 02.05.05 Describe the action of a buffer.
Section: 02.05
Topic: Inorganic compounds and solutions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

77.

When a protein of 50 nanometers is mixed with water, the opaque result is called a(n)

A. suspension.
B. emulsion.
C. solution.
D. colloid.

Bloom's Level: 1. Remember
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.01 Compare and contrast the three different types of water mixtures.
Section: 02.06
Topic: Inorganic compounds and solutions

True / False Questions

78.

When water mixtures are formed, the components are chemically altered and the new molecular bonds can be separated only by chemical means.

FALSE

Bloom's Level: 2. Understand
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.01 Compare and contrast the three different types of water mixtures.
Section: 02.06
Topic: Inorganic compounds and solutions

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

79. Which of the following statements accurately describes the solutes within a solution?
A. Water is the universal solute, and solutes are more abundant in solutions than solvents are.
B. The solutes are not visible, do not scatter light, and do not settle if the solution is left standing.
C. Solutes are greater than 100 nanometers in size, and will settle out of solution if the mixture is left standing.
D. Solutes are between 50 and 100 nanometers in size; they do not scatter light but will settle out of solution if left standing.

Bloom's Level: 2. Understand
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.01 Compare and contrast the three different types of water mixtures.
Section: 02.06
Topic: Inorganic compounds and solutions

True / False Questions

80. An emulsion is a combination of water and a nonpolar liquid that have been forcibly mixed.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.02 Explain how an emulsion differs from other types of mixtures.
Section: 02.06
Topic: Inorganic compounds and solutions

Short Answer Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

81.

Blood has been described as an example of a suspension, and soda has been described as a solution. Define these two categories of mixtures and provide different examples of each type. In the examples you provide, explain the molecular properties (approximate size, polarity) of the substances that mix with water.

Common examples of suspensions include muddy water and a mixture of flour with water. Flour is a large carbohydrate, so it is polar and its particle size is greater than 100 nanometers. Saltwater is a common example of a solution. Sodium and chloride are ions (charged particles) that are single atoms smaller than 1 nanometer.

Bloom's Level: 6. Create
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.01 Compare and contrast the three different types of water mixtures.
Section: 02.06
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

82. When solution concentration is measured in moles of solute per kilogram of solvent, that measurement is known as _____.
molality

Bloom's Level: 2. Understand
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.03 Explain the different ways to express the concentration of solute in a solution.
Section: 02.06
Topic: Inorganic compounds and solutions

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

83. A technician is asked to make up a solution of physiological saline and is told that it should be a 0.9% NaCl solution using the mass/volume percent measurement of concentration. If the technician is making 100 milliliters of solution, how much NaCl should be included?
A. 9 micrograms
B. 9 kilograms
C. 9 grams
D. 0.9 grams
E. 90 grams

Bloom's Level: 3. Apply
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.03 Explain the different ways to express the concentration of solute in a solution.
Section: 02.06
Topic: Inorganic compounds and solutions

True / False Questions

84. Molarity is measured in the units of moles solute/L solution.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.03 Explain the different ways to express the concentration of solute in a solution.
Section: 02.06
Topic: Inorganic compounds and solutions

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

85. How many osmoles are in a solution of 1M NaOH?
A. 1 osm
B. 2 osm
C. 3 osm
D. 4 osm

Bloom's Level: 3. Apply
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.03 Explain the different ways to express the concentration of solute in a solution.
Section: 02.06
Topic: Inorganic compounds and solutions

86.

Given that the mass of an oxygen atom is 16 amu and that of a hydrogen atom is 1 amu, 1 mole of water would be equal to

A. 17 amu.
B. 18 amu.
C. 15 grams.
D. 18 grams.
E. 6.02×10^{23} grams.

Bloom's Level: 3. Apply
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Topic: Module C03 Inorganic compounds & solutions.
Learning Objective: 02.06.03 Explain the different ways to express the concentration of solute in a solution.
Section: 02.06
Topic: Inorganic compounds and solutions

True / False Questions

87. Inorganic molecules contain carbon.
FALSE

Bloom's Level: 1. Remember
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.01 Differentiate between an organic molecule and an inorganic molecule.
Section: 02.07
Topic: Inorganic compounds and solutions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

88. Water and sodium chloride are examples of inorganic molecules.
TRUE

Bloom's Level: 2. Understand
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.01 Differentiate between an organic molecule and an inorganic molecule.
Section: 02.07
Topic: Inorganic compounds and solutions

Multiple Choice Questions

89. Which of the following is an accurate description of hydrocarbons?
A. Most of them contain phosphorus.
B. They are nonpolar molecules.
C. Most of them contain sulfur.
D. They are polar molecules.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.02 Describe the general chemical composition of biomolecules.
Section: 02.07
Topic: Organic compounds

90.

Like most functional groups, carboxyl groups are

A. nonpolar and therefore increase a biomolecule's solubility in water.
B. nonpolar and therefore decrease a biomolecule's solubility in water.
C. polar and therefore increase a biomolecule's solubility in water.
D. polar and therefore decrease a biomolecule's solubility in water.

Bloom's Level: 2. Understand
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.02 Describe the general chemical composition of biomolecules.
Section: 02.07
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

91.

Proteins are

A. polymers made up of amino acid monomers.
B. monomers.
C. monomers made of repeating subunits of polymers.
D. neither monomers nor polymers.
E. polymers made of repeating units of carbohydrates.

Bloom's Level: 3. Apply
HAPS Objective: C04.04a With respect to carbohydrates, proteins, lipids and nucleic acids: Identify the monomers and polymers.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.03 Define a monomer and polymer.
Section: 02.07
Topic: Organic compounds

Fill in the Blank Questions

92. A polymer is made up of several subunits called _____.
monomers

Bloom's Level: 1. Remember
HAPS Objective: C04.02 Explain the relationship between monomers and polymers.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.03 Define a monomer and polymer.
Section: 02.07
Topic: Organic compounds

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

93. When biological molecules engage in condensation, such reactions are _____ reactions.
A. synthesis
B. hydrolysis
C. catabolic
D. amphipathic
E. ergonomic

Bloom's Level: 3. Apply
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.04 Describe the role of water in both dehydration and hydrolysis reactions in altering biomolecules.
Section: 02.07
Topic: Organic compounds

Fill in the Blank Questions

94. When a large biological molecule is digested by the addition of water, the reaction is termed _____.
hydrolysis

Bloom's Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.04 Describe the role of water in both dehydration and hydrolysis reactions in altering biomolecules.
Section: 02.07
Topic: Organic compounds

True / False Questions

95. In general, lipids are water insoluble.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.05 Describe the general characteristics of a lipid.
Section: 02.07
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

Multiple Choice Questions

96. Which of the following is a list of three types of lipids?
A. Riposes, purines, and pyrimidines
B. Eicosanoids, steroids, and triglycerides
C. Fatty acids, proteins, and nucleotides
D. Glucose, starch, and triglycerides
E.

Steroids, peptides, and sugars

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.06 Identify the four types of lipids and their physiologic roles.
Topic: Organic compounds

97.

The most common lipids in the body are

A. triglycerides, and they are used for energy storage in adipose.
B. glycoproteins, and they are used as backbones for cell membranes.
C. eicosanoids, and they are used as hormonal messengers.
D. steroids, and they are used as signaling molecules in inflammatory responses.
E. phospholipids, and they are used as key ingredients of bile salts.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.06 Identify the four types of lipids and their physiologic roles.
Section: 02.07
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

98.

The two fatty acids within a phospholipid molecule make up its

A. nonpolar heads.
B. polar heads.
C. nonpolar tails.
D. polar tails.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.06 Identify the four types of lipids and their physiologic roles.
Section: 02.07
Topic: Organic compounds

Essay Questions

99. Name and describe the four main categories of lipids, and compare and contrast their structures and functions.

Essays should describe triglycerides, steroids, phospholipids, and eicosanoids.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.06 Identify the four types of lipids and their physiologic roles.
Section: 02.07
Topic: Organic compounds

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

100.

For every atom of carbon in a carbohydrate

A. there is approximately one atom of hydrogen.
B. there are approximately two atoms of hydrogen.
C. there are approximately three atoms of hydrogen.
D. there are approximately four atoms of hydrogen

Bloom's Level: 3. Apply
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.07 Describe the distinguishing characteristics of carbohydrates.
Section: 02.07
Topic: Organic compounds

101.

The simple sugar glucose is an example of a

A. monosaccharide.
B. lipid.
C. polysaccharide.
D. polymer.
E. glycogen.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.08 Explain the relationship between glucose and glycogen.
Section: 02.07
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

102.

While a runner is in a marathon, his or her liver will have to free some stored energy to keep blood sugar levels adequate; the liver will liberate this energy by way of a process called

A. dehydration synthesis.
B. glycogensis.
C. glycogenolysis.
D. polysaccharide synthesis.
E. dialysis.

Bloom's Level: 3. Apply
HAPS Objective: C04.04e With respect to carbohydrates, proteins, lipids and nucleic acids: Discuss physiological and structural roles in the human body.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.08 Explain the relationship between glucose and glycogen.
Section: 02.07
Topic: Organic compounds

True / False Questions

103. Starch and cellulose are examples of polysaccharides found in plants.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.09 Name some other carbohydrates found in living systems.
Section: 02.07
Topic: Organic compounds

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

104.

Nucleic acids are made up of

A. nucleotides joined by covalent, phosphodiester bonds.
B. nitrogenous bases joined by ionic, disulfide bonds.
C. ribose sugars joined by intermolecular, hydrogen bonds.
D. proteins and sugars joined by polar, covalent, double bonds.

Bloom's Level: 1. Remember
HAPS Objective: C04.04a With respect to carbohydrates, proteins, lipids and nucleic acids: Identify the monomers and polymers.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.10 Describe the general structure of a nucleic acid.
Section: 02.07
Topic: Nucleic acids: DNA and RNA

105.

The three parts making up a nucleotide are

A. a purine, a pyrimidine, and a ribose sugar.
B.

a five-carbon sugar, a phosphate group, and a nitrogenous base.

C. an adenine, a guanine, and a cytosine.
D. a double helix, a single strand, and a chromosome.
E. a phosphorous, a deoxygenated ribose, and an amino acid.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.11 Describe the structure of a nucleotide monomer.
Section: 02.07
Topic: Nucleic acids: DNA and RNA

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

106. Adenine and thymine are examples of double-ring nitrogenous bases called pyrimidines.

FALSE

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.11 Describe the structure of a nucleotide monomer.
Section: 02.07
Topic: Nucleic acids: DNA and RNA

Multiple Choice Questions

107.

RNA is

A. single-stranded and contains thymine.
B. single-stranded and contains uracil.
C. double-stranded and contains thymine.
D. double-stranded and contais uracil.

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.12 Distinguish between DNA and RNA.
Section: 02.07
Topic: Nucleic acids: DNA and RNA

True / False Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

108. Within DNA, adenine makes hydrogen bonds with thymine, and guanine makes hydrogen bonds with cytosine.
TRUE

Bloom's Level: 3. Apply
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.12 Distinguish between DNA and RNA.
Section: 02.07
Topic: Nucleic acids: DNA and RNA

Multiple Choice Questions

109.

ATP is a nucleotide that is composed of

A. adenine, ribose, and three covalently bonded phosphate groups.
B. adenine, thymine, and three covalently bonded phosphate groups.
C. adipose, thymine, and three phosphate groups linked by ionic bonds.
D. adenosine, deoxyribose, and three phosphorous atoms.
E. arginine, thymidine and three phosphorous atoms.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.13 Name other important nucleotides.
Section: 02.07
Topic: Nucleic acids: DNA and RNA

True / False Questions

110. FAD and NAD^+ are examples of nucleotides.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.13 Name other important nucleotides.
Section: 02.07
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

Essay Questions

111.

Imagine you are trying to create a living, artificial cell in a lab. Considering their role in human cells, explain how you would try to use each of the four types of biological molecules in your artificial cell. For example, explain how you would use one type of molecule to establish a boundary between the water in your test tube and the inside of your artificial cell.

Answers should describe how classes of macromolecules are used in living systems. Lipids are useful in establishing relatively impermeable barriers to water. Carbohydrates are excellent sources of quick fuel. Nucleic acids provide a chemical substance for transmission of heritable information in reproduction. Proteins are crucial functional molecules in many ways, including enzymatic catalysis and cell motility. Membrane proteins will also be crucial in maintaining solute concentrations inside the cell at appropriate levels.

Bloom's Level: 6. Create
HAPS Objective: C04.04e With respect to carbohydrates, proteins, lipids and nucleic acids: Discuss physiological and structural roles in the human body.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.14 List the general functions of proteins.
Section: 02.07
Topic: Organic compounds

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

112.

Hemoglobin in blood, collagen in tendons, and enzymes in the digestive system are all examples of

A. proteins.
B. lipids.
C. amino acids.
D. carbohydrates.
E. catalysts.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.15 Describe the general structure of amino acids and proteins.
Section: 02.07
Topic: Organic compounds

113. Which of the following lists describes three of the main functions served by proteins?
A. Waterproofing, energy storage, and transmission of the genetic code
B. Cushioning of organs, thermal insulation, and establishing cell boundaries
C. Catalysis of chemical reactions, body defenses, and movement
D. Energy storage, body defenses, thermal insulation

Bloom's Level: 1. Remember
HAPS Objective: C04.04e With respect to carbohydrates, proteins, lipids and nucleic acids: Discuss physiological and structural roles in the human body.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.14 List the general functions of proteins.
Section: 02.07
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

114.

A protein consists of

A.

an amine group, a carboxyl group, and an R group.

B. more than 200 amino acids.
C. between 3 and 20 amino acids.
D.

a C-terminal, several nucleic acids, and an N-terminal.

Bloom's Level: 1. Remember
HAPS Objective: C04.04a With respect to carbohydrates, proteins, lipids and nucleic acids: Identify the monomers and polymers.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.15 Describe the general structure of amino acids and proteins.
Section: 02.07
Topic: Organic compounds

115. Which statement accurately describes amino acids?
A. There are twenty varieties, with each type having a different R group.
B. There are twenty varieties, with each type having a different C-terminal end.
C. There are over 200 varieties, with each type having a different R group.
D. There are over 200 varieties, with each type having a different C-terminal end.

Bloom's Level: 3. Apply
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.15 Describe the general structure of amino acids and proteins.
Section: 02.07
Topic: Organic compounds

Fill in the Blank Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

116. When dehydration synthesis occurs between two amino acids, a covalent bond called a _____ bond forms between them.
peptide

Bloom's Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.15 Describe the general structure of amino acids and proteins.
Section: 02.07
Topic: Organic compounds

Multiple Choice Questions

117. Which list contains all four types of amino acids?
A. Ionic, covalent, hydrogen, and van der Waals
B. Charged, polar, nonpolar, and those with special functions
C. Glutamate, aspartate, arginine, and thymine
D. Polar, nonpolar, ionic, and hydrophobic

Bloom's Level: 1. Remember
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.07.15 Describe the general structure of amino acids and proteins.
Section: 02.08
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

118.

Amino acids such as alanine contain hydrocarbons as side groups, and these amino acids engage in hydrophobic interactions with each other. Such amino acids are

A. charged.
B. hydrostatic.
C. polar.
D. nonpolar.
E. polyunsaturated.

Bloom's Level: 3. Apply
HAPS Objective: C04.04b With respect to carbohydrates, proteins, lipids and nucleic acids: Compare and contrast general molecular structure.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.08.02 Distinguish between nonpolar, polar, and charged amino acids.
Section: 02.08
Topic: Organic compounds

True / False Questions

119. A charged amino acid tends to decrease a protein's solubility in water.
FALSE

Bloom's Level: 2. Understand
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.08.02 Distinguish between nonpolar, polar, and charged amino acids.
Section: 02.08
Topic: Organic compounds

Multiple Choice Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

120.

In some proteins, an ionic bond may form between an amino acid with

A.

a positive R group and an amino acid with a negative R group.

B.

a negative R group and a nonpolar amino acid.

C. a sulfhydryl group and an amino acid with an amine group.
D. a carboxyl group and an amino acid with a C-terminal.
E. a glycine and another with a tryptophan.

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 C04 Organic compounds.
Learning Objective: 02.08.02 Distinguish between nonpolar, polar, and charged amino acids.
Section: 02.08
Topic: Organic compounds

121.

The first amino acid put in place when a protein is being synthesized at a ribosome is

A. glycine.
B. tryptophan.
C. methionine.
D. cysteine.
E. proline.

Bloom's Level: 1. Remember
HAPS Objective: C04.04c With respect to carbohydrates, proteins, lipids and nucleic acids: Provide specific examples.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.08.03 Give examples of amino acids with special characteristics.
Section: 02.08
Topic: Protein synthesis

Fill in the Blank Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

122. In some proteins, disulfide covalent bonds form between two _____ amino acids.
cysteine

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 C04 Organic compounds.
Learning Objective: 02.08.03 Give examples of amino acids with special characteristics.
Section: 02.08
Topic: Organic compounds

True / False Questions

123.

The three-dimensional shape of a protein is known as its primary structure.

FALSE

Bloom's Level: 2. Understand
HAPS Objective: C04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Topic: Module C04 Organic compounds.
Learning Objective: 02.08.05 Distinguish between the four structural hierarchy levels of proteins.
Section: 02.08
Topic: Organic compounds

Multiple Choice Questions

124. When two or more polypeptide chains come together to give a protein its ultimate shape, that structure is described as the _____ structure.
A. micro-
B. secondary
C. quaternary
D. tertiary
E. heme group

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 C04 Organic compounds.
Learning Objective: 02.08.05 Distinguish between the four structural hierarchy levels of proteins.
Section: 02.08
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

True / False Questions

125. A beta sheet is an example of a secondary structure of a protein.
TRUE

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 C04 Organic compounds.
Learning Objective: 02.08.05 Distinguish between the four structural hierarchy levels of proteins.
Section: 02.08
Topic: Organic compounds

Multiple Choice Questions

126.

Polar R groups of closely positioned amino acids often enter into _____ with each other, which helps give a protein its three-dimensional shape.

A. hydrophobic interactions
B. ionic bonds
C. hydrogen bonds
D. van der Waal repulsions
E. sulfur-carbon bonds

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 C04 Organic compounds.
Learning Objective: 02.08.04 Describe the different types of intramolecular (or intermolecular) attractions that participate in both the folding of a protein and in maintaining its three-dimensional shape.
Section: 02.08
Topic: Organic compounds

Fill in the Blank Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

127. When extreme temperature changes a protein's shape so much that it can no longer perform its usual function, that change is known as _____.
denaturation

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 C04 Organic compounds.
Learning Objective: 02.08.06 Explain what is meant by denaturation and list factors that can cause it.
Section: 02.08
Topic: Organic compounds

Multiple Choice Questions

128. Which statement accurately describes how pH is related to denaturation?
A. Either a large increase or a large decrease in pH can lead to denaturation.
B.

Neither a large increase nor a large decrease in pH can lead to denaturation.

C. A large increase but not a large decrease in pH can lead to denaturation.
D. A large decrease but not a large increase in pH can lead to denaturation.

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 C04 Organic compounds.
Learning Objective: 02.08.06 Explain what is meant by denaturation and list factors that can cause it.
Section: 02.08
Topic: Organic compounds

Short Answer Questions

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank

129. Explain the mechanisms by which certain changes in environmental conditions can denature proteins.

High temperatures weaken the intramolecular forces that hold the protein in its normal conformation. Excessive H^+ (low pH) disrupts electrostatic interactions within the protein by binding to the negative R group. High pH disrupts protein structure by altering existing electrostatic interactions that involved hydrogen atoms that have changed their position due to the presence of base.

Bloom's Level: 3. Apply
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 C04 Organic compounds.
Learning Objective: 02.08.06 Explain what is meant by denaturation and list factors that can cause it.
Section: 02.08
Topic: Organic compounds

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Anatomy and Physiology An Integrative Approach 2nd edition McKinley Test Bank