Biochemistry 9th edition Campbell Test Bank

SKU: 9781305961135-TEST-BANK

Chapter 02 - Water: The Solvent for Biochemical Reactions

1. The tendency for an atom to attract electrons to itself in a chemical bond is called
   a. polarity.
   b. electronegativity.
   c. hydrophilicity
   d. electrophilicity.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

2. If atoms with greatly differing electronegativities form a bond, that bond will be
   a. polar.
   b. nonpolar.
   c. amphipathic.
   d. acidic.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

3. Many of the properties of water can be accounted for by the fact that
   a. it is polar
   b. it forms hydrogen bonds
   c. it is a bent molecule
   d. all of these are true

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.6 - Modified in 7e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

4. Which of the following is true about ionic compounds?
   a. They are more likely to dissolve in non-polar solvents than covalent compounds.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

b. They always dissolve completely in water.
c. They never dissolve in polar solvents.
d. Some of them dissolve completely in water or other polar solvents, while others do not.

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

5. Which of the following is a correct listing of electronegativity values, from low to high?
a. C, H, O, N
b. N, H, O, C
c. H, C, N, O
d. H, C, O, N

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

6. Which of the following elements has the highest electronegativity?
a. C
b. H
c. N
d. O
e. P

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

7. The water molecule is polar because:
a. Electrons are not distributed symmetrically in the molecule.
b. The hydrogen atoms are found on one "side" of the molecule.
c. Hydrogen is less electronegative than oxygen.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

d. The hydrogen atoms are found on one "side" of the molecule and hydrogen is less electronegative than oxygen.

e. All of these are correct.

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

8. Which of the following molecules is polar?

a. CCl_4

b. CH_4

c. CO_2

d. NH_3

e. None of these molecules is polar.

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

9. Which of the following molecules is amphipathic?

a. sodium chloride

b. acetic acid

c. benzene

d. palmitic acid

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

10. Which of the following classes of compounds is hydrophilic?

a. Sugars

b. Fatty acids

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

c. Amino acids
d. Sugars and amino acids.
e. All of these

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

11. Which of the following classes of compounds is hydrophobic?
a. Table Salt
b. Cholesterol
c. Phosphate esters
d. Cholesterol and phosphate esters.
e. All of these are hydrophobic.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

12. Which of the following molecules has polar bonds but is itself not polar?
a. NH_3
b. CO_2
c. CH_4
d. H_2O

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

13. When a carboxylate side-chain of one amino acid in a protein is in close proximity to a charged amino group of another amino acid, we call the resulting interaction a(n)
a. ion - dipole bond
b. ionic bond

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

c. van der Waal's bond
d. salt bridge

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.3 - New in 8e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

14. A London dispersion force is another name for a(n)
a. induced dipole - induced dipole bond
b. ionic bond
c. covalent bond
d. non-polar bond

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.3 - New in 8e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

15. Ionic compounds and polar covalent compounds tend to dissolve in water because of
a. ion-dipole and dipole-dipole interactions
b. dipole-induced dipole interactions
c. van der Waals bonds
d. hydrophobic interactions

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

16. Which of the following is not considered a van der Waal's force?
a. dipole - dipole bond
b. dipole - induced dipole bond
c. induced dipole - induced dipole bond
d. ion - dipole bond

ANSWER: d

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.3 - New in 8e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

17. A micelle is a structure which
    a. aggregates with other micelles in water.
    b. has its polar groups on the outside and non-polar groups on the inside when in water.
    c. explains how soaps and detergents work.
    d. has its polar groups on the outside and non-polar groups on the inside when in water and explains how soaps and detergents work.
    e. All of these are true.

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.6 - Modified in 7e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

18. Which of the following compounds is most likely to form a micelle?
    a. Acetic acid.
    b. Glucose.
    c. Glycerol.
    d. Sodium palmitate.
    e. Sodium phosphate.

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.7 - Modified in 8e
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

19. The substance most likely to form a micelle is
    a. acetic acid
    b. sodium palmitate
    c. methyl alcohol
    d. acetone

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

20. Molecules which contain both hydrophilic and hydrophobic regions are:
    a. Amphipathic
    b. Amphiphilic
    c. Able to form micelles
    d. Both amphipathic and amphiphilic
    e. All of these

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

21. How do hydrogen bonds tend to affect the melting and boiling points of substances?
    a. They tend to increase both melting and boiling points.
    b. They tend to decrease both melting and boiling points.
    c. They tend to increase melting points and decrease boiling points.
    d. They tend to decrease melting points and increase boiling points.
    e. They do not have any affect on either melting or boiling points.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

22. Hydrogen bonds
    a. play an important role in the solvent properties of water
    b. are not involved in protein structure
    c. play a role in the properties of DNA, but not of RNA
    d. give water a lower boiling point than expected

ANSWER: a
POINTS: 1

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

23. Which of the following molecules will not form hydrogen bonds?
    a. CH_4
    b. NH_3
    c. H_2O
    d. HF

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

24. How does the strength of hydrogen bonds compare with covalent bonds?
    a. Hydrogen bonds are much stronger than covalent bonds.
    b. Hydrogen bonds are much weaker than covalent bonds.
    c. Hydrogen bonds and covalent bonds have similar strengths.
    d. The question cannot be answered without knowing which covalent bonds are being referred to

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.6 - Modified in 7e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

25. A hydrogen bond is a special type of
    a. dioole - dipole bond
    b. induced dipole - induced dipole bond
    c. covalent bond
    d. ionic bond

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.3 - New in 8e

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

TOPICS: Hydrogen bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 11/23/2016 2:21 AM

26. Which of the following is true regarding hydrogen bonds.
    a. They can only form between two different molecules
    b. They are important in protein folding but not DNA structure
    c. They are important in DNA structure but not protein folding
    d. They can be found within a single molecule

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

27. In a hydrogen bond
    a. three atoms lie in a straight line
    b. there is stronger bonding than in a covalent bond
    c. unpaired electrons play no role
    d. none of the above

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

28. The non-covalent interaction below associated with the strongest force in aqueous solution is
    a. dipole-induced dipole
    b. hydrophobic interactions
    c. hydrogen bonding
    d. van der Waals forces

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

29. Which of the following statements about hydrogen bonds is false?
    a. The donor is a hydrogen atom bonded to a less electronegative atom then hydrogen.
    b. The more linear the bond, the stronger the attraction.
    c. The acceptor must contain a non-bonded pair of electrons.
    d. It is a type of non-covalent bond.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

30. True hydrogen bonds can NOT form between hydrogen and this element:
    a. N
    b. F
    c. C
    d. O
    e. All of these elements can form hydrogen bonds.

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

31. What is the maximum number of hydrogen bonds a single water molecule can form?
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

32. Which of the following characteristics makes for a good hydrogen bond acceptor?

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

a. a high electronegativity
b. a nonbonding pair of electrons
c. both of these
d. neither of these

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.6 - Modified in 7e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

33. Which of the following characteristics makes for a good hydrogen bond donor?
a. a high electronegativity
b. a nonbonding pair of electrons
c. both of the above
d. neither of the above

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

34. Which of the following properties of water are related to its ability to form hydrogen bonds?
a. boiling point
b. melting point
c. density
d. solvent potency
e. all of the choices

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.3 - New in 8e
TOPICS: Hydrogen bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

35. Hydrogen bonds explain which of the following properties of water?
a. Water is a great solvent for all ionic and polar molecules.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

b. Water has high melting and boiling points for its small size.
c. Ice expands when frozen.
d. Both the abnormal melting and freezing points and that ice expands when frozen.
e. Hydrogen bonds explain all of these properties.

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

36. Hydrogen bonds can only form when the hydrogen atom is involved in a polar bond.
a. True
b. False

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

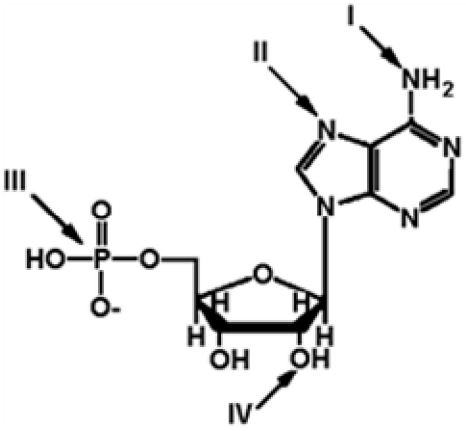
37. Which of the following is a true statement?
a. most substances contract when they freeze.
b. water expands when it freezes.
c. hydrogen bonding is related to water's tendency to expand as it freezes.
d. all of these are true

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

Exhibit 2A
The structure of ATP with various groups labeled.
Group III is the entire phosphate group.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank



38. **Refer to Exhibit 2A.** Which of the functional groups **cannot** function as a hydrogen donor to water?
    a. I
    b. II
    c. III
    d. IV
    e. All can donate a hydrogen to water.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2A
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

39. **Refer to Exhibit 2A.** Which of the functional groups is the most electrophilic?
    a. I
    b. II
    c. III
    d. IV
    e. The answer cannot be determined without further information.

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2A
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

40. **Refer to Exhibit 2A.** Which of the groups could **not** act as a proton acceptor in a hydrogen bond?
    a. I
    b. II

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

c. III
d. IV
e. All can accept a hydrogen in a hydrogen bond.

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2A
TOPICS: Hydrogen Bonds
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

41. Is water an acid or a base?
a. Water is an acid.
b. Water is a base.
c. Water is both an acid and a base.
d. Water is neither an acid nor a base.

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

42. For an acid that undergoes this reaction:

$HA \leftrightarrow H^+ + A^-$

K_a =
a. $[H^+][A^-]/[HA]$
b. $[H^+][HA]/[A^-]$
c. $[HA][A^-]/[H^+]$
d. $[A^-]/[HA][H^+]$
e. $[H^+]/[HA][A^-]$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

DATE MODIFIED: 12/23/2013 2:14 PM

43. Which will dissociate most in water, a weak acid or a strong acid?
    a. A weak acid.
    b. A strong acid
    c. They should dissociate about the same.
    d. It's impossible to predict.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

44. Bases are
    a. proton donors.
    b. proton acceptors.
    c. hydrogen bond donors.
    d. hydrogen bond acceptors.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

45. Which has the greater K_a, a weak acid or a strong acid?
    a. A weak acid.
    b. A strong acid
    c. They should dissociate about the same.
    d. It's impossible to predict.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

46. Which has the greater pK_a, a weak acid or a strong acid?
    a. A weak acid.
    b. A strong acid
    c. They should dissociate about the same.
    d. It's impossible to predict.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

47. The dissociation constant for an acid with a pK_a value of 6.0 is
    a. 1×10^{-6}
    b. -1×10^{6}
    c. 1×10^{6}
    d. -1×10^{-6}

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

48. A buffer solution at pH 10 has a ratio of [HA]/[A–] of 10. What is the pK_a of the acid?
    a. 8
    b. 9
    c. 10
    d. 11
    e. 12

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

49. The dissociation constant for an acid is 1×10^{-6}. What is its pK_a?

a. −6
b. 6
c. 0.6
d. −0.6

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.6 - Modified in 7e
TOPICS: Acids, Bases, and pH
NOTES: Answer was incorrect in 6e
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

50. The pH of a solution of 0.04 M HCl is:

a. 4
b. 1.4
c. 0.4
d. 0.04
e. The pH cannot be determined

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

51. The pOH a solution of 0.04 M HCl is:

a. 1.4
b. 10
c. 12.6
d. 13.6
e. The pOH cannot be determined

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

52. An HCl solution has a pH = 3. If you dilute 10 mL of the solution to 1000mL, the final pH will be:

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

a. 1.0
b. 2.0
c. The pH does not change.
d. 4.0
e. 5.0

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

53. If a solution has a pH = 9.6, the $[H^+]$ is

a. 2.5×10^{10}
b. 9.6 M
c. 2.5 M
d. 2.5×10^{-10} M
e. 9.6×10^{-10} M

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

54. What is the pH of a solution with $[H^+]$ = 10 mM?

a. 10
b. 1
c. 2
d. −2

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.1 - New in 6e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

55. Calculate the final pH of a solution made by the addition of 10 mL of a 0.5 M NaOH solution to 500 mL of a 0.4 M HA originally at pH = 5.0 (pKa = 5.0) Neglect the volume change.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

a. 6.10
b. 5.09
c. 7.00
d. 5.55

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

56. If a solution has a pH = 6, the $[H^+]$ is

a. 6 M
b. 10^6 M
c. 10^{-6} M
d. 0.6 M

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

57. What is the pH of an acetic acid solution where the concentration of acetic acid is 2 mM and the concentration of sodium acetate is 20 mM. The pK_a of acetic acid is 4.76.

a. 5.76
b. 10.6
c. 12.6
d. 8.8

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

58. The ion product constant for water (K_w) is equal to:

a. 10^{14}

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

b. 10^{7}

c. 10^{0}

d. 10^{-7}

e. 10^{-14}

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

59. In a titration of a weak acid by a strong base

a. two equivalents of base are always needed to neutralize all the acid present

b. the equivalence point cannot be defined exactly

c. there is a region in which the pH changes slowly

d. the equivalence point depends on the nature of the added base

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

60. A solution at pH 7 contains a weak acid, HA. The pK_a of the acid is 6.5. What is the ratio of [A–]:[HA]?

a. 1:3

b. 1:1

c. 3:1

d. 10:1

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

61. When does a weak acid buffer best?

a. From one pH unit below its pK_a to its pK_a.

b. From its pK_a to one pH unit above its pK_a.

c. Within one pH unit of its pK_a, both above and below.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

d. Weak acids do not make good buffers at all.

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

62. The inflection point of the titration curve for a weak monoprotic acid is equal to its pK_a

a. True
b. False

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
NOTES: Answer was incorrect in 6e
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

63. Which of the following is true?

a. The pH of a solution where the A^- to HA ratio is 1 has a pH = pK_a.
b. If the pH does not equal the pK_a, the solution is not a buffer.
c. The best buffer for any experiment will always have a pH equal to the pK_a.
d. If a buffer has more weak acid than conjugate base, the pH will be higher than the pK_a.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

64. Using the Henderson-Hasselbalch equation, calculate the pH of an ammonia buffer when the NH_3:NH_4^+ ratio is 0.4 moles:0.6 moles. (pK = 9.75)

a. 7.40
b. 9.07
c. 9.25
d. 9.43
e. 11.05

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

65. An ammonia buffer contains NH_3:NH_4^+ in a ratio of 0.4 moles:0.6 moles (pK = 9.75). What will be the pH if you add 0.01 moles of HCl to this buffer?

a. 8.98
b. 9.04
c. 9.25
d. 9.46
e. 9.52

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

66. The ratio of a weak acid and its conjugate base at the point of maximum buffering capacity is

a. 1/1
b. 1/10
c. 10/1
d. no definite ratio is needed

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

67. Which substance would be the best buffer at pH 8 if it had to be able to buffer against either acid or base?

a. one with a pK_a of 7
b. one with a pK_a of 8
c. one with a pK_a of 9
d. The pK_a of a substance doesn't tell you whether it would be a good buffer at this pH.

ANSWER: b
POINTS: 1

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.8 - Modified from 6e
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

68. Buffering capacity refers to
    a. the effectiveness of commercial antacids
    b. the extent to which a buffer solution can counteract the effect of added acid or base
    c. the pH of a buffer solution
    d. the molecular weight of the substance used as a buffer

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

69. If the pH of 1 liter of a 1.0 M carbonate buffer is 7.0, what is the molar ratio of H_2CO_3 to HCO_3^-? (pK = 6.37)
    a. 0.234
    b. 4.27
    c. 6.37
    d. 7.00
    e. 10.20

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

70. Consider a reaction that produces a significant amount of hydrogen ion and is to be carried out a pH 7. Only two acids are available for making the buffer solution. The pK_a values for acids A and B are 6.3 and 7.3, respectively. Which acid would serve as the optimum buffer for this reaction? Or would carrying out the reaction in water simply serve as well?
    a. acid A
    b. acid B
    c. water
    d. both acids would be equally effective

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.5 - Modified from 5e
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

71. Which of the following acids would serve as a good buffer for a reaction at pH = 8.0?

		K_a
I.	acetic acid	1.76×10^{-5}
II.	$H_2PO_4^-$	6.31×10^{-8}
III.	bicarbonate	5.6×10^{-11}
IV.	TRIS	5.01×10^{-9}

a. I
b. II
c. III
d. IV

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

72. If the pH of 1 liter of a 1.0 M carbonate buffer is 7.0, what is actual number of moles of H_2CO_3 and HCO_3^-? (pK = 6.37)

	moles of H_2CO_3	**moles of HCO_3^-**
I.	0.86	0.14
II.	0.81	0.19
III.	0.76	0.24
IV.	0.19	0.81
V.	0.14	0.86

a. I
b. II
c. III
d. IV
e. V

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

DATE MODIFIED: 12/23/2013 2:14 PM

73. A buffer solution
   a. is used to control the pH of a solution
   b. contains at least 100 times more of a weak acid than its conjugate base
   c. contains at least 100 times less of a weak acid than its conjugate base
   d. always has a pH of 7

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Titration Curves
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

74. The main intracellular buffer system is
   a. $H_3PO_4/H_2PO_4^-$
   b. $H_2PO_4^-/ HPO_4^{2-}$
   c. HPO_4^{2-}/PO_4^{3-}
   d. H_3PO_4/PO_4^{3-}

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

Exhibit 2B
Contains information on the pK's of some common buffers.

Buffer	**pK1**	**pK2**	**pK3**
Acetate	4.75		
Ammonia	9.25		
Carbonic acid	6.37	10.20	
Citric acid	3.09	4.75	5.41
Formic Acid	3.75		
Phosphoric acid	2.14	7.20	12.4
Pyruvic acid	2.50		
Tris	8.3		

75. **Refer to Exhibit 2B.** The enzyme lysozyme has an optimum pH close to 5. A suitable buffer would be:
   a. Acetate
   b. Carbonate
   c. Phosphate
   d. Pyruvate

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

e. None of these is a suitable buffer for this reaction.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2B
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

76. **Refer to Exhibit 2B.** An ammonium buffer would work well at this pH:

a. 5.6
b. 7.0
c. 9.0
d. 11.0
e. None of these

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2B
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

77. **Refer to Exhibit 2B.** A carbonate buffer would work well at this pH:

a. 4.0
b. 6.0
c. 8.0
d. 10.0
e. 6.0 and 10.0

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2B
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

78. **Refer to Exhibit 2B.** A phosphate buffer would work well at this pH:

a. 5.0
b. 7.0
c. 8.0

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

d. 10.0
e. 7.0 and 8.0

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2B
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

79. **Refer to Exhibit 2B**. Which of the following would make the best buffer at pH =10.0?
a. Acetic acid and sodium acetate
b. Tris and its acid form
c. H_2CO_3 and $NaHCO_3$
d. Na_2HPO_4 and NaH_2PO_4
e. $NaHCO_3$ and Na_2CO_3

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2B
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

80. Which of the following is important to know when deciding if a given buffer will be effective for an experiment?
a. the pK_a of the buffer compound
b. the buffer capacity
c. the concentration of the buffer
d. whether the experiment is likely to generate hydrogen ions or hydroxide ions
e. all of these are important considerations

ANSWER: e
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
PREFACE NAME: Exhibit 2B
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

81. Nonphysiological buffers such as HEPES and PIPES have come into common use because

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

a. they are inexpensive
b. they can be prepared much more easily than other buffers
c. they have less tendency to interfere with reactions
d. they contain nitrogen

ANSWER: c
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

82. Buffers which lack biological activity and are unlikely to interfere with <u>any</u> biochemical reactions include:
a. Tris.
b. Hepes.
c. Phosphate.
d. Both Tris and HEPES.
e. All of these.

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

83. Which of the following is **not** true?
a. A buffer is a solution which maintains a solution at a neutral pH
b. Buffer solutions are made to resist change in pH
c. Zwitterion buffers are less likely to interfere with biological reactions than non-zwitterions
d. HEPES is a zwitterion buffer

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.4 - New in 7e
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

84. The main blood buffer system is
a. H_2CO_3/HCO_3^-
b. HCO_3^-/CO_3^{2-}

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

c. H_2CO_3/CO_3^{2-}

d. none of the above

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

85. Buffers work to maintain pH because

a. they obey LeChatlier's principle

b. weak acids cannot change the pH of a solution

c. weak bases added to strong bases neutralize each other

d. they destroy the hydrogen ion that is added

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: CAFA.BIOC.15.3 - New in 8e
TOPICS: Buffers
DATE CREATED: 12/23/2013 2:14 PM
DATE MODIFIED: 12/23/2013 2:14 PM

86. Explain why carbon dioxide is nonpolar.

ANSWER: A carbon dioxide molecule has two C=O polar bonds. However, the bonds in the molecule may be polar, but the molecule itself can be nonpolar because of its geometry. The CO_2 molecule is linear; therefore, the attraction of the oxygen for the electrons in one bond is cancelled out by the equal and opposite attraction for the electrons by the oxygen on the other side of the molecule, resulting in a nonpolar molecule.
POINTS: 1
QUESTION TYPE: Essay
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 11/25/2016 5:41 AM
DATE MODIFIED: 11/25/2016 5:43 AM

87. Which of the following statements is true of dipole-induced dipole interactions?

a. They occur between molecules that are dipoles, with the partial positive side of one molecule attracting the partial negative side of another molecule.

b. They involve a permanent dipole inducing a transient dipole in a nonpolar molecule.

c. They are the attraction between two molecules, lacking dipoles, bumping into each other and distorting each other's electron cloud.

d. They give rise to a London dispersion force between transient-induced dipoles.

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Water and Polarity
DATE CREATED: 11/25/2016 5:44 AM
DATE MODIFIED: 11/25/2016 5:46 AM

88. Distinguish between the hydrogen bonding found in liquid water and ice.
ANSWER: In liquid water, hydrogen bonds are constantly breaking and new ones are constantly forming, with some molecules breaking off and others joining the cluster. An ice crystal, in contrast, has a more or less stable arrangement of hydrogen bonds and its number of molecules is many orders of magnitude greater than 100.
POINTS: 1
QUESTION TYPE: Essay
HAS VARIABLES: False
TOPICS: Hydrogen Bonds
DATE CREATED: 11/25/2016 5:46 AM
DATE MODIFIED: 11/25/2016 5:47 AM

89. Which of the following equations represents the relationship between the pK_a of an acid and the pH of a solution containing the acid and its conjugate base?
a. Arrhenius equation
b. Henderson–Hasselbalch equation
c. Nernst equation
d. Butler–Volmer equation
ANSWER: b
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
TOPICS: Acids, Bases, and pH
DATE CREATED: 11/25/2016 5:48 AM
DATE MODIFIED: 11/25/2016 5:49 AM

90. Which of the following principles states that if stress is applied to a system in equilibrium, the equilibrium will shift in the direction that relieves the stress?
a. Pauli exclusion principle
b. Mach's principle
c. Fermat's principle
d. Le Chatelier's principle
ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank

TOPICS: Which of the following principles states that if stress is applied to a system in equilibrium, the equilibrium will shift in the direction that relieves the stress?

DATE CREATED: 11/25/2016 5:50 AM

DATE MODIFIED: 11/25/2016 5:51 AM

Copyright Cengage Learning. Powered by Cognero.

Biochemistry 9th edition Campbell Test Bank