Anatomy and Physiology 1st edition Jenkins Test Bank

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Package Title: Test Bank
Course Title: Jenkins 1e
Chapter Number: 2

Question type: Multiple Choice

1) Which of the following is one of the 4 major elements found in the body?

a) carbon
b) aluminum
c) iodine
d) calcium
e) selenium

Answer: a

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

2) The rate of a chemical reaction is influenced by all of the following EXCEPT

a) the presence of the appropriate enzyme
b) the concentration of the reactants
c) the presence or absence of carbon
d) the temperature
e) the presence of the appropriate catalyst

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

3) The energy needed to break an existing chemical bond or to form a new chemical bond is called the _____.

a) potential energy
b) catalysis
c) activation energy
d) chemical energy
e) mechanical energy

Answer: c

Difficulty: Medium
Bloom's: Knowledge
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

4) The phospholipids that make up the plasma membranes of body cells have a _____ head region and a _____ tail region, a quality essential for the formation of the "lipid bilayer."

a) non-polar, hydrophilic
b) non-polar, polar
c) polar, hydrophilic
d) hydrophobic, hydrophilic
e) hydrophilic, non-polar

Answer: e

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

5) Which of the following would be regarded as an organic molecule?

a) H_2O
b) CH_4
c) PO_4^{3-}
d) NaCl
e) HCl

Answer: b

Difficulty: Easy

Bloom's: Knowledge
Learning Objective: LO 2.5 Describe organic molecules and explain the importance of carbon in their structure.
Section Reference: 2.5 Organic molecules are large carbon-based molecules that carry out complex functions in living systems.

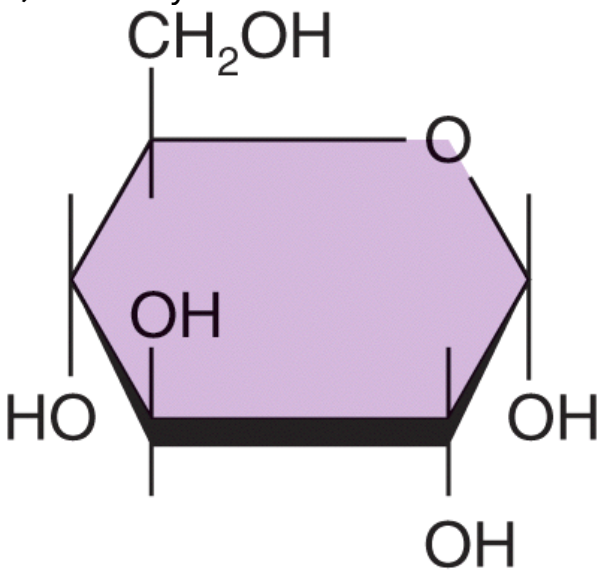
6) Which of these terms describes a large molecule created by covalent bonding of many similar small building block molecules?

a) polymer
b) colloid
c) monomer
d) electrolyte
e) polymath

Answer: a

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.5 Describe organic molecules and explain the importance of carbon in their structure.
Section Reference: 2.5 Organic molecules are large carbon-based molecules that carry out complex functions in living systems.

7) How many carbons are in this structural formula?



a) 1
b) 2
c) 4

d) 6
e) 9

Answer: d

Difficulty: Easy
Bloom's: Comprehension
Learning Objective: LO 2.5 Describe organic molecules and explain the importance of carbon in their structure.
Section Reference: 2.5 Organic molecules are large carbon-based molecules that carry out complex functions in living systems.

8) A bond in which electrons are shared unequally is called a(n) _____.

a) hydrogen bond
b) ionic bond
c) amphipathic bond
d) polar covalent bond
e) nonpolar covalent bond

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

Question type: True/False

9) The sugar part of the backbone of DNA strands is called deoxyribose.

Answer: True

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.9 Describe the composition and function of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
Section Reference: 2.9 Nucleic acids contain genetic material and function in protein synthesis.

10) Most enzymes are non-specific, meaning they may bind to substrates

indiscriminately and catalyze a wide range of reactions in the body.

Answer: False

Difficulty: Easy
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.

11) Ions are formed when atoms gain or lose one or more valence electrons and become positively or negatively charged.

Answer: True

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

12) The lower the pH, the higher the H^+ concentration.

Answer: True

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

Question type: Multiple Choice

13) Which of the following statements is FALSE regarding enzymes?

a) They are specific; each one is able to bind only to certain substrates.
b) They lower the activation energy of a chemical reaction.
c) They are all capable of breaking down lipids.
d) They are unchanged at the end of the reaction.
e) They usually end with the suffix –ase.

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.

14) Which of the following statements best characterizes lipid molecules?

a) In general, they have few polar covalent bonds, and are therefore hydrophobic and insoluble in water.
b) They are most commonly found in the body functioning as enzymes.
c) Glucose, fructose, and galactose are classified as triglycerides.
d) Components of these molecules are joined together by peptide bonds.
e) They are toxic in the body and should be eradicated in all forms from the diet.

Answer: a

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

15) Which of the following is the most plentiful positive ion in the extracellular fluid?

a) nitrogen
b) hydrogen
c) magnesium
d) potassium
e) sodium

Answer: e

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

16) Salts are always _____.

a) dissociate in water into a hydrogen ion and an anion
b) ionic compounds
c) polar covalent compounds

d) non-polar covalent compounds
e) hydrogen bonded

Answer: b

Difficulty: Medium
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

17) The smallest unit of matter that retains the properties and characteristics of an element is the _____.

a) molecule
b) atom
c) electron
d) proton
e) nucleus

Answer: b

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

18) Which of the following is a good example of an acidic bodily fluid in a healthy individual?

a) semen
b) cerebrospinal fluid
c) bile
d) blood
e) gastric juice

Answer: e

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

19) Which of the following is NOT an example of a hydrogen bond?

a) the bonds formed between H_2O molecules
b) the peptide bonds between amino acids
c) the bonds formed between base pairs of DNA and RNA nucleotides
d) the bonds formed between amino acids to create secondary structure of proteins

Answer: b

Difficulty: Hard
Bloom's: Application
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

Question type: True/False

20) Anions are formed when atoms gain or lose one or more valence electrons and become positively or negatively charged.

Answer: False

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

Question type: Multiple Choice

21) Which of the following bodily fluids is strongly alkaline (basic)?

a) blood
b) gastric juice
c) bile
d) vaginal fluid
e) saliva

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

Question type: True/False

22) Non-polar covalent bonds between hydrogen and other atoms create partially charged regions on those molecules, and the attraction between other molecules with partially charged regions are called hydrogen bonds.

Answer: False

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

Question type: Multiple Choice

23) Which of the following is the most plentiful positive ion in the intracellular fluid?

a) Na^+
b) Cl^-
c) H^+
d) K^+
e) Mg^{2+}

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

24) Which of the following particles has a neutral charge?

a) neutron

b) atom
c) proton
d) both the neutron and atom
e) All of the choices are correct.

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

25) What region of an atom contains the protons and neutrons?

a) cloud
b) nucleus
c) element
d) ring
e) shell

Answer: b

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

26) This describes the number of protons in an atom.

a) mass number
b) atomic number
c) isotope
d) valence shell
e) None of the choices is correct.

Answer: b

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

27) Atoms with the same number of protons and a differing number of neutrons are _____.

a) compounds
b) cations
c) anions
d) isotopes
e) molecules

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

28) This term refers to the average atomic mass of all the naturally occurring isotopes of an element.

a) mass number
b) atomic number
c) atomic weight
d) ionic mass
e) covalent mass

Answer: c

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

29) Which of the following particles participate in creating chemical bonds?

a) neutron
b) electron
c) proton
d) neutron and proton
e) All of the choices are correct.

Answer: b

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

30) This is a negatively charged particle.

a) superoxide
b) isotope
c) catalyst
d) anion
e) cation

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

31) Which of these conducts an electric current?

a) isotope
b) surface tension
c) compound
d) electrolyte
e) valence molecule

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

32) This type of bond requires a sharing of electrons.

a) covalent

b) ionic
c) hydrogen
d) bail
e) electronic

Answer: a

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

33) This is the type of bond between the atoms within a molecule of H_2O.

a) nonpolar covalent bond
b) polar covalent bond
c) hydrogen bond
d) ionic bond
e) treasury bond

Answer: b

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

34) Which of the following bonds is the weakest of the chemical bonds but plays a large role in determining the three dimensional shape of large molecules such as proteins?

a) nonpolar covalent bonds
b) polar covalent bonds
c) hydrogen bonds
d) ionic bonds
e) barry bonds

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.

Section Reference: 2.2 Atoms are held together by chemical bonds.

35) This term describes the process of forming new chemical bonds or breaking bonds between atoms.

a) homeostasis
b) surface tension
c) isotopes
d) chemical reaction
e) anabolism

Answer: d

Difficulty: Easy
Bloom's: Comprehension
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

36) This term is defined as the capacity to do work.

a) metabolism
b) electrolytes
c) chemical reaction
d) concentration
e) energy

Answer: e

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

37) This type of reaction will absorb more energy than it releases.

a) exergonic
b) endergonic
c) potential
d) kinetic

e) activation

Answer: b

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

38) An enzyme acts to _____.

a) raise the activation energy required for a chemical reaction to occur
b) lower the activation energy required for a chemical reaction to occur
c) convert the activation energy into potential energy
d) convert the activation energy into kinetic energy
e) prevent a chemical reaction

Answer: b

Difficulty: Easy
Bloom's: Comprehension
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

39) This type of reaction combines reactants to produce larger products.

a) synthesis
b) decomposition
c) potential
d) exchange
e) activated

Answer: a

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

40) This type of reaction will convert larger reactants to smaller products.

a) synthesis
b) decomposition
c) potential
d) exchange
e) activated

Answer: b

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.

41) This is the most abundant and most important inorganic compound in the body.

a) water
b) oxygen gas
c) carbon dioxide
d) glucose
e) DNA

Answer: a

Difficulty: Easy
Bloom's: Knowledge
Learning Objective 1: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

42) A solute that dissolves in water is _____.

a) hydrophobic
b) hydrostatic
c) hydroelectric
d) hydrophilic
e) hydrozone

Answer: d

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

43) Which of these is the solvent in a typical body solution?

a) glucose
b) lipids
c) carbon dioxide
d) water
e) electrolyte

Answer: d

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

44) Which of these best describes a solution with a pH value less than 7?

a) basic
b) salty
c) acidic
d) alkaline
e) concentrated

Answer: c

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

45) Which of these is a substance that is added to solutions to add or remove hydrogen ions so that stronger acids or bases are converted into weaker acids or bases?

a) base

b) lye
c) acid
d) alkaline
e) buffer

Answer: e

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

46) Which of the following is considered a proton donor?

a) acid
b) base
c) salt
d) organic compound
e) colloid

Answer: a

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

47) Which of the following is a monosaccharide that is important in producing energy?

a) glucose
b) sucrose
c) lactose
d) ribose
e) deoxyribose

Answer: a

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.6 Explain the functions of carbohydrates in the human body.
Section Reference: 2.6 Carbohydrates function as building blocks and sources of energy.

48) The major energy storage polysaccharide in humans is _____.

a) cellulose
b) ribose
c) lipids
d) fats
e) glycogen

Answer: e

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.6 Explain the functions of carbohydrates in the human body.
Section Reference: 2.6 Carbohydrates function as building blocks and sources of energy.

49) This type of triglyceride contains more than one double bond in the fatty acid carbon atoms.

a) saturated
b) monounsaturated
c) polyunsaturated
d) acylglycerols
e) lipoprotein

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

50) This type of lipid is the body's long-term energy storage molecule.

a) steroid
b) phospholipid
c) cholesterol
d) triglyceride
e) lipoprotein

Answer: d

Difficulty: Medium

Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

51) The body uses this type of lipid to create hormones.

a) cellulose
b) phospholipid
c) cholesterol
d) triglyceride
e) lipoprotein

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

52) Which of the following is NOT true of phospholipids?

a) the tails are hydrophobic
b) the head group is polar
c) the molecule is an important part of cell membranes
d) the tail groups are nonpolar
e) they are a major energy storage lipid

Answer: e

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

53) Which of the following is true of inorganic acids, bases and salts in water?

a) An acid dissociates into one or more hydrogen ions and one or more cations.
b) A base dissociates into one or more hydroxide ions and one or more anions.
c) Salts dissociate into one or more anions and one or more cations, none of which are H^+ or OH.

d) An acid dissociates into one or more hydrogen ions and one or more cations and a base dissociates into one or more hydroxide ions and one or more anions.
e) None of the choices is correct.

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

54) Prostaglandins and leukotrienes are considered _____.

a) amphipathic
b) lipids
c) eicosanoids
d) both lipids and eicosanoids
e) All of the choices are correct.

Answer: d

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.

55) The primary structure of a protein contains _____.

a) alpha helix
b) beta-pleated sheets
c) substrates
d) amino acids
e) All of the choices are correct

Answer: d

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.

56) Which is the function of RNA?

a) produce electrical impulses
b) storage of energy
c) transfer information for protein synthesis
d) store information for protein synthesis
e) transport of fluids

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.9 Describe the composition and function of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
Section Reference: 2.9 Nucleic acids contain genetic material and function in protein synthesis.

57) Which of these molecules is made up of a nitrogenous base, five-carbon sugar, and a phosphate group?

a) amino acid
b) monosaccharide
c) nucleotide
d) fatty acid
e) triglyceride

Answer: c

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.9 Describe the composition and function of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
Section Reference: 2.9 Nucleic acids contain genetic material and function in protein synthesis.

58) How does RNA differ from DNA?

a) RNA is usually single-stranded while DNA is usually part of a double-stranded helix.
b) The sugar in RNA monomers is ribose; in DNA, it is deoxyribose.
c) RNA uses the nitrogenous base, uracil, where DNA uses thymine.
d) RNA is usually single-stranded while DNA is usually part of a double-stranded helix, and RNA uses the nitrogenous base, uracil, where DNA uses thymine.
e) All of the choices are correct.

Answer: e

Difficulty: Medium
Bloom's: Application
Learning Objective: LO 2.9 Describe the composition and function of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
Section Reference: 2.9 Nucleic acids contain genetic material and function in protein synthesis.

59) An atom with 4 electrons in its valence shell is _____.

a) very stable
b) likely to ionize
c) a noble gas
d) an oxygen atom
e) a carbon atom

Answer: e

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.

60) Which of these describes the function of DNA?

a) produce chemical signals
b) storage of energy
c) transfer information for protein synthesis
d) store information for protein synthesis
e) transport of electrolytes

Answer: d

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.9 Describe the composition and function of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
Section Reference: 2.9 Nucleic acids contain genetic material and function in protein synthesis.

61) Which of these describes a function of adenosine triphosphate (ATP)?

a) produce electrical impulses
b) transfers energy for cell functions
c) surrounds the cell and separates it from environment
d) store information for protein synthesis
e) All of the choices are correct.

Answer: b

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.10 Explain the composition and function of adenosine triphosphate (ATP).
Section Reference: 2.10 Adenosine triphosphate (ATP) is the principal energy-transferring molecule in living systems.

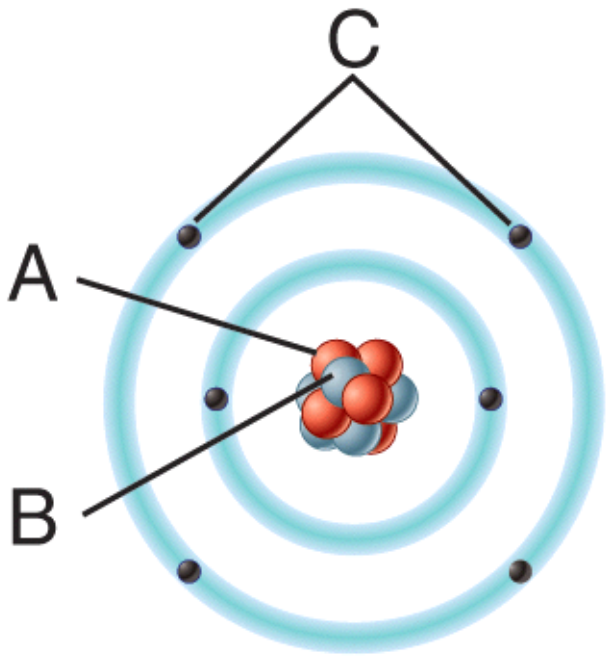
62) What is the monomer used to build RNA and DNA?

a) fatty acid
b) amino acid
c) glucose
d) glycerol
e) nucleotide

Answer: e

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.9 Describe the composition and function of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
Section Reference: 2.9 Nucleic acids contain genetic material and function in protein synthesis.

63) In the diagram which particles are negatively charged?



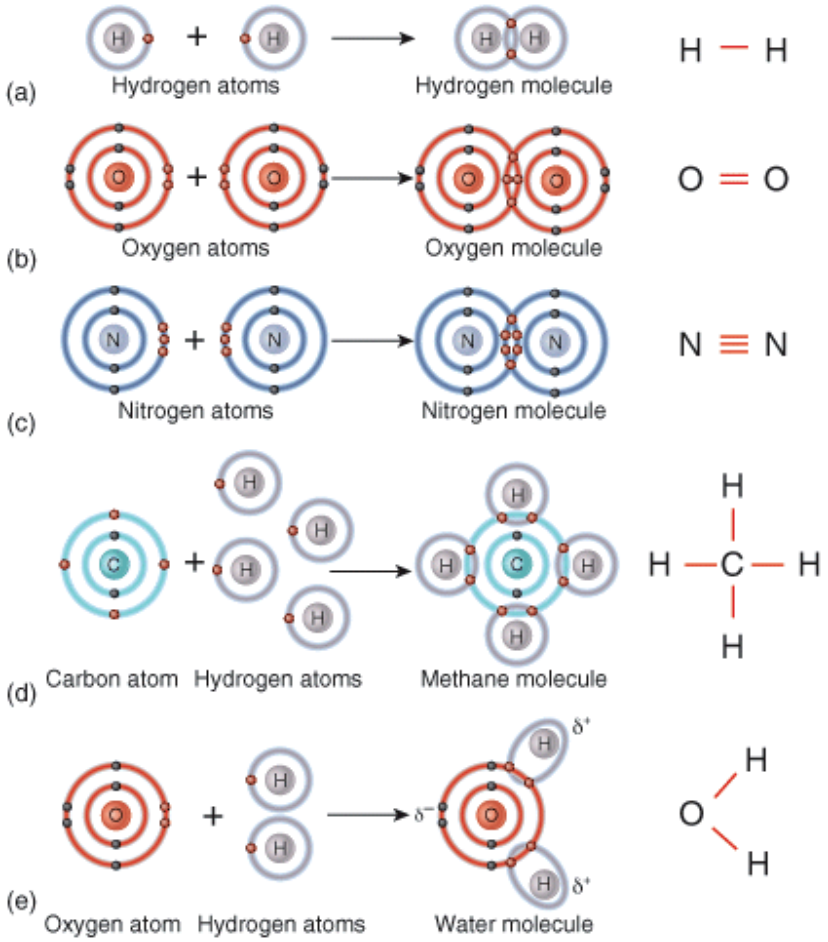
a) A
b) B
c) C
d) All of the choices are correct.
e) None of the choices is correct.

Answer: c

Difficulty: Easy
Bloom's: Knowledge
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.

Question Type: Essay

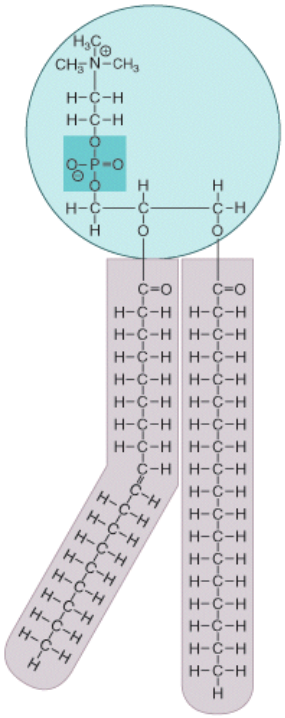
64) Give a brief description of what rule this diagram represents.



Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.
Solution: This diagram represents the octet rule in chemical bonding. The octet rule states that two atoms will tend to bond if doing so means that they will both be left with eight electrons in their valence shells.

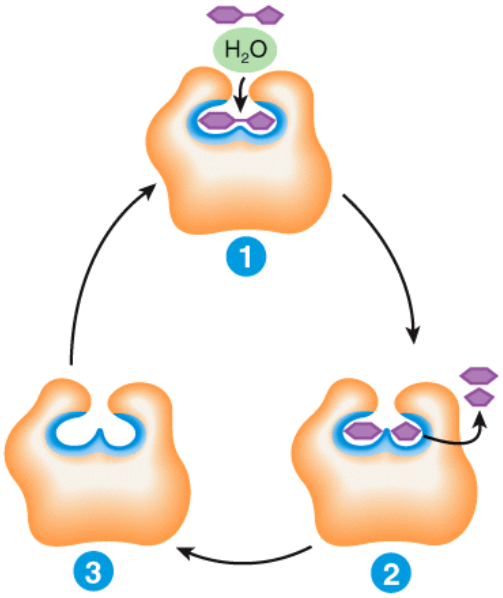
65) What is this molecule, where can it be found in a eukaryotic cell and what are the special properties of this molecule?



Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.
Solution: This is a phospholipid found in the plasma membranes of eukaryotic cells. It has a polar hydrophilic head group and a nonpolar hydrophobic tail group making it amphipathic.

66) Describe what is happening at places 1, 2, and 3 in the figure.

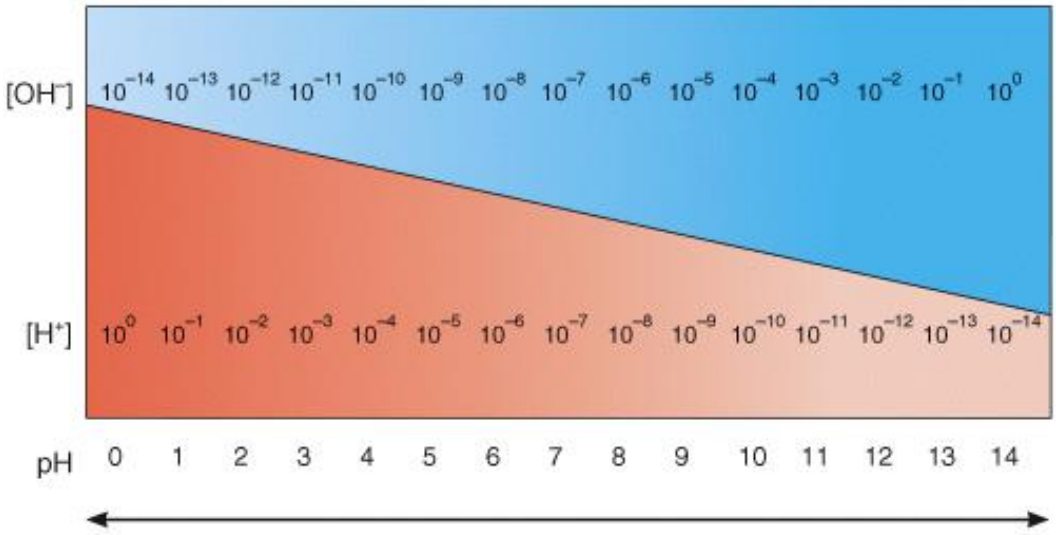


Answer:

Difficulty: Hard
Bloom's: Application
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.
Solution: This figure represents how an enzyme works. In number one, the enzyme and substrate come together at the active site of the enzyme forming the enzyme-substrate complex. In number two, the enzyme catalyzes the reaction and transforms the substrate into products. In number three, the reaction is complete and the enzyme remains unchanged and free to catalyze the same reaction again on a new substrate.

Question Type: Multiple Choice

67) In the diagram, which pH value represents an acidic solution?



a) 12
b) 10
c) 8
d) 6
e) None of the choices is correct.

Answer: d

Difficulty: Medium
Bloom's: Knowledge
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

Question Type: Essay

68) What is the difference between atomic mass, mass number and atomic number?

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.1 Describe the structures of atoms, ions, molecules, and compounds.
Section Reference: 2.1 Chemical elements are composed of small units called atoms.
Solution: Atomic number is the number of protons found in the nucleus of an atom. Atomic mass is the average mass of all the naturally occurring isotopes of an element. The mass number of an atom is the sum of its protons and neutrons.

69) Why are most lipids insoluble in water?

Answer:

Difficulty: Medium
Bloom's: Application
Learning Objective: LO 2.7 Explain the functions of lipids in the human body.
Section Reference: 2.7 Lipids are important for cell membrane structure, energy storage, and hormone production.
Solution: There are fewer polar covalent bonds due to a lower proportion of electronegative oxygen atoms in lipids. As a result, most lipids are hydrophobic.

70) Describe the functions of water in the body.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.
Solution: Water is a solvent that allows transportation of solutes. Water acts in hydrolysis reactions to split reactants. Water can transport heat and, through sweating, releases heat from the body. Water is used as a lubricant, particularly in serous fluids.

71) Describe three factors that increase the rate of chemical reactions.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.
Solution: Three factors that promote reaction rates are the presence of enzymes (catalysts), increased concentration of reactants and increased temperature.

72) Describe the law of conservation of energy.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.3 Explain what happens when atoms combine with or separate from other atoms during a chemical reaction.
Section Reference: 2.3 Chemical reactions occur when atoms combine with or separate from other atoms.
Solution: Energy cannot be created or destroyed but it may be converted from one form to another form.

73) List the three major properties of enzymes.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.
Solution: Enzymes are highly specific, efficient and subject to a variety of cellular controls.

74) Describe what happens to a protein's structure and function when it is denatured.

Answer:

Difficulty: Hard
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.
Solution: The protein will become unraveled and lose its unique shape. Loss of that shape will destroy the protein's function.

75) Describe what structures comprise an amino acid.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.
Solution: Amino acids contain a central carbon atom, an amino group, an acidic carboxyl group and a side chain.

76) List the six major functions of proteins.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.
Solution: Proteins can be used for structure, regulation, contraction, immunology, transport and as a catalyst.

77) Describe a hydrogen bond.

Answer:

Difficulty: Medium
Bloom's: Comprehension
Learning Objective: LO 2.2 Explain how atoms form molecules and compounds, and describe the nature of the various types of bonds that join them.
Section Reference: 2.2 Atoms are held together by chemical bonds.
Solution: Hydrogen bonds form between the slightly positively charged hydrogen atom and a slightly negatively charged atom, mostly oxygen or nitrogen.

Question type: Multiple choice

78) The fact that blood can successfully transport most materials through the body without difficulty is due to the fact that

a) most materials can enter red blood cells to be transported
b) blood contains numerous carriers to assist in transport
c) most substances dissolve in lipids and plasma is mainly lipids
d) plasma is mostly water and most substances carried in the blood are water soluble
e) most things do not need to dissolve in blood to be transported

Answer: d

Difficulty: Hard
Bloom's: Analysis
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

79) In order to prevent damage to the structure of the body resulting from the acids

produced during metabolism, the blood and cells use

a) buffers to remove the acids
b) bases to neutralize the acids
c) buffers to prevent the pH of blood from increasing
d) enzymes to break down the acids
e) buffers to prevent the pH of blood from decreasing

Answer: e
Difficulty: Hard
Bloom's: Analysis
Learning Objective: LO 2.4 Explain the importance of water, salts, acids, and bases in the functioning of the human body.
Section Reference: 2.4 Inorganic compounds include water, salts, acids, and bases.

80) Glycogen can be used by the body to maintain blood sugar because it can

a) be used by the body to make ATP
b) be broken down into glucose subunits to increase blood sugar levels
c) cause the pancreas to release insulin
d) added to the blood to increase blood sugar levels
e) be used by the cells instead of glucose to make ATP

Answer: b

Difficulty: Medium
Bloom's: Analysis
Learning Objective: LO 2.6 Explain the functions of carbohydrates in the human body.
Section Reference: 2.6 Carbohydrates function as building blocks and sources of energy.

81) The body needs to regulate its reactions. In order to control where digestion occurs, enzymes need to be regulated. One way the body can regulate where digestive enzymes work is

a) to break down enzymes after they have been used
b) to make enzymes only when they are needed
c) to use pH to control the activity of the enzymes
d) to sequester the enzymes until needed
e) to use proenzymes to activate enzymes

Answer: b

Difficulty: Hard
Bloom's: Analysis

Learning Objective: LO 2.8 Explain the functions of proteins in the human body.
Section Reference: 2.8 Proteins are amino acid complexes serving many diverse roles.