Maders Understanding Human Anatomy and Physiology 9th edition Longenbaker Test Bank

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Chapter 02
Chemistry of Life

Multiple Choice Questions

1. The smallest unit of matter is the
A. molecule.
B. atom.
C. compound.
D. isotope.

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

2. An element is any substance that contains one type of
A. molecule.
B. isotope.
C. atom.
D. proton.

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

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True / False Questions

3. Over 90% of the body is composed of four elements: carbon, nitrogen, chlorine, and hydrogen.
FALSE

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

Multiple Choice Questions

4. The positively charged particles in the nucleus of an atom are
A. neutrons.
B. electrons.
C. protons.
D. isotopes.

Bloom's Level: 1. Remember
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

5. The atomic mass of a proton is
A. 0 atomic mass units.
B. 2 atomic mass units.
C. 1 atomic mass units.
D. –1 atomic mass units.

Bloom's Level: 1. Remember
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

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6. Which of the following subatomic particles are found in the nucleus of an atom?
A. Protons and electrons
B. Electrons and neutrons
C. Protons and shells
D. Neutrons and protons

Bloom's Level: 1. Remember
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

7. The number of protons in an atom is called the
A. atomic number.
B. atomic weight.
C. mass number.
D. combining weight.

Bloom's Level: 1. Remember
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

8. Which subatomic particle determines the identity of an atom?
A. Neutron
B. Proton
C. Electron
D. Prion

Bloom's Level: 1. Remember
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

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9. Which subatomic particle determines the chemical activity of an atom?
A. Neutron
B. Proton
C. Electron
D. Prion

Bloom's Level: 1. Remember
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

10. Which is characteristic of an ion?
A. Contains an unequal number of electrons and protons
B. Contains a different number of neutrons
C. Contains extra protons
D. Contains equal numbers of protons, electrons, and neutrons

Bloom's Level: 1. Remember
HAPS Objective: C.01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

11. The number of an element is equal to
A. protons plus the number of neutrons.
B. protons plus the number of electrons.
C. protons.
D. electrons plus the number of neutrons.

Bloom's Level: 1. Remember
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

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12. An atom or group of atoms with a charge is called a(n)
A. molecule.
B. isotope.
C. compound.
D. ion.

Bloom's Level: 1. Remember
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.03
Section: 02.01
Topic: Atoms and molecules

13. Atoms with more than one shell are most stable when the outermost shell contains _____ electrons.
A. 10
B. 1
C. 8
D. 6

Bloom's Level: 1. Remember
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

14. Exactly 6.02×10^{23} atoms of any element is called one ____ of that element.
A. atomic mass unit
B. isotope
C. mole
D. mouse

Bloom's Level: 1. Remember
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

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15. Different forms of the same element with different numbers of neutrons are called
A. molecules.
B. compounds.
C. isotopes.
D. lattices.

Bloom's Level: 1. Remember
HAPS Objective: C.01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

16. If the atomic number of an element is 9 and the mass number is 19, how many neutrons does the atom have?
A. 10
B. 9
C. 19
D. 28

Bloom's Level: 3. Apply
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

17. If the atomic number of an element is 27 and the mass number is 60, how many neutrons does the atom have?
A. 27
B. 33
C. 87
D. 60

Bloom's Level: 3. Apply
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

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18. Compared to "regular" isotopes, radioactive isotopes
A. emit energy from the nucleus.
B. lose or gain neutrons.
C. lose or gain electrons.

Bloom's Level: 1. Remember
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.02
Section: 02.01
Topic: Atoms and molecules

19. Low levels of radiation are commonly used to
A. sterilize dental products.
B. destroy cancer cells.
C. produce images of body parts.
D. All apply.

Bloom's Level: 1. Remember
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.02
Section: 02.01
Topic: Atoms and molecules

20. What makes an isotope radioactive?
A. It has more protons than electrons.
B. It releases energy to become stable.
C. It releases hydrogen ions into solution.
D. It breaks down into hydrogen and electrons.

Bloom's Level: 2. Understand
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.02
Section: 02.01
Topic: Atoms and molecules

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21. High levels of radiation are NOT used
A. to sterilize medical equipment.
B. to kill cancer cells.
C. as tracers to detect molecular changes.
D. to sterilize medical tools and equipment.

Bloom's Level: 1. Remember
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.02
Section: 02.01
Topic: Atoms and molecules

22. Atoms bonded together to form a chemical unit are called
A. molecules.
B. ions.
C. radioisotopes.
D. buffers.

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.03
Section: 02.01
Topic: Atoms and molecules
Topic: Chemical bonding

23. Molecules form from
A. the shape of the individual atoms.
B. the attraction between electrons.
C. the sharing of electrons.
D. a drive toward solubility.

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

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24. A molecule made of two or more different atoms bonded together is called a(n)
A. ion.
B. isotope.
C. atom.
D. compound.

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.03
Section: 02.01
Topic: Atoms and molecules
Topic: Chemical bonding

25. An anion is an atom or molecule that
A. is positively charged.
B. is negatively charged.
C. emits radioactive energy.

Bloom's Level: 1. Remember
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.01
Section: 02.01
Topic: Atoms and molecules

26. A bond created from the attraction between positively and negatively charged ions is a(n) _____ bond.
A. covalent
B. hydrogen
C. ionic
D. metallic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

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27. Sodium chloride dissociates when dissolved in water. Therefore, it is considered a _____.
A. salt
B. compound
C. acid
D. base

Bloom's Level: 1. Remember
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

28. A bond created from the sharing of electrons between two atoms is a(n) _____ bond.
A. covalent
B. hydrogen
C. ionic
D. metallic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

29. When two pairs of electrons are shared between two atoms, a _____ bond is formed.
A. single covalent
B. double covalent
C. triple covalent
D. double ionic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

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30. When one atom has a stronger attraction for shared electrons than the other atom, a(n) _____ covalent bond is formed.
A. polar
B. nonpolar
C. ionic
D. metallic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

31. Ionic bonds involve _____, while covalent bonds involve _____.
A. the donation of electrons; the sharing of electrons
B. the sharing of electrons; the donation of electrons
C. weak attractions; the donation of electrons

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

32. Equal sharing of electrons is a characteristic of a _____ covalent bond, while unequal sharing is in a _____ bond.
A. polar; nonpolar
B. nonpolar; polar

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemical bonding

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33. The most abundant molecule in living organisms is
A. water.
B. glucose.
C. oxygen.
D. ammonia.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

34. Organic compounds always contain _____ atoms.
A. water
B. carbon
C. nitrogen
D. oxygen

Bloom's Level: 1. Remember
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.04
Section: 02.02
Topic: Atoms and molecules

35. Water molecules are
A. polar.
B. nonpolar.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

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36. The attraction between a slightly positive hydrogen to a slightly negative oxygen of another molecule describes a(n) _____ bond.
A. hydrogen
B. oxygen
C. nitrogen
D. ionic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.04
Section: 02.02
Topic: Chemical bonding

37. Which of the following is NOT a property of water?
A. High heat capacity
B. Low heat of vaporization
C. Solvent for polar and ionic compounds
D. Cohesiveness

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

38. Which of the following is NOT a property of water?
A. The ability to cling to other water molecules, yet flow
B. The ability to facilitate chemical reactions
C. The ability to insulate the body from temperature extremes
D. The ability to dissolve nonpolar, hydrophobic molecules

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

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39. Substances that dissolve in water are called
A. hydrophilic.
B. hydrophobic.
C. hydrophoric.
D. hydrochromic.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

40. The ability of water molecules to cling to each other is _____, while the ability to cling to other surfaces is _____.
A. cohesion; adhesion
B. dissolving; vaporization
C. adhesion; cohesion
D. cohesion; dissolving

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

41. The ability of water to absorb large amounts of heat energy without changing its temperature is a
A. low specific heat capacity.
B. low heat of vaporization.
C. high specific heat capacity.
D. high heat of vaporization.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
Learning Outcome: 02.04
Section: 02.02
Topic: Inorganic compounds and solutions

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42. A substance that dissociates in water, releasing hydrogen ions, is a(n)
A. salt.
B. base.
C. protein.
D. acid.

Bloom's Level: 1. Remember
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Inorganic compounds and solutions

43. A substance that can take up hydrogen ions or release hydroxide ions in water is a(n)
A. salt.
B. base.
C. protein.
D. acid.

Bloom's Level: 1. Remember
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Inorganic compounds and solutions

44. Hydrochloric acid is considered a strong acid because it
A. produces very few hydrogen ions in water.
B. produces many hydroxide ions in water.
C. produces many hydrogen ions in water.
D. dissociates very little in water.

Bloom's Level: 2. Understand
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Inorganic compounds and solutions

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True / False Questions

45. A weak base will accept many hydrogen ions, while a strong base will accept only a few hydrogen ions.
FALSE

A strong base will accept many hydrogen ions.

Bloom's Level: 2. Understand
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Inorganic compounds and solutions

Multiple Choice Questions

46. The lower the pH,
A. the lesser the hydrogen ion concentration.
B. the more acidic the solution.
C. the lesser the hydrogen ion concentration and the more acidic the solution.
D. the greater the hydroxide ion concentration.
E. the more basic the solution and the greater the hydroxide ion concentration.

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

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47. The pH of the blood is slightly basic. Which of the following describes this pH?
A. 6.4
B. 12.6
C. 4.7
D. 7.4

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

48. A pH of 5.5 would be considered
A. acidic.
B. basic.
C. neutral.

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

49. A pH of 7.0 would be considered
A. acidic.
B. basic.
C. neutral.

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

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50. A blood pH of 7.2 would be considered _____, while a pH of 7.6 would be _____.
A. acidosis; alkalosis
B. alkalosis; acidosis
C. acidosis; normal
D. Both values are within the normal range.

Bloom's Level: 1. Remember
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

51. Chemicals that help keep body fluids within a normal pH range are called
A. acids.
B. bases.
C. buffers.
D. salts.

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

52. An electrolyte is a substance that releases _____ when dissolved in water.
A. ions
B. electrons
C. bases

Bloom's Level: 1. Remember
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.06
Section: 02.02
Topic: Inorganic compounds and solutions

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Check All That Apply Questions

53. Which four are the main macromolecules found in cells?
__X__ Proteins
_____ Water
__X__ Carbohydrates
__X__ Nucleic acids
__X__ Lipids

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.07
Section: 02.03
Topic: Organic compounds

Multiple Choice Questions

54. What monomer is NOT correctly matched with its macromolecule?
A. carbohydrates - glucose
B. lipids - glycerol and citric acids
C. proteins - amino acids
D. nucleic acids - nucleotides

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.08
Section: 02.03
Topic: Organic compounds

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55. The subunit molecules for proteins are
A. nucleic acids.
B. amino acids.
C. fatty acids.
D. monosaccharides.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.08
Section: 02.03
Topic: Organic compounds

56. Which arrow in the following equation represents dehydration?

A. Arrow 1
B. Arrow 2

Bloom's Level: 2. Understand
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Organic compounds

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57. The addition of water in an enzyme-catalyzed reaction is a(n) _____ reaction.
A. dehydration
B. hydrolysis
C. exchange
D. neutralization

Bloom's Level: 1. Remember
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Organic compounds

58. The removal of a water molecule during a reaction results in
A. breaking a bond.
B. forming an acid.
C. hydrolysis.
D. forming a bond.

Bloom's Level: 2. Understand
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Organic compounds

59. The main function of carbohydrates is to provide
A. cellular energy.
B. insulation.
C. transport molecules.
D. hereditary information.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

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60. A monosaccharide of five carbons is a
A. hexose sugar.
B. glycerol.
C. fatty acid.
D. pentose sugar.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

61. The monomer of carbohydrates is a
A. nucleotide.
B. fatty acid.
C. monosaccharide.
D. amino acid.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

62. Which of the following is NOT a monosaccharide?
A. Glucose
B. Fructose
C. Sucrose
D. Galactose

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

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63. Which of the following is NOT a disaccharide?
A. Maltose
B. Galactose
C. Lactose
D. Sucrose

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

64. Which of the following contains glucose?
A. Protein
B. Fat
C. Nucleic acid
D. Starch

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

65. Glycogen is
A. a monosaccharide used for quick energy.
B. a protein found in cell membranes.
C. a polysaccharide used as stored energy in animals.
D. a fat found in margarine.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

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Check All That Apply Questions

66. Which are characteristics of starch? Choose all that apply.
__X__ It is a polysaccharide.
_____ It is a disaccharide.
__X__ It is found in plants.
_____ It is found in animals.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

Multiple Choice Questions

67. Which of the following is the main component of fiber in our diet?
A. Glycogen
B. Protein
C. Cellulose
D. Starch

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.09
Section: 02.04
Topic: Organic compounds

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68. Organic compounds that are always insoluble in water are called
A. sugars.
B. lipids.
C. nucleotides.
D. proteins.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

69. Which of the following is NOT a function of lipids?
A. Long-term energy storage
B. Formation of antibodies
C. Formation of cell membranes
D. Component of sex hormones

Bloom's Level: 1. Remember
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

True / False Questions

70. Fats are usually liquid at room temperature and oils are solids.
FALSE

Fats are usually solid at room temperature and oils are liquid.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

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Multiple Choice Questions

71. Which macromolecule is composed of one glycerol plus three fatty acids?
A. Lipids
B. Proteins
C. Nucleic acids
D. Carbohydrates

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

72. The process that allows fats to mix with water, particularly so digestion can occur, is called
A. hydrolysis.
B. degradation.
C. dehydration.
D. emulsification.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

73. When fatty acids contain one or more double bonds, they are considered
A. saturated.
B. unsaturated.
C. emulsified.
D. synthesized.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

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74. What makes a phospholipid different from a fat?
A. Fats are neutral while phospholipids are ionized.
B. Fats are solid while phospholiopids are liquid.
C. Fats are ionized while phospholipids are neutral.
D. Fats are basic while phospholipids are acidic.

Bloom's Level: 2. Understand
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

75. The macromolecules that are the main component of cell membranes are
A. steroids.
B. triglycerides.
C. phospholipids.
D. prostaglandins.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

76. Steroids differ in structure from other lipids in that they have a backbone of
A. four fused carbon rings.
B. branched chains of carbons.
C. saturated carbon chains.
D. unsaturated carbon chains.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

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Check All That Apply Questions

77. Which are characteristics of cholesterol? Choose all that apply.
_____ It is a type of protein.
__X__ It is hydrophobic.
__X__ It is an important component of cell membranes.
_____ It is an energy-storage molecule.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.10
Section: 02.05
Topic: Organic compounds

Multiple Choice Questions

78. Which of the following is NOT a function of proteins?
A. They form structural components such as collagen.
B. They form many hormones.
C. They form actin and myosin needed for muscular movement.
D. They form important energy molecules.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06

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79. Which of the following is NOT a function of proteins?
A. They form enzymes to speed up reactions.
B. They form the backbone of cell membranes.
C. They form hemoglobin to transport oxygen in the blood.
D. They form antibodies to protect the body from disease.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

80. How many different amino acids compose all human polypeptides (proteins)?
A. 10
B. 15
C. 20
D. 25

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

81. The sequence of amino acids makes up the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

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82. The coiling or folding of a polypeptide chain is the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

83. The coiling and folding of a polypeptide chain into a more circular molecule is the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

84. Proteins that have more than one polypeptide arranged together have a _____ structure.

A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

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85. The differences between one polypeptide and another lies in
A. the type of peptide bond they contain.
B. the type of sugar they contain.
C. whether they are saturated or not.
D. the sequence of amino acids.

Bloom's Level: 2. Understand
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

86. Any process that causes an irreversible change in the shape of a protein is called
A. denaturation.
B. emulsification.
C. hydrolysis.
D. degradation.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

Check All That Apply Questions

87. Which of the following can denature proteins? Choose all that apply.
_____ High salt concentration
__X__ High temperature
_____ Low calcium concentration
__X__ Low pH

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

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Multiple Choice Questions

88. The sum of all the chemical reactions that occur in a cell is called
A. emulsification.
B. metabolism.
C. denaturation.
D. synthesis.

Bloom's Level: 1. Remember
Learning Outcome: 02.11
Section: 02.06

89. What is the role of an enzyme in a chemical reaction?
A. Raises the energy of activation
B. Raises the temperature of the reaction
C. Lowers the energy of activation
D. Lowers the temperature of the reaction

Bloom's Level: 1. Remember
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.11
Section: 02.06

90. In the reactions that occur in metabolism, enzymes function as
A. amino acids.
B. lipids.
C. catalysts.
D. compounds.

Bloom's Level: 1. Remember
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

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91. The substance that an enzyme acts upon is its
A. substrate.
B. active site.
C. catalyst.
D. product.

Bloom's Level: 1. Remember
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

92. An enzyme's specificity for its substrate is due to
A. the shape of its active site.
B. its denaturation.
C. the presence of cofactors or coenzymes.

Bloom's Level: 2. Understand
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

93. The area of the enzyme that binds to its substrate is called the
A. active site.
B. catalyst.
C. activation energy.
D. product.

Bloom's Level: 1. Remember
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

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94. What role can inorganic metals such as iron or zinc have in a reaction?
A. A catalyst
B. A coenzyme
C. A substrate
D. A cofactor

Bloom's Level: 1. Remember
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

95. What role do some vitamins play in chemical reactions?
A. As a coenzyme
B. As a substrate
C. As an enzyme
D. As energy

Bloom's Level: 1. Remember
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

96. Which of the following types of reactions involves the production of a larger product by combining smaller reactants?
A. Degradation
B. Replacement
C. Synthesis
D. Decomposition

Bloom's Level: 1. Remember
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
Learning Outcome: 02.11
Section: 02.06

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97. A hydrolysis reaction is an example of which reaction type?
A. Decomposition
B. Synthesis
C. Replacement
D. Neutralization

Bloom's Level: 1. Remember
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
Learning Outcome: 02.11
Section: 02.06

98. Very small protein molecules that seem to be disease-causing agents are called
A. viruses.
B. bacteria.
C. flukes.
D. prions.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
Learning Outcome: 02.11
Section: 02.06
Topic: Organic compounds

99. Which of the following is NOT a component of a nucleotide?
A. Pentose sugar
B. Phosphate group
C. Glucose
D. Nitrogen-containing base

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Organic compounds

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Check All That Apply Questions

100. Which are examples of nucleic acids? Choose all that apply.
__X__ Deoxyribonucleic acid
_____ Amino acid
__X__ Ribonucleic acid
_____ Glucose

Bloom's Level: 1. Remember
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

Multiple Choice Questions

101. Which of the following is NOT an instruction found in genes?
A. How to join amino acids to make proteins
B. How to replicate DNA
C. How to break down complex carbohydrates
D. How to make RNA

Bloom's Level: 2. Understand
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

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102. Which of the following is NOT a nitrogen base found in DNA?
A. Uracil
B. Adenine
C. Guanine
D. Cytosine

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

103. The shape of the DNA molecule is a(n)
A. single strand.
B. globule.
C. double helix.
D. inverted T.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

104. The backbone or sides of a DNA helix consists of
A. nitrogen base pairs.
B. a sugar-phosphate chain.
C. an adenine-ribose chain.
D. a glucose-phosphate chain.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

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105. The rungs of the DNA ladder are composed of
A. nitrogen base pairs.
B. sugar-phosphate chain.
C. adenine-ribose chain.
D. glucose-phosphate chain.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

106. In the DNA molecule, the complementary base pair of adenine is always
A. uracil.
B. cytosine.
C. thymine.
D. guanine.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

107. In the DNA molecule, the complementary base pair of cytosine is always
A. uracil.
B. guanine.
C. adenine.
D. thymine.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

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108. A three-base sequence on DNA and therefore RNA codes for a(n)
A. glucose.
B. fatty acid.
C. amino acid.
D. steroid.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

109. Which of the following is NOT true of RNA?
A. It is single stranded.
B. It has uracil instead of thymine.
C. It has ribose sugar.
D. It contains the blueprint for assembling a protein.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
Learning Outcome: 02.12
Section: 02.07
Topic: Nucleic acids: DNA and RNA

110. Which of the following molecules is the primary energy carrier in cells?
A. DNA
B. ATP
C. RNA
D. GNA

Bloom's Level: 1. Remember
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Energy transfer using ATP

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111. What is the main molecule that provides the energy to produce ATP?
A. Phosphate
B. Glucose
C. RNA
D. Uracil

Bloom's Level: 1. Remember
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Energy transfer using ATP

112. Which of the following contains high-energy phosphate bonds?
A. DNA
B. Glycogen
C. RNA
D. ATP

Bloom's Level: 1. Remember
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Energy transfer using ATP

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