Biology Science for Life with Physiology 5th edition Belk Test Bank

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Biology: Science for Life with Physiology, 5e **(Belk)**
Chapter 2 Science Fiction, Bad Science, and Pseudoscience: Water, Biochemistry, and Cells

1) Which feature is present in all known living things?
A) genes made from proteins
B) growth from inorganic materials
C) absorption of sunlight for energy
D) metabolic reactions
Answer: D
Section: 2.1
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.1

2) Which term best describes the water in a sugarwater solution?
A) product
B) reactant
C) solute
D) solvent
Answer: D
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

3) Which term best describes the sugar in a sugarwater solution?
A) product
B) reactant
C) solute
D) solvent
Answer: C
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

4) Which chemical condition describes the electrons in a water molecule being shared unequally between the hydrogen and oxygen atoms?
A) hydrophobic
B) ionic
C) noncovalent
D) polar
Answer: D
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

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5) Which of the following are found in the nucleus of an atom?
A) electrons and neutrons
B) neutrons and protons
C) protons and electrons
D) neutrons, electrons, and protons
Answer: B
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

6) Which characteristic necessary for life would exclude zombies from being a living thing?
A) consumption of energy-containing molecules
B) fully functioning homeostatic abilities
C) reproduction of more zombies
D) response to external stimuli
Answer: B
Section: 2.1
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.1

7) When would an atom be least likely to form chemical bonds with other atoms?
A) The number of protons equals the number of electrons.
B) The number of protons equals the number of neutrons.
C) There is only one electron in the valence shell.
D) The valence shell is full of electrons.
Answer: D
Section: 2.3
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.3

8) What type of chemical bond connects the complementary strands of a DNA molecule to each other?
A) hydrogen bonds
B) ionic bonds
C) nonpolar covalent bonds
D) polar covalent bonds
Answer: A
Section: 2.3
Skill: Comprehension (Understand)
Learning Outcome: 2.4

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9) Which element is the basis for the macromolecules found in living things?
A) carbon
B) hydrogen
C) nitrogen
D) oxygen
Answer: A
Section: 2.3
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.5

10) Imagine a newly discovered biological molecule that is mostly hydrophobic in its structure. How would this new molecule be classified?
A) carbohydrate
B) lipid
C) nucleic acid
D) protein
Answer: B
Section: 2.4
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.6

11) Which of the following pairs of molecules can be held together by a hydrogen bond?
A) one polar molecule and one nonpolar molecule
B) two negative ions
C) two nonpolar molecules
D) two polar molecules
Answer: D
Section: 2.3
Skill: Application (Apply)
Learning Outcome: 2.4

12) What kind of bond is found between the individual atoms of a single water molecule?
A) hydrogen bonds
B) ionic bonds
C) covalent bonds that are not polar
D) covalent bonds that are polar
Answer: D
Section: 2.3
Skill: Application (Apply)
Learning Outcome: 2.4

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13) What kind of bond holds two water molecules to each other?
A) hydrogen bonds
B) ionic bonds
C) nonpolar covalent bonds
D) polar covalent bonds
Answer: A
Section: 2.3
Skill: Application (Apply)
Learning Outcome: 2.4

14) Which component of amino acids accounts for the differences in their properties?
A) the amino group
B) the carboxyl group
C) the side group
D) the type of bonds
Answer: C
Section: 2.4
Skill: Comprehension (Understand)
Learning Outcome: 2.6

15) Which macromolecule has a sugar-phosphate backbone?
A) lipid
B) nucleic acid
C) protein
D) polysaccharide
Answer: B
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

16) The number of which subatomic particle designates the atomic number of an element?
A) electrons
B) neutrons
C) protons
D) protons plus neutrons
Answer: C
Section: 2.3
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.3

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17) How do the concentrations of H^+ and OH^- compare to each other in an acidic solution?
A) The concentration of H^+ is higher.
B) The concentration of H^+ is lower.
C) The concentration of H^+ is the same.
D) Acidic solutions do not contain H^+.
Answer: A
Section: 2.3
Skill: Application (Apply)
Learning Outcome: 2.4

18) What is the pH of a neutral solution?
A) 1
B) 5
C) 7
D) 9
Answer: C
Section: 2.3
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.4

19) What molecule is composed only of chains and rings of hydrogen and carbon?
A) carbohydrate
B) hydrocarbon
C) polypeptide
D) polysaccharide
Answer: B
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

20) What is the name of a molecule composed of one or more sugars?
A) carbohydrate
B) lipid
C) nucleic acid
D) polypeptide
Answer: A
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

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21) Which monomer units combine to form polysaccharides?
A) amino acids
B) fatty acids
C) nucleotides
D) sugars
Answer: D
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

22) Which monomer units combine to form proteins?
A) amino acids
B) fatty acids
C) nucleotides
D) sugars
Answer: A
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

23) Which monomer units combine to form nucleic acids?
A) amino acids
B) fatty acids
C) nucleotides
D) sugars
Answer: C
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

24) Which of the following is a lipid?
A) cellulose
B) cholesterol
C) sucrose
D) ribonucleic acid
Answer: B
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

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25) What is the name for the ability of living things to maintain a relatively constant internal environment?
A) cellular respiration
B) homeostasis
C) metabolism
D) stimulus-response
Answer: B
Section: 2.1
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.1

26) Sodium chloride is composed of molecules that are stable when dry. In the presence of water, however, the atoms of the molecules separate from each other. What type of chemical bond holds the dry substance together?
A) hydrogen bonds
B) ionic bonds
C) nonpolar covalent bonds
D) polar covalent bonds
Answer: B
Section: 2.3
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.4

27) Which component of cholesterol would classify it as a lipid?
A) carbohydrates
B) phosphates
C) glycerol
D) hydrocarbons
Answer: D
Section: 2.4
Skill: Application/Analysis (Apply/Analyze)
Learning Outcome: 2.6

28) Which type of macromolecule is present in enzymes?
A) carbohydrates
B) lipids
C) nucleic acids
D) proteins
Answer: D
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

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29) What are all of the chemical processes that occur in the cells of an organism considered?
Answer: metabolism
Section: 2.1
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.1

30) What is the ability of living things to maintain a relatively constant internal environment even when the external environment is changing?
Answer: homeostasis
Section: 2.1
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.1

31) What are the smallest units into which an element can be broken down?
Answer: atoms
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

32) What are the monomer units that compose proteins? (two words)
Answer: amino acids
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

33) Which of the following is considered part of a living organism's metabolism?
A) secretion of wastes
B) growth and development
C) responses to external stimuli
D) reproduction
Answer: A
Section: 2.1
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.1

34) Which of the following is an element?
A) water
B) methane
C) hydrogen
D) carbon dioxide
Answer: C
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

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35) What type of electric charge do protons carry?
A) negative
B) positive
C) neutral
D) no charge
Answer: B
Section: 2.2
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.2

36) Which of the following is nonpolar?
A) a positive ion
B) a negative ion
C) a neutral ion
D) a molecule with no partial charges
Answer: D
Section: 2.2
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.2

37) Why is oxygen considered highly electronegative?
A) It pulls electrons toward itself.
B) It has a nonpolar structure.
C) It repels electrons away from its nucleus.
D) It discharges electrons readily out of the atom.
Answer: A
Section: 2.2
Skill: Application/Analysis (Apply/Analyze)
Learning Outcome: 2.2

38) If a solution has a pH of 2, how does its H^+ ion concentration compare to a solution with a pH of 4?
A) It is 2 times higher.
B) It is 10 times higher.
C) It is 100 times higher.
D) It is 1000 times higher.
Answer: C
Section: 2.3
Skill: Analysis (Analyze)
Learning Outcome: 2.4

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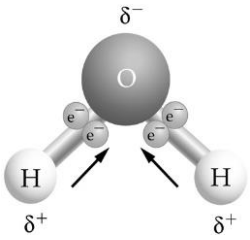
39) Which of the following has the lowest OH^- concentration?
A) baking soda
B) pure water
C) coffee
D) battery acid
Answer: D
Section: 2.3
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.4

40) What does a neutral pH of 7 actually represent?
A) a greater number of H^+ ions than OH^- ions
B) a greater number of OH^- ions than H^+ ions
C) an equal number of H^+ and OH^- ions
D) no H^+ and OH^- ions are present
Answer: C
Section: 2.3
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.4

41) Which of the following could accept one (and only one) electron?
A) carbon (atomic number = 6)
B) nitrogen (atomic number = 7)
C) oxygen (atomic number = 8)
D) hydrogen (atomic number = 1)
Answer: D
Section: 2.2
Skill: Analysis/Synthesis (Analyze/Synthesize)
Learning Outcome: 2.2

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42) Use the figure to answer the following question. If two or more of these molecules are in proximity to one another, how will they bond together?
A) hydrogen bonding, with two hydrogen atoms bonded together
B) covalent bonding, with two oxygen atoms bonded together
C) hydrogen bonding, with a hydrogen atom bonded to an oxygen atom
D) ionic bonding, with a hydrogen ion bonded to an oxygen atom
Answer: C
Section: 2.2, 2.3
Skill: Application/Analysis (Apply/Analyze)
Learning Outcome: 2.2, 2.4

43) What kind of molecule forms a bilayer that is the basis for all cellular membranes?
A) carbohydrate
B) cholesterol
C) phospholipid
D) protein
Answer: C
Section: 2.4
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.6

44) Which feature is found in both prokaryotic and eukaryotic cells?
A) mitochondrion
B) Golgi body
C) DNA
D) centriole
Answer: C
Section: 2.5
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.7

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45) According to the theory of evolution, what characteristics do all living organisms share suggesting that all life-forms on Earth arose from a single ancestor?
A) They share a common organic chemistry.
B) They have DNA within their nucleus.
C) They exhibit the same basic cell wall.
D) They perform the same mode of reproduction.
Answer: A
Section: 2.5
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.8

46) What are the internal membrane-bound compartments found in eukaryotic cells called?
Answer: organelles
Section: 2.5
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.7

47) Which feature is found in prokaryotic cells?
A) nucleus
B) endoplasmic reticulum
C) Golgi apparatus
D) cell wall
Answer: D
Section: 2.5
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.7

48) Why might bacteria be considered more successful than humans?
A) Humans are resistant to bacterial infections.
B) Bacteria have very specialized food sources.
C) Bacteria have been evolving for billions of years.
D) Bacteria are less diversified than humans.
Answer: C
Section: 2.5
Skill: Comprehension/Application (Understand/Apply)
Learning Outcome: 2.8

49) How does the diameter of a prokaryotic cell compare to the diameter of a eukaryotic cell?
A) Prokaryotes have twice the diameter of a eukaryote.
B) Prokaryotes have one-half the diameter of a eukaryote.
C) Prokaryotes have one-tenth the diameter of a eukaryote.
D) Prokaryotes have one-thousandth the diameter of a eukaryote.
Answer: C
Section: 2.5
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.7

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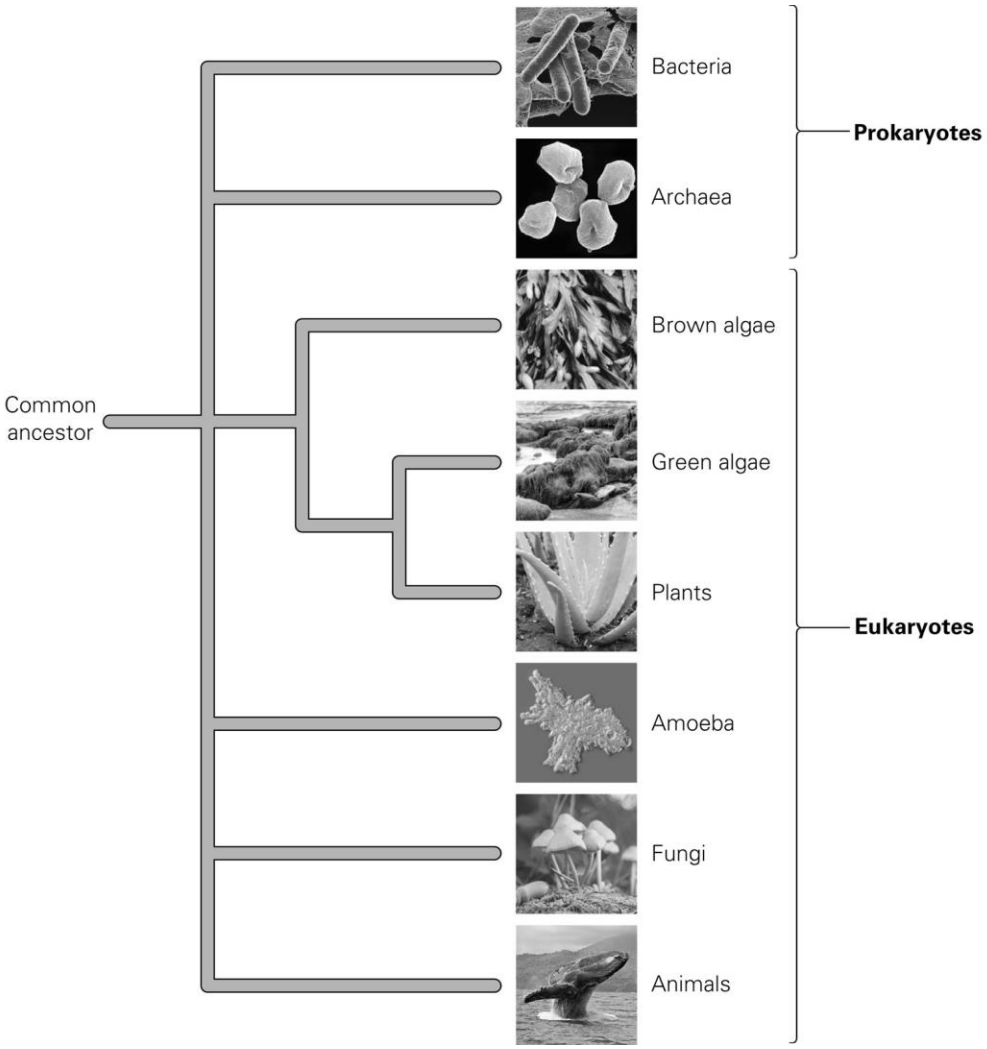
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50) What is the fundamental structural unit of life on Earth?
Answer: cell
Section: 2.1
Skill: Knowledge/Comprehension (Remember/Understand)
Learning Outcome: 2.1, 2.7

51) Why is the cohesion of water important for biological systems?
A) It helps to moderate the temperature of cold-blooded animals.
B) It helps transport water from the roots to the leaves of a plant.
C) It prevents chemical reactions from occurring in body systems.
D) It prevents salts from dissolving inside the plasma membrane.
Answer: B
Section: 2.2
Skill: Application/Analysis (Apply/Analyze)
Learning Outcome: 2.2

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52) According to the diagram, which organisms are most closely related on the tree of life?
A) amoeba and brown algae
B) bacteria and animals
C) fungi and archaea
D) green algae and plants
Answer: D
Section: 2.5
Skill: Application/Analysis (Apply/Analyze)
Learning Outcome: 2.8

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53) What does "hydrophobic" mean?
A) made of water
B) repelled by water
C) attracted to water
D) dissolved in water
Answer: B
Section: 2.2
Skill: Knowledge (Remember)
Learning Outcome: 2.2

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