General Organic and Biochemistry 10th edition Denniston Test Bank

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General, Organic, and Biochemistry, 10e **(Denniston)**
Chapter 2 The Structure of the Atom and the Periodic Table

1) What are the three primary particles found in an atom?
A) neutron, positron, and electron
B) electron, neutron, and proton
C) electron, proton, and nucleon
D) positron, electron, and nucleon
E) proton, electron, and neutrino

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

2) What is the value of the mass number in the isotope $^{131}_{53}I$?

A) 53
B) 78
C) 126.9
D) 131
E) 184

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

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3) What term is used to describe atoms of the same element that have different masses?
A) radioactive
B) constituents
C) isotopes
D) telomers
E) isomers

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

4) Which statement explains why isotopes have different mass numbers?
A) Isotopes differ in the number of protons each contains.
B) Isotopes differ in the number of electrons each contains.
C) Isotopes differ in the number of neutrons each contains.
D) Isotopes differ in the number of protons and neutrons each contains.
E) Isotopes differ in the number of protons and electrons each contains.

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

5) When a neutral atom gains one or more electrons, what type of particle is formed?
A) an anion
B) an isotope
C) a proton
D) a positron
E) a cation

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

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6) What is always true for a neutral atom?
A) There is an equal number of protons and neutrons.
B) There is an equal number of protons and electrons.
C) There is an equal number of protons, neutrons, and electrons.
D) The number of protons and neutrons is an even number.
E) The number of protons, neutrons, and electrons is an even number.

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

7) What was J. J. Thomson's important discovery about cathode rays in 1897?
A) Cathode rays were indestructible.
B) Cathode rays were heavier than anode rays.
C) Cathode rays consisted of a stream of electrons.
D) Cathode rays were produced by all radioactive atoms.
E) Cathode rays were able to initiate radioactive decay of an atom.

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories

8) What is Rutherford's important contribution to our knowledge of atomic structure?
A) Atoms contain a small, dense, positively charged nucleus, surrounded largely by empty space.
B) The atom cannot be created, divided, destroyed, or converted to any other type of atom.
C) Electrons in an atom have the magnetic property of spin.
D) Electrons are confined to certain specific regions of space outside the nucleus.
E) Electrons follow circular paths around the nucleus of an atom.

Answer: A
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories

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9) Which statement concerning atoms is FALSE?
A) The atomic number of an atom is the number of protons it contains.
B) The mass number of an atom is the sum of the number of protons, neutrons, and electrons it contains.
C) The nucleus of an atom contains its protons and neutrons, and is positively charged.
D) The nucleus of an atom is the heaviest part of the atom.
E) Electrons reside outside the nucleus in what is called the electron cloud.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

10) Which describes the basic concept of Bohr's theory of the atom?
A) Atoms contain a small, dense positively charged region called the nucleus.
B) The energy of an electron in an atom is quantized; it has only certain allowable values.
C) Light is made up of particles called photons.
D) Electrons have the magnetic property of spin.
E) Radioactive atoms spontaneously decay and release large amounts of energy from the nucleus.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories; Structure of the Atom

11) When is an atom in its ground state?
A) when the electrons of the atom are in the lowest possible energy levels
B) when an atom loses all of its electrons to form a noble gas
C) when the electrons of the atom are in the highest possible energy levels
D) when an electron is promoted to a higher energy level, farther from the nucleus
E) when the electrons of an atom spontaneously emit energy in the form of a photon

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure; Orbital Diagrams

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12) The identity of an atom is determined by which of the following?
A) the number of electrons it contains
B) its mass number
C) the number of isotopes it has
D) the number of protons it contains
E) the number of protons and neutrons it contains

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

13) In modern atomic theory, Bohr's orbits are replaced by atomic orbitals. What is an atomic orbital?
A) a circular path around the nucleus travelled by an electron
B) a dense, positively charged region of space at the center of an atom
C) a region of space within an atom where there is a high probability of finding an electron
D) the outermost principle energy level in an atom
E) the lowest energy arrangement of electrons in an atom

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Structure of the Atom; Electronic Structure

14) Which two scientists in 1869 arranged the elements in order of increasing atomic masses to form a precursor of the modern periodic table of elements?
A) Bohr and Rutherford
B) Plank and Rutherford
C) Maxwell and Dalton
D) Thomson and Crookes
E) Mendeleev and Meyer

Answer: E
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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15) Who stated that the elements, when arranged according to their atomic masses, showed a distinct periodicity of their properties?
A) Dmitri Mendeleev
B) Niels Bohr
C) J.J Thomson
D) Ernest Rutherford
E) John Dalton

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

16) Which statement about the modern periodic table is FALSE?
A) Elements are arranged in order of increasing atomic number.
B) A period is a horizontal row of elements.
C) A group is a vertical column of elements.
D) A stepwise line separates the metals from the nonmetals; metals are to the left of the line, nonmetals are to the right of the line.
E) Elements in the same period share similar chemical and physical properties.

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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17) The modern periodic law states that the physical and chemical properties of the elements are periodic functions of what property?
A) electrons
B) atomic weight
C) neutrons
D) atomic number
E) mass number

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

18) The ion K^+ is formed by which process?
A) loss of an electron by K
B) gain of a proton by K
C) loss of a proton by K
D) gain of an electron by K
E) None of these are correct.

Answer: A
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

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19) Tungsten is a metal containing 74 protons, and is used widely in the electronics industry. What is the chemical symbol for tungsten?
A) T
B) Tg
C) Tn
D) W
E) As

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

20) Which period contains the element sodium?
A) one
B) two
C) three
D) five
E) eleven

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

21) What are the columns of elements on the periodic table called?
A) groups
B) shells
C) periods
D) metals
E) rows

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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22) Which statement concerning the elements fluorine, chlorine, bromine, and iodine is FALSE?
A) They are all halogens.
B) They all have the same electron configuration.
C) They are all nonmetals.
D) They are all representative elements.
E) They all have the same number of valence electrons.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Analyze
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons; Electron Configuration

23) What is the general name given to the elements of Group IA (1)?
A) halogens
B) alkali metals
C) alkaline earth metals
D) noble gases
E) metalloids

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

24) What term is used for the elements straddling the "staircase" boundary between the metals and nonmetals?
A) transition elements
B) metalloids
C) cations
D) lanthanides
E) noble gases

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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25) What are valence electrons?
A) the electrons located in the nucleus of an atom
B) the interior electrons, located closest to the nucleus
C) the outermost electrons in an atom
D) the electrons with the lowest energy in an atom
E) the total number of electrons in an atom

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

26) What is FALSE about the three orbitals in the 2*p* sublevel?
A) The orbitals have the same dumbbell-like shape.
B) The orbitals have similar, but different energies.
C) The orbitals are the same distance away from the nucleus.
D) The orbitals are each oriented in a different direction.
E) Each orbital can hold two electrons with opposite spins.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

27) What requirement must be met in order for two electrons to coexist in the same orbital?
A) The electrons must have different energies.
B) The electrons must have the same spin.
C) The electrons must have opposite charges.
D) The electrons must be in different principle energy levels.
E) The electrons must have opposite spins.

Answer: E
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

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28) The Aufbau Principle specifies which of the following?
A) Each atomic orbital has a maximum capacity of two electrons.
B) Two electrons in the same orbital must have opposite spins.
C) Two electrons in the same orbital must be spin paired.
D) Electrons will occupy the lowest energy orbitals that are available.
E) Electrons will half-fill orbitals of equal energy, before any become completely filled.

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

29) The ground state electron configuration of chlorine is shown. Which statement concerning an atom of chlorine is FALSE?

Cl	$1s^2 2s^2 2p^6 3s^2 3p^5$

A) A chlorine atom has 17 total electrons.
B) The outermost energy level in a chlorine atom is n=3.
C) A chlorine atom has 5 valence electrons.
D) A chlorine atom needs one electron to obtain an octet in its outermost energy level.
E) A chlorine atom has 17 protons.

Answer: C
Difficulty: 3 Hard
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons; Electronic Structure; Electron Configuration

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30) In nature, the element neon exists as three different isotopes: Ne-20, Ne-21, and Ne-22. Which isotope would be the most abundant in a sample of neon?
A) Ne-20
B) Ne-21
C) Ne-22
D) All isotopes would be equally abundant.
E) It is impossible to determine.

Answer: A
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Analyze
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

31) How many valence electrons are present in a chloride ion, $Cl^{?}$?
A) 5
B) 7
C) 8
D) 17
E) 18

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

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32) Which statement correctly describes the basis for the octet rule?

Ar	$1s^2 2s^2 2p^6 3s^2 3p^6$

A) Atoms strive to attain eight protons in their nucleus to attain the stability of the nearest noble gas.
B) Atoms have a tendency to form eight bonds with other atoms to attain the stability of a noble gas.
C) Atoms will lose, gain, or share eight electrons to become a noble gas.
D) Atoms are most stable with eight electrons in their outermost shell and the electron configuration of a noble gas.
E) Atoms are most stable when the number of protons they contain is identical to the noble gas closest to them in the periodic table.

Answer: D
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons; Electron Configuration

33) Which ion is NOT isoelectronic (i.e. has the same electron configuration) with Ar? The electron configuration of Ar is shown.

S	$1s^2 2s^2 2p^6 3s^2 3p^4$

A) Cl^-
B) K^+
C) Br^-
D) Ca^{2+}
E) S^{2-}

Answer: C
Difficulty: 3 Hard
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Analyze
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons; Electron Configuration

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34) The ground state electron configuration of a sulfur atom is shown below. What is the ground state electron configuration of the ion S^{2-}?
A) $1s^2 2s^2 2p^6 3s^0 3p^4$
B) $1s^2 2s^2 2p^6 3s^2 3p^6$
C) $1s^2 2s^2 2p^6 3s^2 3p^2$
D) $1s^2 2s^2 2p^6$
E) $1s^2 2s^2 2p^6 3s^3 3p^5$

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons; Electron Configuration

35) Atoms with the biggest radii occur in the _____ region of the periodic table.
A) bottom left
B) top right
C) bottom right
D) top left
E) middle

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

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36) Which *best* explains why an Al^{3+} ion is smaller than an Al atom?

A) In forming the Al^{3+} ion, the Al atom loses the electrons in its outermost energy level, causing a decrease in the atomic radius.

B) In forming the Al^{3+} ion, the Al atom gains three protons and the resulting net positive charge keeps the electrons more strongly attracted to the nucleus, reducing the radius.

C) The Al^{3+} ion contains more electrons than the Al atom, which results in a greater attraction for the nucleus and a smaller atomic radius.

D) In forming the Al^{3+} ion, the Al atom adds electrons into a higher energy level, causing a decrease in the atomic radius.

E) There are more protons in an Al^{3+} ion than there are in an Al atom.

Answer: A
Difficulty: 3 Hard
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure; Trends in the Periodic Table

37) Which element is a halogen in period 4?
A) bromine
B) silicon
C) iodine
D) krypton
E) potassium

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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38) Hydrogen can form two different ions: a hydrogen ion (H^+), and a hydride ion (H^-). Which statement concerning these ions is FALSE?

A) The H^+ ion is a cation formed by the loss of one electron; this ion has no valence electrons.

B) The H^- ion is an anion formed by the gain of one electron; this ion has a full n=1 energy level.

C) The hydrogen ion and the hydride ion are isotopes.

D) The hydrogen ion and the hydride ion have the same number of protons.

E) The hydrogen ion and the hydride ion have different sizes.

Answer: C
Difficulty: 3 Hard
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Analyze
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes; Valence Electrons; Electronic Structure

39) The element carbon forms the basis of study in Organic Chemistry. Which statement about the element carbon is FALSE?

A) Carbon is a period 2 element.

B) Carbon is a group 4 element.

C) Carbon is a nonmetal.

D) Carbon atoms have six valence electrons.

E) Carbon atoms have six protons.

Answer: D
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons

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40) What does the mass number minus the atomic number represent?
A) number of protons
B) number of electrons
C) number of neutrons
D) number of protons - number of neutrons
E) number of neutrons - number of protons

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

41) In a neutral atom, what number equals the number of electrons?
A) atomic number
B) mass number
C) mass number minus the atomic number
D) atomic number and mass number minus the atomic number are correct.
E) None of the choices are correct.

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

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42) Given that helium has an isotope $^{4}_{2}\text{He}$, how many electrons does an atom of this helium isotope contain?
A) 1
B) 2
C) 4
D) 6
E) 0

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Analyze
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

43) How many neutrons are present in an atom of the isotope $^{7}_{3}\text{Li}$?

A) 3
B) 4
C) 7
D) 10
E) None of the choices are correct.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

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44) Microwaves, light, and X-rays are all forms of
A) electricity.
B) high energy electrons.
C) electron repulsion.
D) electromagnetic radiation.
E) radioactivity.

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

45) Where are the alkaline earth metals located on the periodic table?
A) IA (1)
B) IIA (2)
C) IIIA (3)
D) VIIA (17)
E) VIIIA (18)

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

46) How many orbitals are in an *s* sublevel? How many in a *p* sublevel?
A) *s*: 1, *p*: 2
B) *s*: 2, *p*: 3
C) *s*: 1, *p*: 3
D) *s*: 2, *p*: 6
E) *s*: 3, *p*: 3

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

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47) How many electrons are present in an atom of silicon?
A) 14
B) 16
C) 18
D) 24
E) 26

Answer: A
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

48) What Group IA (1) ion has the electronic arrangement shown $1s^2 2s^2 2p^6$
A) lithium ion
B) sodium ion
C) potassium ion
D) magnesium ion
E) calcium ion

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons; Electron Configuration

49) What ion carries two negative charges and is isoelectronic with K^+?
A) O^{2-}
B) S^{2-}
C) F^{2-}
D) Cl^{2-}
E) Ar^{2-}

Answer: B
Difficulty: 3 Hard
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Analyze
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes; Valence Electrons

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50) What kind(s) of particles can be found outside the nucleus of an atom?
A) protons
B) neutrons
C) electrons
D) protons and electrons
E) protons and neutrons

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Electronic Structure

51) The total mass of the protons in any neutral atom is about _____ times the total mass of electrons in the atom.
A) 0.0005
B) 0.3
C) 1
D) 2
E) 2000

Answer: E
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

52) Americium-241 is an isotope used in smoke detectors. What is the composition of a neutral atom of Americium-241?
A) 241 protons, 95 neutrons, 241 electrons
B) 241 protons, 95 neutrons, 146 electrons
C) 95 protons, 146 neutrons, 95 electrons
D) 95 protons, 146 neutrons, 51 electrons
E) 95 protons, 241 neutrons, 95 electrons

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

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53) Which isotope of hydrogen has two neutrons?
A) hydrogen-1
B) hydrogen-2
C) hydrogen-3
D) deuterium
E) H_2-

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

54) Which of the following accounts for the fact that chlorine has an atomic mass of 35.45 amu rather than a whole number?
A) isotopes
B) electrons
C) protons
D) radioactivity
E) isomers

Answer: A
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

55) Who discovered that cathode rays consist of a stream of negative particles, electrons?
A) Crookes
B) Thomson
C) Geiger
D) Rutherford
E) Bohr

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories

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56) Who discovered the existence of the atomic nucleus?
A) Crookes
B) Thomson
C) Geiger
D) Rutherford
E) Bohr

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories

57) In Rutherford's experiment, which led to the discovery of the atomic nucleus, what type of particle or ray was fired at the gold foil target?
A) alpha
B) beta
C) gamma
D) neutrons
E) cathode rays

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories

58) In Mendeleev's table of the elements, the elements were arranged according to
A) atomic number.
B) mass number.
C) atomic mass.
D) neutron number.
E) density.

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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59) The modern periodic table is arranged according to what property?
A) atomic number
B) mass number
C) atomic mass
D) neutron number
E) density

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

60) What is a horizontal row of elements on the periodic table called?
A) group
B) period
C) family
D) representative elements
E) transition elements

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

61) What are the elements in the A-groups often called?
A) transition elements
B) lanthanides
C) metals
D) non-metals
E) representative elements

Answer: E
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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62) Which of the following elements is a metalloid?
A) C
B) Ge
C) Pb
D) N
E) P

Answer: B
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

63) Where are the halogens located on the periodic table?
A) representative elements
B) transition metals
C) Group VIIA (17)
D) Group IIA (2)
E) Group IIIA (3)

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

64) How many valence electrons are in an atom of carbon?
A) 8
B) 6
C) 4
D) 1
E) 0

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

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65) What is the lowest energy sublevel of a principal level?
A) *d*
B) *e*
C) *f*
D) *s*
E) *p*

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

66) How many sublevels are there in the third principal energy level?
A) 3
B) 2
C) 1
D) 0
E) 4

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

67) How many orbitals are there in the second principal energy level?
A) 2
B) 3
C) 1
D) 0
E) 4

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

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68) Which of the following correctly gives the electron capacity of a principal energy level in terms of the number n?
A) n
B) $2n$
C) $2n + 2$
D) n^2
E) $2n^2$

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

69) What is the ground state electron configuration of sulfur, whose atomic number is 16?
A) $1s^2 1p^6 2s^2 2p^6$
B) $1s^2 2s^2 2p^6 2d^6$
C) $1s^2 2s^2 2p^6 3s^2 3p^4$
D) $1s^2 2s^2 2p^6 3s^2 3d^4$
E) $1s^2 2s^2 2p^6 3s^2 2d^4$

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure; Electron Configuration

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70) Which one of the following electron configurations is appropriate for a ground state atom?
A) $1s^1 2s^1$
B) $1s^2 2s^1$
C) $1s^2 2s^2 2p^8$
D) $1s^2 2s^2 2p^4 3s^1$
E) $1s^2 2s^2 2p^6 3d^1$

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure; Electron Configuration

71) Which of the following elements is most likely to form a 2+ ion?
A) Li
B) K
C) Al
D) N
E) Ca

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons

72) What is the ground state electronic configuration of the sodium ion, Na^+?
A) $1s^2 2s^2 2p^5$
B) $1s^2 2s^2 2p^6$
C) $1s^2 2s^2 2p^6 3s^1$
D) $1s^2 2s^2 2p^6 3s^2$
E) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons; Electron Configuration

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73) Which of the following ions does not follow the octet rule?
A) Na^{+}
B) Ca^{2+}
C) Al^{3+}
D) N^{3-}
E) Cl^{2-}

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

74) Which of the following atoms has the biggest size (radius)?
A) Na
B) Al
C) Cl
D) Rb
E) I

Answer: D
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

75) Which of the following elements has the highest ionization energy?
A) Li
B) B
C) O
D) F
E) He

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

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76) Which of the following elements has the lowest ionization energy?
A) Li
B) B
C) O
D) F
E) Ne

Answer: A
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

77) Electron affinity is
A) the energy required to remove an electron from an isolated atom.
B) the force between two electrons in the same orbital.
C) the force between two ions of opposite charge.
D) the energy released when an isolated atom gains an electron.
E) the attraction of an atom for an electron in a chemical bond.

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

78) Which one of the following elements has the highest electron affinity?
A) Li
B) K
C) Kr
D) O
E) Cl

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

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79) Which of the following statements relating to Bohr's model of the hydrogen atom is FALSE?
A) The lowest energy orbit has quantum number $n = 1$.
B) The highest energy orbits are farthest from the nucleus.
C) In a transition from the $n = 3$ to the $n = 1$ level, light is emitted.
D) Energy differences between energy levels can be calculated from the wavelengths of the light absorbed or emitted.
E) The Bohr model consists of energy levels that are evenly spaced, like the rungs of a ladder.

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Structure of the Atom

80) What can be said about the possibility of the existence of the hydrogen isotope represented by the symbol shown below?

$$_{2}^{2}\mathrm{H}$$

A) This isotope of hydrogen is not possible because it has no electrons.
B) This isotope of hydrogen is not possible because atoms of hydrogen have one proton.
C) This isotope of hydrogen is possible; it simply contains no protons and is an ion.
D) This isotope of hydrogen is possible; it simply contains no neutrons.
E) This isotope of hydrogen is possible; it simply has two neutrons.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Evaluate
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

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81) For the imaginary element abdicinium (Ab), two isotopes exist. Isotope one has a mass of 40.005 amu with a relative abundance of 14.00%. Isotope two has a mass of 41.008 amu with a relative abundance of 86.00%. What is the atomic mass of the element?
A) 40.99 amu
B) 40.87 amu
C) 40.61 amu
D) 40.21 amu
E) 40.05 amu

Answer: B
Difficulty: 3 Hard
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

82) Which of the following correctly matches the ion with the total number of electrons in the ion?
A) Br^-, 34 electrons
B) Mg^{2+}, 14 electrons
C) Zn^{2+}, 28 electrons
D) P^{3-}, 15 electrons
E) H^+, 2 electrons

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons

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83) Rutherford's experiment, in which alpha particles were aimed at a thin piece of gold, led to what understanding?
A) Neutrons existed.
B) Electrons existed and have a negative charge.
C) The number of electrons can be determined by the mass number and atomic number.
D) Electrons can be promoted to higher energy by absorbing energy.
E) An atom is mostly empty space.

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories

84) What property of light is defined by the distance between identical points on adjacent waves?
A) energy
B) speed
C) wavelength
D) spectrum
E) amplitude

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Structure of the Atom

85) Which statement is TRUE concerning Bohr's model of an atom?
A) The model involved the study of helium.
B) The model led to the understanding that the energy of an electron is quantized.
C) When electrons in an excited state return to the ground state, they absorb light.
D) Bohr's model explains that electrons have a negative charge.
E) The model defines the existence of orbitals.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Structure of the Atom

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86) Which of the following is a metal in the third period?
A) Ge
B) Cl
C) Ca
D) Mg
E) Cu

Answer: D
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

87) Which of the following is a representative nonmetal?
A) P
B) K
C) Si
D) Ni
E) Al

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

88) How many valence electrons are in Na, O and He, respectively?
A) 1, 6, 8
B) 11, 8, 8
C) 1, 6, 2
D) 11, 8, 2
E) 2, 4, 2

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

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89) Which sublevel has the lowest energy?
A) 2s
B) 3p
C) 4p
D) 4s
E) 2p

Answer: A
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electronic Structure

90) What is the ground state (shorthand) electron configuration of Se?
A) [Kr]
B) $[Ar]4s^2\ 4p^4$
C) $[Kr]4s^2\ 4p^4$
D) $[Ar]4s^2\ 4d^{10}\ 4p^6$
E) $[Ar]4s^2\ 3d^{10}\ 4p^4$

Answer: E
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.05
Accessibility: Keyboard Navigation
Subtopic: Electron Configuration

91) Which of the following gives the correct charge of the ion according to the octet rule?
A) F^+
B) Ba^{2-}
C) S^{2-}
D) P^{3+}
E) C^{2+}

Answer: C
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Apply
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons

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92) Why do atoms gain and lose electrons to have eight electrons in the valence shell?
A) Atoms/ions are stable when the n=2 principal level is full.
B) Atoms/ions are stable when the s and p sublevels of the valence shell are full.
C) Atoms/ions are stable when the d sublevel of the valence shell is full.
D) Atoms/ions are stable when the n=4 principal level is full.
E) Atoms/ions are stable when the s, p, and d sublevels of the 2nd level are full.

Answer: B
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

93) Which of the following atoms and ions will have the largest radius?
A) S^{2-}
B) S
C) Cl
D) F
E) He

Answer: A

94) What is the energy required to remove an electron from an isolated atom?
A) electron affinity
B) electronegativity
C) ionization energy
D) kinetic energy
E) potential energy

Answer: C
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

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95) In the calcium atom represented by the symbol $^{40}_{20}Ca$, there are 20 protons, 20 neutrons, and 20 electrons.

Answer: TRUE
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.01
Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

96) All atoms of a particular element have identical chemical properties.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

97) An atom cannot be created, divided, destroyed, or converted to any other type of atom.

Answer: FALSE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

98) The atomic number of an atom indicates the number of protons that are present.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.01
Accessibility: Keyboard Navigation
Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

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99) If an atom gains one electron, it becomes an anion.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

100) The first experimentally based theory of atomic structure was proposed by John Dalton.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories; Structure of the Atom

101) J. J. Thomson was the first to state that an atom is mostly empty space.

Answer: FALSE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.02
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories; Structure of the Atom

102) Bohr was the first to use the term "orbit" to explain the fixed energy levels of electrons.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories; Structure of the Atom

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103) Niels Bohr developed a theory that accounted for the lines in the visible region of the hydrogen spectrum.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.03
Accessibility: Keyboard Navigation
Subtopic: Atomic Theories; Structure of the Atom

104) In Mendeleev's table, the elements were arranged according to their atomic mass.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

105) There are nine periods on the periodic table.

Answer: FALSE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

106) Sulfur (S) is one of the representative elements.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

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107) Europium (Eu) is a lanthanide element.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

108) Arsenic (As) is a metalloid.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.04
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table

109) Valence electrons are involved when atoms form bonds.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

110) Atoms of the noble gas elements, Group VIII A (18), do not readily bond to other elements.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

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111) There are eight valence electrons in a chlorine anion.

Answer: TRUE
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

112) The ions formed from Group IIA (2) atoms have charges of 2-.

Answer: FALSE
Difficulty: 2 Medium
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Valence Electrons

113) Cations tend to be formed from metal atoms, while anions are formed from non-metal atoms.

Answer: TRUE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.06
Accessibility: Keyboard Navigation
Subtopic: Elements and the Periodic Table; Valence Electrons

114) The atoms of smallest radius are those of elements in the top left hand part of the periodic table.

Answer: FALSE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Remember
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

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115) The halogens, Group VII A (17), have the lowest ionization energies of any group in the periodic table.

Answer: FALSE
Difficulty: 1 Easy
Topic: Atoms and the Periodic Table (Components of Matter)
Bloom's: Understand
Section number: 02.07
Accessibility: Keyboard Navigation
Subtopic: Trends in the Periodic Table

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