

Test Bank for General Organic and Biochemistry 10th Denniston

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 $^{131}_{53}\text{I}$?

- 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

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

- 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

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

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

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

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

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

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

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 $2p$ 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

- 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)

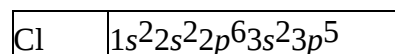
Bloom's: Remember

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?



- 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

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

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

Ar	$1s^2 2s^2 2p^6 3s^2 3p^6$
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- 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	$1s^2 2s^2 2p^6 3s^2 3p^4$
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- 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

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

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

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

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

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

- 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

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

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

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

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

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

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

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

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

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

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

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

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?



- 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

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

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

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

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]4s² 4p⁴
- C) [Kr]4s² 4p⁴
- D) [Ar]4s² 4d¹⁰ 4p⁶
- E) [Ar]4s² 3d¹⁰ 4p⁴

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) Ba²⁻
- C) S²⁻
- D) P³⁺
- E) C²⁺

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

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

95) In the calcium atom represented by the symbol $^{40}_{20}\text{Ca}$, 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

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

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

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

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

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