

General, Organic and Biological Chemistry, 4e (Smith)
Chapter 2 Atoms and the Periodic Table

1) Which element is a nonmetal?

- A) K
- B) Co
- C) Br
- D) Al

Answer: C

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

2) Which element is a metal?

- A) Li
- B) Si
- C) Cl
- D) Ar
- E) More than one of the elements is a metal.

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

3) Which element is a metalloid?

- A) B
- B) C
- C) Ar
- D) Al

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

- 4) What is the mass number of the isotope with the symbol ${}^{37}_{17}\text{Cl}$?
- A) 17
 - B) 18
 - C) 35.45
 - D) 37

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

- 5) What is the atomic number of the isotope with the symbol ${}^{37}_{17}\text{Cl}$?
- A) 17
 - B) 18
 - C) 35.45
 - D) 37

Answer: A

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

- 6) How many protons are in the isotope with the symbol ${}^{37}_{17}\text{Cl}$?
- A) 17
 - B) 18
 - C) 35.45
 - D) 37

Answer: A

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

7) Silicon has three naturally occurring isotopes: Si-28, Si-29, and Si-30. If the average atomic mass of silicon is 28.09, which isotope has the highest isotopic abundance?

- A) Si-28
- B) Si-29
- C) Si-30
- D) All isotopes have the same isotopic abundance.

Answer: A

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

8) The active ingredient in the drug Fosamax is a compound with the chemical formula $C_4H_{18}NNaO_{10}P_2$. Which statement concerning the chemical formula of this compound is FALSE?

- A) Atoms of six different elements make up this compound.
- B) Carbon, hydrogen, nitrogen, sodium, oxygen, and potassium atoms are present in this compound.
- C) The ratio of carbon atoms to oxygen atoms is 4:10.
- D) There is only one atom of nitrogen present in this compound.

Answer: B

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

9) Which element is a transition metal in period 4?

- A) K
- B) Hf
- C) Sn
- D) Sc

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

10) Which element is a noble gas?

- A) H
- B) Ne
- C) Pr
- D) Ra
- E) More than one of the elements listed is a noble gas.

Answer: B

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

11) Which element is not an alkali metal?

- A) Li
- B) K
- C) Rb
- D) H
- E) All of these elements are alkali metals.

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

12) Which element is not an alkali metal?

- A) Li
- B) Kr
- C) Rb
- D) Na
- E) All of these elements are alkali metals.

Answer: B

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

13) The chemical reactivity of an element is determined by which of the following?

- A) The number of protons in an atom of the element
- B) The number of valence electrons in an atom of the element
- C) The number of neutrons in an atom of the element
- D) The number of protons and neutrons in an atom of the element

Answer: B

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

14) The element symbol for manganese is _____.

- A) M
- B) Ma
- C) Mg
- D) Mn

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

15) The element symbol for sulfur is _____.

- A) S
- B) Su
- C) Sf
- D) Sl

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

16) Which statement is not part of the modern description of the electronic structure of an atom?

- A) Electrons occupy discrete energy levels.
- B) Electrons move freely in space.
- C) The energy of electrons is quantized.
- D) The energy of electrons is restricted to specific values.

Answer: B

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Electronic Structure

Accessibility: Keyboard Navigation

Chapter: 02

17) What is the maximum number of electrons that can occupy the third ($n=3$) shell?

- A) 2
- B) 3
- C) 6
- D) 8
- E) 18

Answer: E

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Electronic Structure; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

18) Which of the following properly represents the order of orbital filling based on the relative energy of the orbitals?

- A) $1s, 2s, 2p, 3s, 3p, 3d, 4s, 4p$
- B) $1s, 2s, 3s, 4s, 2p, 3p, 4p, 3d$
- C) $1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p$
- D) $1s, 2s, 2p, 3s, 3d, 3p, 4s, 4p$

Answer: C

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Electronic Structure; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

19) Which atom has the largest atomic radius?

- A) K
- B) Ga
- C) Br
- D) Rb

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

20) Which atom has the smallest atomic radius?

- A) K
- B) Ga
- C) Br
- D) Rb

Answer: C

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

21) Which element has the smallest ionization energy?

- A) K
- B) Ga
- C) Br
- D) Rb

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

- 22) How many protons are in the isotope ${}_{92}^{238}\text{U}$?
- A) 238
 - B) 146
 - C) 92
 - D) 330

Answer: C

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

- 23) How many neutrons are in the isotope ${}_{92}^{238}\text{U}$?
- A) 238
 - B) 146
 - C) 92
 - D) 330

Answer: B

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

- 24) How many electrons are in the isotope ${}_{92}^{238}\text{U}$?
- A) 238
 - B) 146
 - C) 92
 - D) 330

Answer: C

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

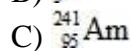
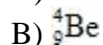
Bloom's: 2. Understand

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

25) Which isotope is not possible?



E) More than one of the isotopes is not possible.

Answer: B

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

26) An atom of the isotope chlorine-37 consists of how many protons, neutrons, and electrons?

(p = proton, n = neutron, e = electron)

A) 18 p, 37 n, 18 e

B) 17 p, 20 n, 17 e

C) 17 p, 20 n, 18 e

D) 37 p, 37 n, 17 e

E) 37 p, 20 n, 37 e

Answer: B

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes; Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

27) The elements in a column of the periodic table are collectively referred to as _____.

A) metals

B) a period

C) a group

D) a series

E) metalloids

Answer: C

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

28) Which element is most likely to be a good conductor of electricity?

- A) Ar
- B) N
- C) F
- D) Ni
- E) O

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

29) Which element is chemically similar to lithium?

- A) Sulfur
- B) Magnesium
- C) Iron
- D) Lanthanum
- E) Potassium

Answer: E

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

30) Which element is chemically similar to chlorine?

- A) Sulfur
- B) Calcium
- C) Oxygen
- D) Bromine
- E) Argon

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

31) Which element is an *s* block element?

- A) S
- B) Ar
- C) He
- D) La
- E) None of these elements is an *s* block element.

Answer: C

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 3. Apply

Subtopic: Elements and the Periodic Table; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

32) Which element is a *d* block element?

- A) S
- B) Ar
- C) Ag
- D) As
- E) None of these elements is a *d* block element.

Answer: C

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

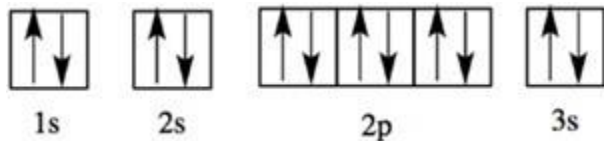
Bloom's: 3. Apply

Subtopic: Elements and the Periodic Table; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

33) Which element has the following orbital diagram?



- A) Li
- B) Be
- C) Na
- D) Mg

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

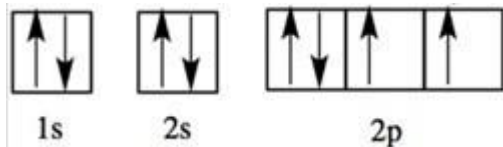
Bloom's: 3. Apply

Subtopic: Electron Configuration

Accessibility: Keyboard Navigation

Chapter: 02

34) Which element has the following orbital diagram?



- A) O
- B) N
- C) C
- D) Li

Answer: A

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

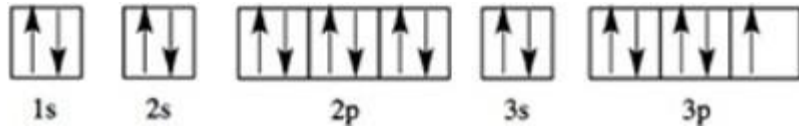
Bloom's: 3. Apply

Subtopic: Electron Configuration

Accessibility: Keyboard Navigation

Chapter: 02

35) Which element has the following orbital diagram?



- A) Ar
- B) Cl
- C) F
- D) S

Answer: B

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

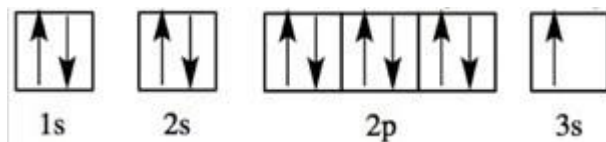
Bloom's: 3. Apply

Subtopic: Electron Configuration

Accessibility: Keyboard Navigation

Chapter: 02

36) Which element has the following orbital diagram?



- A) Mg
- B) K
- C) Na
- D) S

Answer: C

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 3. Apply

Subtopic: Electron Configuration

Accessibility: Keyboard Navigation

Chapter: 02

37) The proper electron-dot symbol for aluminum is _____.

- A) $\cdot\overset{\cdot}{\text{Al}}\cdot$
- B) $\cdot\overset{\cdot}{\underset{\cdot}{\text{Al}}}\cdot$
- C) $\cdot\overset{\cdot}{\underset{\cdot}{\text{Al}}}$
- D) $\text{Al}\cdot$

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Valence Electrons

Accessibility: Keyboard Navigation

Chapter: 02

38) The electron configuration of chlorine is $1s^22s^22p^63s^23p^5$. Which statement about chlorine is incorrect?

- A) Chlorine has five valence electrons
- B) Chlorine's valence shell is the third shell
- C) Chlorine has five electrons in the 3p subshell
- D) Chlorine has 17 total electrons

Answer: A

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

39) What is the symbol for the isotope with $A = 31$ and $Z = 15$?

- A) ${}_{31}^{15}\text{P}$
- B) ${}_{15}^{45}\text{P}$
- C) ${}_{15}^{31}\text{Ga}$
- D) ${}_{15}^{31}\text{P}$

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

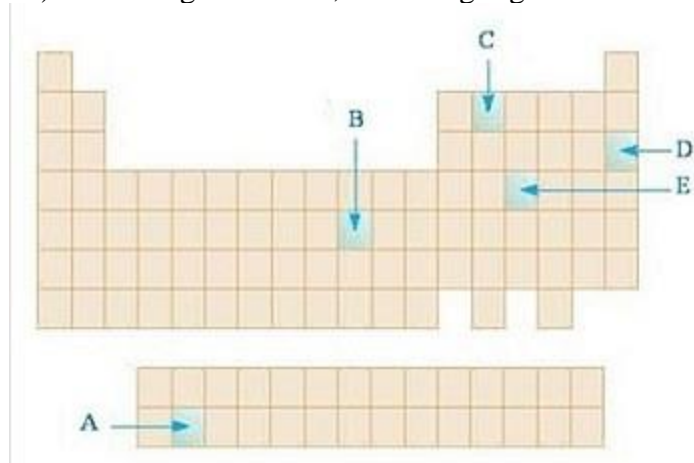
Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes; Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

40) In the diagram below, which highlighted element is an *f* block element?



- A) A
- B) B
- C) C
- D) D
- E) E

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

41) Which statement describing atoms is FALSE?

- A) The number of protons in an atom is referred to as the atomic number of the atom.
- B) The total number of protons, neutrons, and electrons in an atom is referred to as the mass number of the atom.
- C) Protons and neutrons are located in the nucleus of an atom.
- D) Electrons are located in the space outside the nucleus called the electron cloud.

Answer: B

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes; Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

42) Antimony is a metalloid containing 51 protons that is alloyed with lead and used in car batteries. What is the element symbol for antimony?

- A) A
- B) An
- C) At
- D) Sb
- E) Cr

Answer: D

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

43) Which statement concerning the elements fluorine, chlorine, bromine, and iodine is INCORRECT?

- A) These elements are all halogens.
- B) These elements all have the same valence shell.
- C) These elements are all nonmetals.
- D) These elements all have the same number of valence electrons.

Answer: B

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

44) A sulfur atom has a larger atomic radius than an oxygen atom. Which statement best explains why?

- A) Sulfur contains more electrons than oxygen does.
- B) Sulfur contains more protons than oxygen does.
- C) The valence shell of sulfur is farther away from the nucleus than the valence shell of oxygen is.
- D) The larger number of protons in an oxygen atom pulls its electrons closer to the nucleus than a sulfur atom.

Answer: C

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

45) Zirconium (Zr) is an element classified as a metal. Which property cannot be assumed based on its classification as a metal?

- A) Zr has a relatively high density
- B) Zr is a trace element in the body
- C) Zr is a good conductor of electricity
- D) Zr is a shiny solid

Answer: B

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

46) Which element is located in period 3, Group 3A?

- A) Al
- B) S
- C) Si
- D) B

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

47) What is the Period and Group for the element Bromine?

- A) Period 4, Group 7A
- B) Period 7, Group 4A
- C) Period 2, Group 3A
- D) Period 6, Group 2A

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

48) What is the period and Group for the element Boron?

- A) Period 2, Group 13A
- B) Period 3, Group 3A
- C) Period 2, Group 3A
- D) Period 4, Group 8A

Answer: A

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

49) Protons and electrons reside in the nucleus of an atom.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

50) Electrons are negatively charged and have the smallest mass of the three subatomic particles.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Structure of the Atom; Atomic Theories

Accessibility: Keyboard Navigation

Chapter: 02

51) The nucleus contains most of the mass of an atom and is positively charged.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Structure of the Atom; Atomic Theories

Accessibility: Keyboard Navigation

Chapter: 02

52) All atoms of the same element contain the same number of protons.

Answer: TRUE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Structure of the Atom; Atomic Theories

Accessibility: Keyboard Navigation

Chapter: 02

53) An alloy is a mixture of two or more elements that has metallic properties.

Answer: TRUE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

54) Fl is the element symbol for fluorine.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

55) The element symbol S represents sodium.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

56) Hydrogen is located in group 1A but it is not considered an alkali metal.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

57) The element symbol for iron is Fe.

Answer: TRUE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

58) Helium is an *s* block element.

Answer: TRUE

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

59) Nonmetals have a shiny appearance, and they are generally poor conductors of heat and electricity.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

60) All elements have at least two naturally occurring isotopes.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes; Atomic Theories

Accessibility: Keyboard Navigation

Chapter: 02

61) Oxygen, carbon, hydrogen, and nitrogen are called the building-block elements because they make up the majority of the mass of the human body.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

62) A compound is a pure substance formed by chemically combining two or more elements together.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Atomic Theories

Accessibility: Keyboard Navigation

Chapter: 02

63) The farther a shell is from the nucleus, the larger its volume becomes, and the more electrons it can hold.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Structure; Electronic Configuration; Trends in the Periodic Table; Valence Electrons

Accessibility: Keyboard Navigation

Chapter: 02

64) The mass of a neutron is equal to the mass of a proton plus the mass of an electron.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

65) The $5s$ orbital is lower in energy than the $4d$ orbital.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Structure; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

66) The electron-dot symbol for barium is $\text{Ba} \cdot$.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Valence Electrons

Accessibility: Keyboard Navigation

Chapter: 02

67) Magnesium is a metal.

Answer: TRUE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

68) Sulfur is a metal.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

69) All metals are solids at room temperature.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

70) The maximum number of electrons that can occupy the $3d$ subshell is ten (10).

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Structure; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

71) Phosphorus has 15 valence electrons.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Structure; Electronic Configuration; Valence Electrons

Accessibility: Keyboard Navigation

Chapter: 02

72) A bromine atom is smaller than a potassium atom.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

73) Iodine has smaller ionization energy than chlorine.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

74) The electron configuration for calcium is $1s^22s^22p^63s^23p^64s^2$.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

75) When orbitals are equal in energy, one electron is added to each orbital until the orbitals are half-filled, before any orbital is completely filled.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration; Orbital Diagrams

Accessibility: Keyboard Navigation

Chapter: 02

76) When two electrons occupy the same orbital they have paired spins—that is, the spins are opposite in direction.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration; Orbital Diagrams

Accessibility: Keyboard Navigation

Chapter: 02

77) Group 6A elements have the general electron configuration of ns^2np^6 .

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

78) The electron cloud contains most of the volume of an atom.

Answer: TRUE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Structure of the Atom

Accessibility: Keyboard Navigation

Chapter: 02

79) Bromine is abbreviated by the two-letter symbol BR.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

80) A column in the periodic table is called a period.

Answer: FALSE

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

81) An atom with $A = 21$ and $Z = 10$ is an isotope of an atom with $A = 20$ and $Z = 10$.

Answer: TRUE

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

82) The atomic weight of an element is the sum of the masses of the naturally occurring isotopes of the element.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

83) Strontium and barium have similar chemical properties.

Answer: TRUE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

84) The number of electrons that an orbital can contain depends on the type of orbital.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Structure; Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

85) Fluorine has higher ionization energy than neon.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

86) An iodine atom is larger than both a krypton atom and a tellurium atom.

Answer: FALSE

Difficulty: 3 Hard

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

87) Radium is a noble gas.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

88) The chemical formula S_8 represents a compound.

Answer: FALSE

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

89) Identify the element with the ground state electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6$.

A) argon, Ar

B) calcium ion, Ca^{2+}

C) chlorine, Cl

D) krypton, Kr

E) potassium ion, K^+

Answer: A

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

90) Identify ground state electron configuration for the element aluminum. Select all that apply.

- A) $1s^2 2s^8 3s^3$
- B) $1s^2 2s^2 2p^6 3s^2 3p^1$
- C) $3s^2 3p^1$
- D) $[\text{Mg}]3p^1$
- E) $[\text{Ne}]3s^3$
- F) $[\text{Ne}]3s^2 3p^1$

Answer: B, F

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Electronic Configuration

Accessibility: Keyboard Navigation

Chapter: 02

91) The electrons in the outermost shell of an atom are called the _____ electrons.

Answer: valence

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Structure of the Atom; Valence Electrons

Accessibility: Keyboard Navigation

Chapter: 02

92) The name of the halogen in period 3 is _____.

Answer: chlorine

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table; Trends in the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

93) Identify the isotope where A equals 49 and Z equals 22.

- A) Indium-22
- B) Indium-27
- C) Indium-49
- D) Titanium-22
- E) Titanium-27
- F) Titanium-49
- G) None of the choices are correct.

Answer: F

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

94) Isotopes of the same element have the same number of _____.

Answer: protons

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

95) Elements in the same group have the same number of _____.

- A) core electrons
- B) electrons
- C) neutrons
- D) protons
- E) valence electrons

Answer: E

Difficulty: 1 Easy

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 2. Understand

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02

96) Iron-56 contains _____ neutrons.

- A) 56
- B) 53
- C) 30
- D) 26
- E) 3

Answer: C

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 4. Analyze

Subtopic: Elements and the Periodic Table; Atomic Number, Mass Number, Atomic Symbol and Isotopes

Accessibility: Keyboard Navigation

Chapter: 02

97) Tungsten is a metal containing 74 protons that is widely used in the electronics industry. What is the elemental symbol for tungsten?

Answer: W

Difficulty: 2 Medium

Topic: Atoms and the Periodic Table (Components of Matter)

Bloom's: 1. Remember

Subtopic: Elements and the Periodic Table

Accessibility: Keyboard Navigation

Chapter: 02