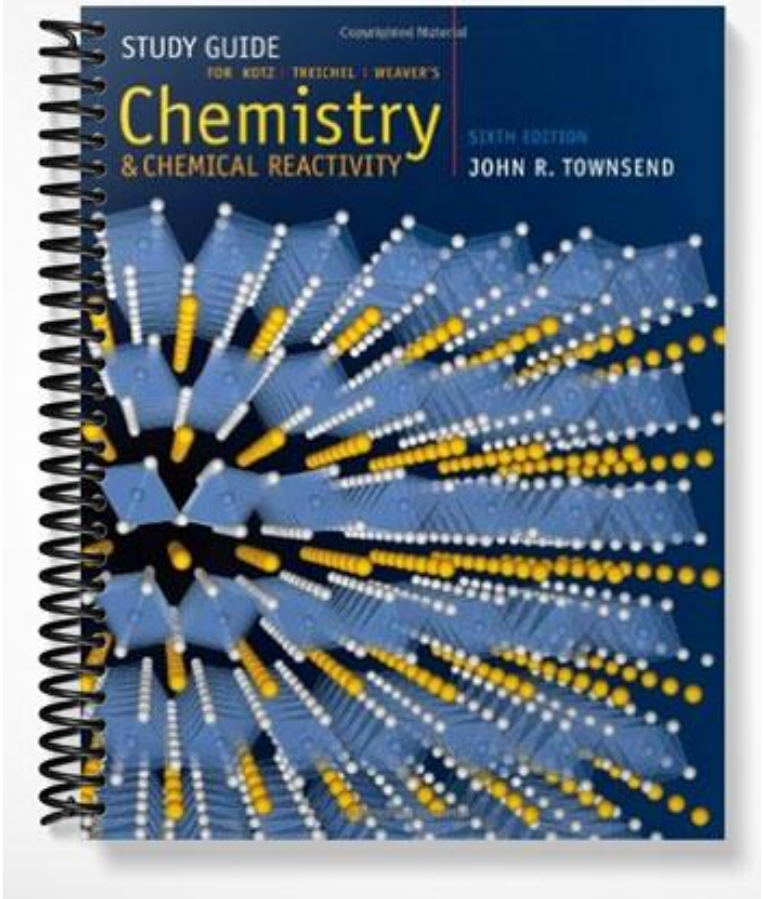
TEST BANK


STUDY GUIDE
FOR KOTZ | TREICHEL | WEAVER'S
Chemistry
& CHEMICAL REACTIVITY
SIXTH EDITION
JOHN R. TOWNSEND

Chapter 2--Atoms and Elements

Student: _____

1. Which of the following postulates of Dalton's atomic theory are now known to be incorrect?

    1. Matter is made up of atoms.
    2. All atoms of a given element are identical.
    3. Atoms are indivisible and indestructible.

    A. 1 only
    B. 2 only
    C. 3 only
    D. 2 and 3
    E. 1, 2, and 3

2. Which of the following statements concerning Marie Curie are correct?

    1. Marie Curie isolated polonium and radium.
    2. Marie Curie discovered that uranium emits neutrons when it decays.
    3. Marie Curie suggested that certain atoms disintegrate, emitting unusual rays. She named the phenomenon radioactivity.

    A. 1 only
    B. 2 only
    C. 3 only
    D. 1 and 2
    E. 1 and 3

3. The Millikan oil drop experiment determined

    A. the mass of a drop of oil.
    B. the charge on an electron.
    C. the charge to mass ratio of a proton.
    D. the mass of a neutron.
    E. the number of electrons in a drop of oil.

4. Which of the following particles will not be deflected by charged plates?

    A. g particles
    B. b particles
    C. a particles
    D. protons
    E. a and b particles

5. J. J. Thomson determined the charge to mass ratio of electrons by

   A. creating a charge on the amber by rubbing it with a cloth.
   B. deflecting cathode rays with magnetic and electric fields.
   C. exposing photographic plates to radioactive uranium ores.
   D. striking a beryllium target with particles emitted from radioactive polonium.
   E. bombarding gold foil with alpha particles.

6. From the results of his gold foil experiment, Ernest Rutherford concluded that

   A. electrons have a charge of -1.602×10^{-19} C.
   B. atoms contain equal numbers of protons and electrons.
   C. uranium ores emit a form of radiation that affect photographic plates.
   D. alpha particles are helium nuclei.
   E. atoms are composed of a small, dense nucleus surrounded by a cloud of electrons.

7. Alpha particles (a) are

   A. identical to electrons.
   B. high energy electromagnetic radiation.
   C. helium nuclei.
   D. identical to canal rays.
   E. positively charged electrons.

8. Beta (b) particles are identical to ____.

   A. neutrons
   B. electrons
   C. helium nuclei
   D. light
   E. protons

9. Rank the subatomic particles from lowest to highest mass.

   A. electrons = protons < neutrons
   B. electrons < neutrons < protons
   C. electrons < protons < neutrons
   D. neutrons < electrons < protons
   E. electrons < protons = neutrons

10. An atomic mass unit (u) is defined as

    A. the mass of one hydrogen-1 atom.
    B. 1/8 the mass of one oxygen-16 atom.
    C. 1/12 the mass of one carbon-12 atom.
    D. 1.99×10^{-23} g.
    E. the sum of the masses of one proton, one neutron, and one electron.

11. Which of the following atoms contains the largest number of protons?

A. ^{231}Pa
B. ^{227}Ac
C. ^{232}Th
D. ^{226}Ra
E. ^{222}Rn

12. How many protons, neutrons, and electrons are in an oxygen-18 atom?

A. 6 protons, 8 neutrons, 4 electron
B. 6 protons, 10 neutrons, 8 electrons
C. 8 protons, 8 neutrons, 8 electrons
D. 8 protons, 10 neutrons, 8 electrons
E. 8 protons, 10 neutrons, 18 electrons

13. What is the atomic symbol for an element with 28 protons and 31 neutrons?

A. $^{59}_{28}Ni$

B. $^{31}_{28}Ni$

C. $^{59}_{31}Ga$

D. $^{28}_{59}Pr$

E. $^{31}_{3}Li$

14. What is the identity of $^{72}_{32}X$?

A. Hf
B. Zr
C. Rf
D. Ge
E. Cu

15. What is the atomic symbol for an element that has 30 neutrons and a mass number of 55?

A. Cs
B. At
C. Zn
D. Hg
E. Mn

16. How many neutrons are in cobalt-59?

A. 18
B. 27
C. 28
D. 32
E. 59

17. Which of the following atoms contains the largest number of protons?

A. ^{158}Gd
B. ^{157}Tb
C. ^{127}I
D. ^{138}Ba
E. ^{144}Nd

18. Which of the following atoms contains the largest number of neutrons?

A. $^{31}_{15}P$

B. $^{30}_{14}Si$

C. $^{37}_{17}Cl$

D. $^{32}_{16}S$

E. $^{34}_{16}S$

19. Which two of the atoms below have the same number of neutrons?
$^{64}_{28}Ni$, $^{63}_{29}Cu$, $^{64}_{30}Zn$, $^{68}_{30}Zn$,?

A. $^{63}_{29}Cu$ and $^{64}_{30}Zn$

B. $^{64}_{28}Ni$ and $^{63}_{29}Cu$

C. $^{64}_{28}Ni$ and $^{64}_{30}Zn$

D. $^{63}_{29}Cu$ and $^{68}_{30}Zn$

E. $^{64}_{30}Zn$ and $^{68}_{30}Zn$

20. Give the mass number of a bromine atom with 46 neutrons.

    A. 11
    B. 35
    C. 46
    D. 80
    E. 81

21. Isotopes of a given element have the same number of ____, but different numbers of ____ in their nucleus.

    A. neutrons, electrons
    B. electrons, protons
    C. protons, electrons
    D. neutrons, protons
    E. protons, neutrons

22. All of the following statements are true EXCEPT

    A. for any neutral element, the number of protons and electrons are equal.
    B. electrons and protons have equal mass, but opposite charges.
    C. the mass number is the sum of the number of protons and neutrons.
    D. the atomic number equals the number of protons.
    E. isotopes of an element have identical atomic numbers.

23. What experimental method is used to precisely determine the exact masses of isotopes and their relative abundances?

    A. determination of density by water displacement
    B. distillation
    C. bombardment by alpha particles
    D. mass spectrometry
    E. electron microscopy

24. Which two of the following atoms are isotopes?
$^{45}_{21}Sc$, $^{48}_{22}Ti$, $^{50}_{22}Ti$, $^{50}_{23}V$

A. $^{45}_{21}Sc$ and $^{50}_{23}V$

B. $^{48}_{22}Ti$ and $^{50}_{22}Ti$

C. $^{50}_{22}Ti$ and $^{50}_{23}V$

D. $^{45}_{21}Sc$ and $^{50}_{22}Ti$

E. $^{48}_{22}Ti$ and $^{50}_{23}V$

25. Bromine has two naturally occurring isotopes. The average mass of bromine is 79.904 u. If 50.54% of bromine is found as bromine-79 (78.9183 u), what is the mass of the other isotope?

A. 79.82 u
B. 79.97 u
C. 80.91 u
D. 81.93 u
E. 82.91 u

26. An element consists of two isotopes. The abundance of one isotope is 95.72% and its atomic mass is 114.9041 u. The atomic mass of the second isotope is 112.9043 u. What is the average atomic mass of the element?

A. 113.9 u
B. 113.0 u
C. 113.9 u
D. 114.8 u
E. 115.1 u

27. Silver has an average atomic mass of 107.87 u. If 48.18% of Ag exists as Ag-109 (108.9047 u), what is the identity and the atomic mass of the other isotope?

A. Ag-106; 106.9 u
B. Ag-107; 106.9 u
C. Ag-107; 107.9 u
D. Ag-108; 107.9 u
E. Ag-108; 108.9 u

28. Lithium has two stable isotopes with masses of 6.01512 u and 7.01600 u. The average molar mass of Li is 6.941 u. What is the percent abundance of each isotope?

A. 7.49% Li-6 and 92.51% Li-7
B. 9.18% Li-6 and 90.813% Li-7
C. 12.2% Li-6 and 87.78% Li-7
D. 50.00% Li-6 and 50.00% Li-7
E. 62.99% Li-6 and 37.01% Li-7

29. You have 0.330 mole of each of the following elements: Be, B, Br, Ba, and Bi. Which sample has the largest mass?

A. Be
B. B
C. Br
D. Ba
E. Bi

30. You have 4.15 g of each of the following elements: Ca, Cu, Ce, Cs, Cf. Which sample contains the largest number of atoms?

A. Ca
B. Cu
C. Ce
D. Cs
E. Cf

31. Calculate the number of moles in 0.41 g titanium.

A. 9.1×10^{-4} mol
B. 8.6×10^{-3} mol
C. 0.051 mol
D. 2.0×10^{1} mol
E. 1.2×10^{2} mol

32. Calculate the number of moles in 39 g silicon.

A. 9.1×10^{-4} mol
B. 0.72 mol
C. 1.4 mol
D. 11 mol
E. 1.1×10^{3} mol

33. What is the mass of 5.1 mol P?

A. 6.3×10^{-3} g
B. 1.6×10^{-1} g
C. 6.1 g
D. 1.6×10^{2} g
E. 2.0×10^{2} g

34. What is the mass of 0.25 mol Zn?

A. 3.8×10^{-3} g
B. 0.061 g
C. 7.3 g
D. 16 g
E. 2.6×10^{2} g

35. A 3.6 g sample of lithium contains ____ atoms.

A. 5.2×10^{-1}
B. 1.7×10^{23}
C. 3.1×10^{23}
D. 1.2×10^{24}
E. 1.5×10^{25}

36. What is a correct method for calculating the mass of 1.9×10^{23} potassium atoms?

A. 6.02×10^{23} atoms K $\left(\frac{1 \text{ mol K}}{1.9 \times 10^{23} \text{ atoms}}\right)\left(\frac{39.1 \text{ g K}}{1 \text{ mol K}}\right) =$

B. 1.9×10^{23} atoms K $\left(\frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol K}}\right)\left(\frac{39.1 \text{ g K}}{1 \text{ mol K}}\right) =$

C. 1.9×10^{23} atoms K $\left(\frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol K}}\right)\left(\frac{1 \text{ mol K}}{39.1 \text{ g K}}\right) =$

D. 1.9×10^{23} atoms K $\left(\frac{1 \text{ mol K}}{6.02 \times 10^{23} \text{ atoms}}\right)\left(\frac{1 \text{ mol K}}{39.1 \text{ g K}}\right) =$

E. 1.9×10^{23} atoms K $\left(\frac{1 \text{ mol K}}{6.02 \times 10^{23} \text{ atoms}}\right)\left(\frac{39.1 \text{ g K}}{1 \text{ mold K}}\right) =$

37. The molar mass of carbon is 12.01 g/mole. What is the mass of a 1.0×10^{9} carbon atoms?

A. 1.4×10^{-16} g
B. 2.0×10^{-14} g
C. 1.2×10^{-8} g
D. 8.3×10^{7} g
E. 7.2×10^{15} g

38. What is a correct method for calculating the number of atoms in 3.5×10^{-3} mole Cr?

A. 3.5×10^{-3} mol Cr $\left(\frac{6.02 \times 10^{23}\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

B. 3.5×10^{-3} mol Cr $\left(\frac{1\ \text{mol Cr}}{52.0\ \text{g Cr}}\right)\left(\frac{6.02 \times 10^{23}\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

C. 3.5×10^{-3} mol Cr $\left(\frac{52.0\ \text{g Cr}}{1\ \text{mol Cr}}\right)\left(\frac{6.02 \times 10^{23}\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

D. 3.5×10^{-3} mol Cr $\left(\frac{1\ \text{mole Cr}}{6.02 \times 10^{23}\ \text{atoms Cr}}\right) =$

E. 3.5×10^{-3} mol Cr $\left(\frac{52.0\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

39. Pennies minted after 1983 are composed of 97% zinc and 3.0% copper and have a mass of 2.46 g. How many moles of copper are in a penny?

A. 0.0012 mol
B. 0.014 mol
C. 0.038 mol
D. 0.040 mol
E. 25 mol

40. The molar mass of silver is 107.9 g/mol. What is the mass of a single silver atom?

A. 1.539×10^{-26} g
B. 1.792×10^{-22} g
C. 1.079×10^{-20} g
D. 1.901×10^{-18} g
E. 5.581×10^{21} g

41. What mass of He contains the same number of atoms as 5.0 g Kr?

A. 0.24 g
B. 0.80 g
C. 1.2 g
D. 5.0 g
E. 1.0×10^{2} g

42. All of the following are possible quantities EXCEPT

A. a gold coin with a mass of 0.0031 kg.
B. aluminum foil that is 2.0×10^{-2} cm thick.
C. 2.0×10^{-22} grams He.
D. 1.0×10^{-24} mol C.
E. 22 atoms of Bi.

43. The density of lithium is 0.546 g/cm^3. What volume is occupied by 1.96×10^{23} atoms of lithium?

A. 0.0859 cm^3
B. 0.596 cm^3
C. 4.14 cm^3
D. 5.63 cm^3
E. 39.0 cm^3

44. A nail is coated with a 0.042 cm thick layer of zinc. The surface area of the nail is 9.17 cm^2. The density of zinc is 7.13 g/cm^3. How many zinc atoms are used in the coating?

A. 5.0×10^{20} atoms
B. 2.5×10^{22} atoms
C. 3.3×10^{22} atoms
D. 1.7×10^{23} atoms
E. 1.7×10^{24} atoms

45. An average sample of coal contains 3.0% sulfur by mass. Calculate the moles of sulfur present in 2.40×10^{3} kg of coal.

A. 9.4×10^{2} mol
B. 2.2×10^{3} mol
C. 6.0×10^{3} mol
D. 7.2×10^{4} mol
E. 7.5×10^{4} mol

46. The density of iron is 7.87 g/cm^3. Calculate the number of iron atoms present in a cube that has an edge of 3.00 cm.

A. 1.75×10^{21} atoms
B. 3.69×10^{22} atoms
C. 1.75×10^{23} atoms
D. 2.29×10^{24} atoms
E. 1.28×10^{26} atoms

47. The most abundant element in the universe is

A. hydrogen.
B. carbon.
C. helium.
D. nitrogen.
E. silicon.

48. Which gaseous element comprises over three quarters of the Earth's atmosphere?

A. nitrogen
B. helium
C. oxygen
D. argon
E. hydrogen

49. How many elements are in the fifth period of the periodic table?

A. 8
B. 14
C. 18
D. 32
E. 40

50. How many elements are in the first period of the periodic table?

A. 2
B. 7
C. 8
D. 10
E. 18

51. What element is in the fifth period in Group 3A?

A. As
B. Nb
C. P
D. In
E. Tl

52. What alkali metal is in the fourth period?

A. Ca
B. K
C. Na
D. Sr
E. Sc

53. What chalcogen is in the second period?

A. N
B. O
C. F
D. Ne
E. As

54. Which three elements are likely to have similar chemical and physical properties?

A. sodium, lithium, and potassium
B. sodium, magnesium, and aluminum
C. nitrogen, oxygen, and neon
D. nickel, copper, and zinc
E. uranium, plutonium, and americium

55. Four elements constitute over 95% of the human body. These four elements are

A. iron, calcium, carbon, and sodium.
B. phosphorus, carbon, nitrogen, and sodium.
C. sodium, calcium, carbon, and iron.
D. magnesium, oxygen, nitrogen, and hydrogen.
E. oxygen, carbon, hydrogen, and nitrogen.

56. Marie Curie was the first person to isolate the element _____, which she named after her native country.

57. Pure carbon can exist in several forms, or _____. Examples include diamond, graphite, and buckminsterfullerene.

58. Group 2A elements are also known as _____ metals.

59. Mendeleev's original periodic table placed the elements in order of increasing _____.

60. The modern periodic table places the elements in order of increasing _____.

61. Brimstone or burning stone are ancient names for the element _____.

62. What are the names of four metalloids?

Chapter 2--Atoms and Elements Key

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    A. 1 only
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2. Which of the following statements concerning Marie Curie are correct?

    1. Marie Curie isolated polonium and radium.
    2. Marie Curie discovered that uranium emits neutrons when it decays.
    3. Marie Curie suggested that certain atoms disintegrate, emitting unusual rays. She named the phenomenon radioactivity.

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3. The Millikan oil drop experiment determined

    A. the mass of a drop of oil.
    B. the charge on an electron.
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    D. the mass of a neutron.
    E. the number of electrons in a drop of oil.

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A. Cs
B. At
C. Zn
D. Hg
E. Mn

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B. 27
C. 28
D. 32
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B. $^{64}_{28}Ni$ and $^{63}_{29}Cu$

C. $^{64}_{28}Ni$ and $^{64}_{30}Zn$

D. $^{63}_{29}Cu$ and $^{68}_{30}Zn$

E. $^{64}_{30}Zn$ and $^{68}_{30}Zn$

20. Give the mass number of a bromine atom with 46 neutrons.

A. 11
B. 35
C. 46
D. 80
E. 81

21. Isotopes of a given element have the same number of ____, but different numbers of ____ in their nucleus.

A. neutrons, electrons
B. electrons, protons
C. protons, electrons
D. neutrons, protons
E. protons, neutrons

22. All of the following statements are true EXCEPT

A. for any neutral element, the number of protons and electrons are equal.
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B. Ag-107; 106.9 u
C. Ag-107; 107.9 u
D. Ag-108; 107.9 u
E. Ag-108; 108.9 u

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D. 50.00% Li-6 and 50.00% Li-7
E. 62.99% Li-6 and 37.01% Li-7

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A. Be
B. B
C. Br
D. Ba
E. Bi

30. You have 4.15 g of each of the following elements: Ca, Cu, Ce, Cs, Cf. Which sample contains the largest number of atoms?

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D. Cs
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A. 9.1×10^{-4} mol
B. 8.6×10^{-3} mol
C. 0.051 mol
D. 2.0×10^{1} mol
E. 1.2×10^{2} mol

32. Calculate the number of moles in 39 g silicon.

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C. 1.4 mol
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A. 6.3×10^{-3} g
B. 1.6×10^{-1} g
C. 6.1 g
D. 1.6×10^{2} g
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34. What is the mass of 0.25 mol Zn?

A. 3.8×10^{-3} g
B. 0.061 g
C. 7.3 g
D. 16 g
E. 2.6×10^{2} g

35. A 3.6 g sample of lithium contains ____ atoms.

A. 5.2×10^{-1}
B. 1.7×10^{23}
C. 3.1×10^{23}
D. 1.2×10^{24}
E. 1.5×10^{25}

36. What is a correct method for calculating the mass of 1.9×10^{23} potassium atoms?

A. 6.02×10^{23} atoms K $\left(\frac{1 \text{ mol K}}{1.9 \times 10^{23} \text{ atoms}}\right)\left(\frac{39.1 \text{ g K}}{1 \text{ mol K}}\right) =$

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D. 1.9×10^{23} atoms K $\left(\frac{1 \text{ mol K}}{6.02 \times 10^{23} \text{ atoms}}\right)\left(\frac{1 \text{ mol K}}{39.1 \text{ g K}}\right) =$

E. 1.9×10^{23} atoms K $\left(\frac{1 \text{ mol K}}{6.02 \times 10^{23} \text{ atoms}}\right)\left(\frac{39.1 \text{ g K}}{1 \text{ mold K}}\right) =$

37. The molar mass of carbon is 12.01 g/mole. What is the mass of a 1.0×10^{9} carbon atoms?

A. 1.4×10^{-16} g
B. 2.0×10^{-14} g
C. 1.2×10^{-8} g
D. 8.3×10^{7} g
E. 7.2×10^{15} g

38. What is a correct method for calculating the number of atoms in 3.5×10^{-3} mole Cr?

A. 3.5×10^{-3} mol Cr $\left(\frac{6.02 \times 10^{23}\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

B. 3.5×10^{-3} mol Cr $\left(\frac{1\ \text{mol Cr}}{52.0\ \text{g Cr}}\right)\left(\frac{6.02 \times 10^{23}\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

C. 3.5×10^{-3} mol Cr $\left(\frac{52.0\ \text{g Cr}}{1\ \text{mol Cr}}\right)\left(\frac{6.02 \times 10^{23}\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

D. 3.5×10^{-3} mol Cr $\left(\frac{1\ \text{mole Cr}}{6.02 \times 10^{23}\ \text{atoms Cr}}\right) =$

E. 3.5×10^{-3} mol Cr $\left(\frac{52.0\ \text{atoms Cr}}{1\ \text{mole Cr}}\right) =$

39. Pennies minted after 1983 are composed of 97% zinc and 3.0% copper and have a mass of 2.46 g. How many moles of copper are in a penny?

A. 0.0012 mol
B. 0.014 mol
C. 0.038 mol
D. 0.040 mol
E. 25 mol

40. The molar mass of silver is 107.9 g/mol. What is the mass of a single silver atom?

A. 1.539×10^{-26} g
B. 1.792×10^{-22} g
C. 1.079×10^{-20} g
D. 1.901×10^{-18} g
E. 5.581×10^{21} g

41. What mass of He contains the same number of atoms as 5.0 g Kr?

A. 0.24 g
B. 0.80 g
C. 1.2 g
D. 5.0 g
E. 1.0×10^{2} g

42. All of the following are possible quantities EXCEPT

A. a gold coin with a mass of 0.0031 kg.
B. aluminum foil that is 2.0×10^{-2} cm thick.
C. 2.0×10^{-22} grams He.
D. 1.0×10^{-24} mol C.
E. 22 atoms of Bi.

43. The density of lithium is 0.546 g/cm^3. What volume is occupied by 1.96×10^{23} atoms of lithium?

A. 0.0859 cm^3
B. 0.596 cm^3
C. 4.14 cm^3
D. 5.63 cm^3
E. 39.0 cm^3

44. A nail is coated with a 0.042 cm thick layer of zinc. The surface area of the nail is 9.17 cm^2. The density of zinc is 7.13 g/cm^3. How many zinc atoms are used in the coating?

A. 5.0×10^{20} atoms
B. 2.5×10^{22} atoms
C. 3.3×10^{22} atoms
D. 1.7×10^{23} atoms
E. 1.7×10^{24} atoms

45. An average sample of coal contains 3.0% sulfur by mass. Calculate the moles of sulfur present in 2.40×10^{5} kg of coal.

A. 9.4×10^{2} mol
B. 2.2×10^{3} mol
C. 6.0×10^{3} mol
D. 7.2×10^{4} mol
E. 7.5×10^{4} mol

46. The density of iron is 7.87 g/cm^3. Calculate the number of iron atoms present in a cube that has an edge of 3.00 cm.

A. 1.75×10^{21} atoms
B. 3.69×10^{22} atoms
C. 1.75×10^{23} atoms
D. 2.29×10^{24} atoms
E. 1.28×10^{26} atoms

47. The most abundant element in the universe is

A. hydrogen.
B. carbon.
C. helium.
D. nitrogen.
E. silicon.

48. Which gaseous element comprises over three quarters of the Earth's atmosphere?

A. nitrogen
B. helium
C. oxygen
D. argon
E. hydrogen

49. How many elements are in the fifth period of the periodic table?

A. 8
B. 14
C. 18
D. 32
E. 40

50. How many elements are in the first period of the periodic table?

A. 2
B. 7
C. 8
D. 10
E. 18

51. What element is in the fifth period in Group 3A?

A. As
B. Nb
C. P
D. In
E. Tl

52. What alkali metal is in the fourth period?

A. Ca
B. K
C. Na
D. Sr
E. Sc

53. What chalcogen is in the second period?

A. N
B. O
C. F
D. Ne
E. As

54. Which three elements are likely to have similar chemical and physical properties?

A. sodium, lithium, and potassium
B. sodium, magnesium, and aluminum
C. nitrogen, oxygen, and neon
D. nickel, copper, and zinc
E. uranium, plutonium, and americium

55. Four elements constitute over 95% of the human body. These four elements are

A. iron, calcium, carbon, and sodium.
B. phosphorus, carbon, nitrogen, and sodium.
C. sodium, calcium, carbon, and iron.
D. magnesium, oxygen, nitrogen, and hydrogen.
E. oxygen, carbon, hydrogen, and nitrogen.

56. Marie Curie was the first person to isolate the element _____, which she named after her native country.

polonium

57. Pure carbon can exist in several forms, or _____. Examples include diamond, graphite, and buckminsterfullerene.

allotropes

58. Group 2A elements are also known as _____ metals.

alkaline earth

59. Mendeleev's original periodic table placed the elements in order of increasing _____.

mass

60. The modern periodic table places the elements in order of increasing _____.

atomic number

61. Brimstone or burning stone are ancient names for the element _____.

sulfur

62. What are the names of four metalloids?

boron, silicon, germanium, arsenic (antimony, and tellurium)