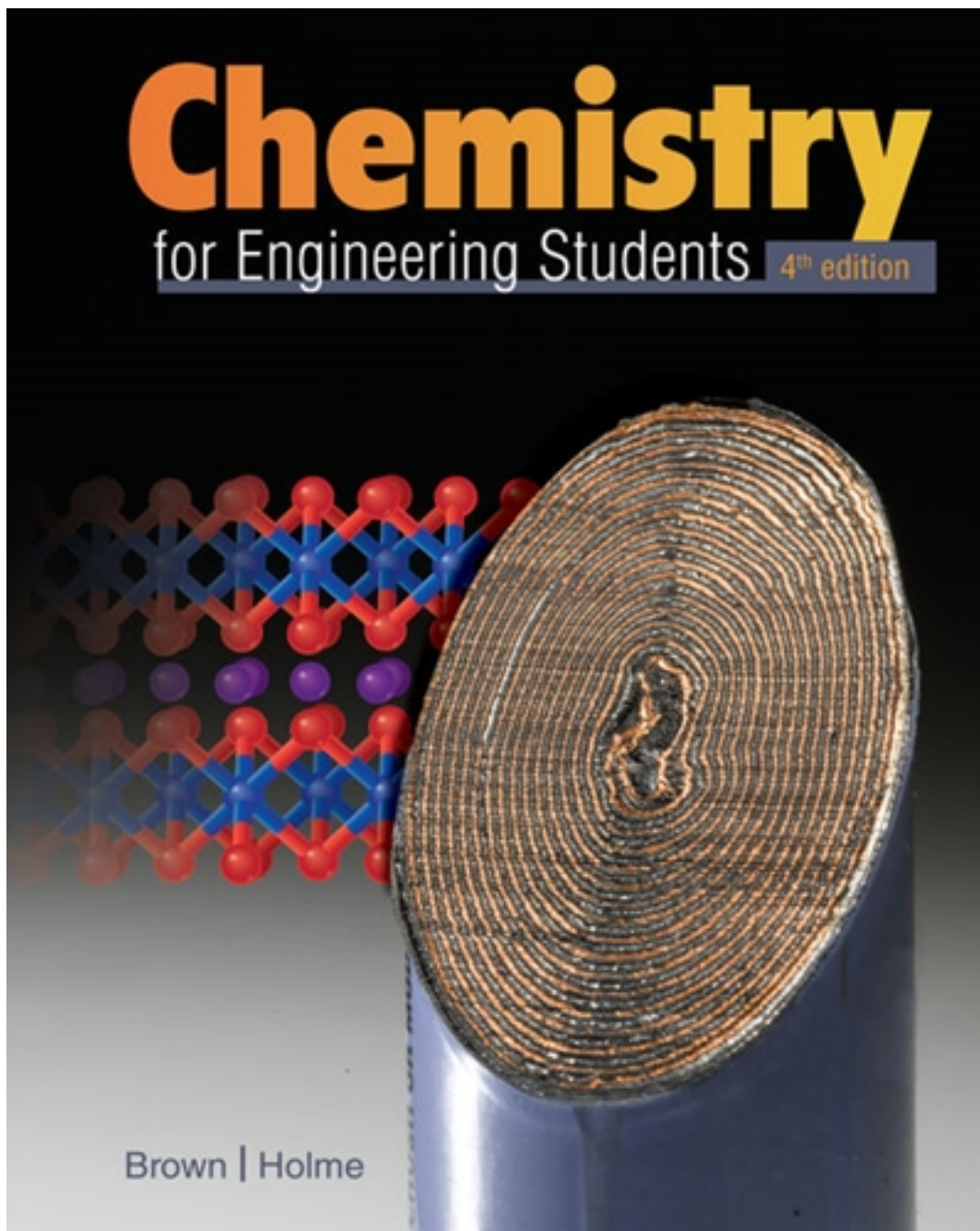


# Test Bank for Chemistry for Engineering Students 4th Edition by Brown

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# Test Bank

## **Chapter 02**

1. All polymers form rigid solids at standard temperature and pressure.

- a. True
- b. False

**ANSWER:** False

**POINTS:** 1

**DIFFICULTY:** Easy

**QUESTION TYPE:** True / False

**HAS VARIABLES:** False

**TOPICS:** Conducting Polymers

**DATE CREATED:** 12/23/2013 1:59 PM

**DATE MODIFIED:** 1/19/2018 12:46 AM

2. The nucleus of an atom is comprised of protons and electrons.

- a. True
- b. False

**ANSWER:** False

**POINTS:** 1

**DIFFICULTY:** Easy

**QUESTION TYPE:** True / False

**HAS VARIABLES:** False

**TOPICS:** Atomic Structure and Mass

**DATE CREATED:** 12/23/2013 1:59 PM

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3. Cations are particles with fewer electrons than protons.

- a. True
- b. False

**ANSWER:** True

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** True / False

**HAS VARIABLES:** False

**TOPICS:** Ions

**DATE CREATED:** 12/23/2013 1:59 PM

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4. A horizontal row of elements on the periodic table is referred to as a family.

- a. True
- b. False

**ANSWER:** False

**POINTS:** 1

**DIFFICULTY:** Easy

**QUESTION TYPE:** True / False

**HAS VARIABLES:** False

## **Chapter 02**

TOPICS: The Periodic Table  
DATE CREATED: 12/23/2013 1:59 PM  
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5. The systematic name of  $V_2O_5$  is vanadium pentoxide.

- a. True
- b. False

ANSWER: True  
POINTS: 1  
DIFFICULTY: Moderate  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: Chemical Nomenclature  
DATE CREATED: 12/23/2013 1:59 PM  
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6. The systematic name of  $AlCl_3$  is aluminum chloride.

- a. True
- b. False

ANSWER: True  
POINTS: 1  
DIFFICULTY: Moderate  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: Chemical Nomenclature  
DATE CREATED: 12/23/2013 1:59 PM  
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7. The chemical formula for nitrite is  $NO_3^-$ .

- a. True
- b. False

ANSWER: False  
POINTS: 1  
DIFFICULTY: Easy  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: Chemical Nomenclature  
DATE CREATED: 12/23/2013 1:59 PM  
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8. Elements in a periodic family tend to combine with the same number of hydrogen atoms.

- a. True
- b. False

ANSWER: True

**Chapter 02**

POINTS: 1  
DIFFICULTY: Easy  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: The Periodic Table  
DATE CREATED: 12/23/2013 1:59 PM  
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9. Free radicals, such as  $\text{Cl}\cdot$ , tend to be very reactive.

- a. True
- b. False

ANSWER: True  
POINTS: 1  
DIFFICULTY: Easy  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: Polyethylene  
DATE CREATED: 12/23/2013 1:59 PM  
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10. Silicon tetrachloride plays an important role in the production of semiconductors.

- a. True
- b. False

ANSWER: True  
POINTS: 1  
DIFFICULTY: Easy  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: Inorganic and Organic Chemistry  
DATE CREATED: 12/23/2013 1:59 PM  
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11.  $\text{CH}_3\text{--O--CH}_3$  is an example of an alcohol.

- a. True
- b. False

ANSWER: False  
POINTS: 1  
DIFFICULTY: Moderate  
QUESTION TYPE: True / False  
HAS VARIABLES: False  
TOPICS: Inorganic and Organic Chemistry  
DATE CREATED: 12/23/2013 1:59 PM  
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## **Chapter 02**

12. Chlorine forms four oxyanions.

- a. True
- b. False

ANSWER: True

POINTS: 1

DIFFICULTY: Easy

QUESTION TYPE: True / False

HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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13. The average mass of an atom is determined by:

- a. adding the number of protons and electrons and dividing it by the number of neutrons.
- b. averaging the masses of each isotope.
- c. calculating the weighted average of all stable isotopic masses.
- d. adding the number of protons and neutrons and dividing it by the number of electrons.

ANSWER: c

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Atomic Structure and Mass

DATE CREATED: 12/23/2013 1:59 PM

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14. Ions of opposite charges attract one another. This attraction is governed by \_\_\_\_\_.

- a. Graham's law
- b. Henry's law
- c. Kirchoff's law
- d. Coulomb's law

ANSWER: d

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Ions

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15. In the modern periodic table, the densest element is found in \_\_\_\_\_.

- a. period 2
- b. period 4
- c. period 6

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d. period 8

**ANSWER:** c

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** The Periodic Table

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16. Group II elements (Be, Mg, Ca, Sr, and Ba) are commonly referred to as \_\_\_\_\_.

a. alkali metals

b. alkaline earth metals

c. halogen metals

d. lanthanide metals

**ANSWER:** b

**POINTS:** 1

**DIFFICULTY:** Easy

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** The Periodic Table

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17. The vertical columns in the periodic table are called \_\_\_\_\_.

a. groups

b. periods

c. classes

d. sections

**ANSWER:** a

**POINTS:** 1

**DIFFICULTY:** Easy

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** The Periodic Table

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18. In the context of the modern periodic table, \_\_\_\_\_ are examples of transition metals.

a. Fe and Zn

b. Sb and I

c. Pm and Gd

d. Al and Ga

**ANSWER:** a

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*POINTS:* 1  
*DIFFICULTY:* Easy  
*QUESTION TYPE:* Multiple Choice  
*HAS VARIABLES:* False  
*TOPICS:* The Periodic Table  
*DATE CREATED:* 12/23/2013 1:59 PM  
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19. \_\_\_\_\_ are examples of actinides.

- a. Ti and Cr
- b. U and Np
- c. Sm and Er
- d. Kr and Xe

*ANSWER:* b  
*POINTS:* 1  
*DIFFICULTY:* Easy  
*QUESTION TYPE:* Multiple Choice  
*HAS VARIABLES:* False  
*TOPICS:* The Periodic Table  
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20. Which of the following pairs of elements can be classified as noble gases?

- a. H and He
- b. Na and K
- c. Kr and Ar
- d. N and O

*ANSWER:* c  
*POINTS:* 1  
*DIFFICULTY:* Easy  
*QUESTION TYPE:* Multiple Choice  
*HAS VARIABLES:* False  
*TOPICS:* The Periodic Table  
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21. Uranium, plutonium, and neptunium are classified as \_\_\_\_\_.

- a. alkali metals
- b. alkaline earth metals
- c. lanthanides
- d. actinides

*ANSWER:* d  
*POINTS:* 1  
*DIFFICULTY:* Easy

## **Chapter 02**

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** The Periodic Table

**DATE CREATED:** 12/23/2013 1:59 PM

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22. Alkali metal cations carry a charge of \_\_\_\_\_.

- a. 1+
- b. 2+
- c. 2-
- d. 1-

**ANSWER:** a

**POINTS:** 1

**DIFFICULTY:** Easy

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** The Periodic Table

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23.  $\text{CaCl}_2$  is an example of a(n) \_\_\_\_\_.

- a. covalent compound
- b. formula unit
- c. molecular compound
- d. organic acid

**ANSWER:** b

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** Compounds and Chemical Bonds

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24. The molecular formula for lead nitrate is \_\_\_\_\_.

- a.  $\text{PbN}_3$
- b.  $\text{Pb}(\text{NO}_2)_3$
- c.  $\text{Pb}(\text{NO}_3)_2$
- d.  $\text{PNO}_3$

**ANSWER:** c

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice



## **Chapter 02**

*HAS VARIABLES:* False

*TOPICS:* Chemical Nomenclature

*DATE CREATED:* 12/23/2013 1:59 PM

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25. The molecular formula for ammonium chloride is \_\_\_\_\_.

- a.  $\text{NH}_3\text{Cl}$
- b.  $\text{NH}_2\text{Cl}_2$
- c.  $\text{NH}_4\text{Cl}$
- d.  $\text{NH}_2\text{Cl}_3$

*ANSWER:* c

*POINTS:* 1

*DIFFICULTY:* Moderate

*QUESTION TYPE:* Multiple Choice

*HAS VARIABLES:* False

*TOPICS:* Chemical Nomenclature

*DATE CREATED:* 12/23/2013 1:59 PM

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26. The molecular formula for strontium chloride is \_\_\_\_\_.

- a.  $\text{SrCl}_2$
- b.  $\text{StCl}_2$
- c.  $\text{SrClO}_2$
- d.  $\text{SrCl}$

*ANSWER:* a

*POINTS:* 1

*DIFFICULTY:* Moderate

*QUESTION TYPE:* Multiple Choice

*HAS VARIABLES:* False

*TOPICS:* Chemical Nomenclature

*DATE CREATED:* 12/23/2013 1:59 PM

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27. The molecular formula for iron(II) bromide is \_\_\_\_\_.

- a.  $\text{FeBr}_3$
- b.  $\text{FeBr}_2$
- c.  $\text{I}_2\text{Br}_2$
- d.  $\text{IBr}_3$

*ANSWER:* b

*POINTS:* 1

*DIFFICULTY:* Moderate

*QUESTION TYPE:* Multiple Choice

## **Chapter 02**

*HAS VARIABLES:* False

*TOPICS:* Chemical Nomenclature

*DATE CREATED:* 12/23/2013 1:59 PM

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28. The molecular formula for dinitrogen pentoxide is \_\_\_\_\_.

- a.  $\text{N}_2\text{O}_5$
- b.  $(\text{NO}_5)_2$
- c.  $2\text{NO}_5$
- d.  $\text{N}_2\text{P}_5\text{O}$

*ANSWER:* a

*POINTS:* 1

*DIFFICULTY:* Moderate

*QUESTION TYPE:* Multiple Choice

*HAS VARIABLES:* False

*TOPICS:* Chemical Nomenclature

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29. The molecular formula for rubidium chloride is \_\_\_\_\_.

- a.  $\text{RuCl}_2$
- b.  $\text{RbCl}_2$
- c.  $\text{RuCl}$
- d.  $\text{RbCl}$

*ANSWER:* d

*POINTS:* 1

*DIFFICULTY:* Moderate

*QUESTION TYPE:* Multiple Choice

*HAS VARIABLES:* False

*TOPICS:* Chemical Nomenclature

*DATE CREATED:* 12/23/2013 1:59 PM

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30. The molecular formula for calcium phosphate is \_\_\_\_\_.

- a.  $\text{Ca}_3\text{P}_2$
- b.  $\text{CaPO}_3$
- c.  $\text{Ca}_3(\text{PO}_4)_2$
- d.  $\text{Ca}_2(\text{PO}_4)_3$

*ANSWER:* c

*POINTS:* 1

*DIFFICULTY:* Moderate

*QUESTION TYPE:* Multiple Choice

## **Chapter 02**

**HAS VARIABLES:** False

**TOPICS:** Chemical Nomenclature

**DATE CREATED:** 12/23/2013 1:59 PM

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31. The molecular formula for tin(IV) oxide is \_\_\_\_\_.

a.  $\text{TiO}_2$

b.  $\text{SnO}_2$

c.  $\text{SnO}_4$

d.  $\text{TiO}_4$

**ANSWER:** b

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** Chemical Nomenclature

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32. The systematic (IUPAC) name of  $\text{MgI}_2$  is \_\_\_\_\_.

a. manganese iodide

b. manganese diiodide

c. magnesium iodide

d. magnesium (II) iodide

**ANSWER:** c

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** Chemical Nomenclature

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33. The systematic (IUPAC) name of  $\text{Sr}(\text{NO}_2)_2$  is \_\_\_\_\_.

a. strontium nitrate

b. strontium dinitrate

c. sirium nitrate

d. strontium nitrite

**ANSWER:** d

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

## **Chapter 02**

**TOPICS:** Chemical Nomenclature

**DATE CREATED:** 12/23/2013 1:59 PM

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34. The systematic (IUPAC) name of CuO is \_\_\_\_\_.

- a. copper (I) oxide
- b. copper (II) oxide
- c. copper oxide
- d. copper (II) hydroxide

**ANSWER:** b

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** Chemical Nomenclature

**DATE CREATED:** 12/23/2013 1:59 PM

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35. The systematic (IUPAC) name of NaClO<sub>4</sub> is \_\_\_\_\_.

- a. sodium perchlorate
- b. sodium chlorate
- c. sodium hypochlorate
- d. sodium chloride tetraoxide

**ANSWER:** a

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** Chemical Nomenclature

**DATE CREATED:** 12/23/2013 1:59 PM

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36. How many neutrons are present in <sup>201</sup>Hg?

- a. 201
- b. 80
- c. 283
- d. 121

**ANSWER:** d

**POINTS:** 1

**DIFFICULTY:** Moderate

**QUESTION TYPE:** Multiple Choice

**HAS VARIABLES:** False

**TOPICS:** Atomic Structure and Mass

**DATE CREATED:** 12/23/2013 1:59 PM

## **Chapter 02**

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37. How many electrons are present in  $^{40}\text{Ca}^{2+}$ ?

- a. 40
- b. 38
- c. 20
- d. 18

ANSWER: d

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Ions

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38. Which of the following chemical species contains 9 protons?

- a.  $^{16}\text{O}$
- b.  $^{19}\text{F}$
- c.  $^{35}\text{S}$
- d.  $^{32}\text{P}$

ANSWER: b

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Atomic Structure and Mass

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39. If an ion contains 33 protons, 39 neutrons, and 34 electrons, the ion is \_\_\_\_\_.

- a.  $^{73}\text{Se}^{1-}$
- b.  $^{72}\text{As}^{1-}$
- c.  $^{67}\text{Y}^{1+}$
- d.  $^{73}\text{Se}^{1+}$

ANSWER: b

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Ions

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40. Consider  $^{235}\text{U}$ . How many neutrons are present in this nuclide?

- a. 143
- b. 235
- c. 92
- d. 177

ANSWER: a

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Atomic Structure and Mass

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41. When electrons are shared between pairs of atoms rather than donated from one atom to another or mobile across an entire lattice, we have \_\_\_\_\_ bonding.

ANSWER: covalent

POINTS: 1

DIFFICULTY: Easy

QUESTION TYPE: Completion

HAS VARIABLES: False

TOPICS: Compounds and Chemical Bonds

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42. The atomic mass of an atom is the number of \_\_\_\_\_ in that particular atom.

ANSWER: protons and neutrons

POINTS: 1

DIFFICULTY: Easy

QUESTION TYPE: Completion

HAS VARIABLES: False

TOPICS: Atomic Structure and Mass

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43. An \_\_\_\_\_ provides the relative ratio between the numbers of atoms of the different elements present in a compound.

ANSWER: empirical formula

POINTS: 1

DIFFICULTY: Easy

QUESTION TYPE: Completion

HAS VARIABLES: False

TOPICS: Compounds and Chemical Bonds

## **Chapter 02**

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44. The ratio of isotopes for a given element can be measured instrumentally using a \_\_\_\_\_.

*ANSWER:* mass spectrometer

*POINTS:* 1

*DIFFICULTY:* Easy

*QUESTION TYPE:* Completion

*HAS VARIABLES:* False

*TOPICS:* Atomic Structure and Mass

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45. Atoms of the same element that have different numbers of neutrons are called \_\_\_\_\_.

*ANSWER:* isotopes

*POINTS:* 1

*DIFFICULTY:* Easy

*QUESTION TYPE:* Completion

*HAS VARIABLES:* False

*TOPICS:* Atomic Structure and Mass

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46. Potassium has two stable isotopes:  $^{39}\text{K}$ , which has a mass of 38.96 amu and makes up 93.26 % of the natural potassium found; and  $^{41}\text{K}$ , with a mass of 40.96 amu. What is the atomic weight of potassium?

*ANSWER:* 39.09 amu

*POINTS:* 1

*DIFFICULTY:* Hard

*QUESTION TYPE:* Subjective Short Answer

*HAS VARIABLES:* False

*TOPICS:* Atomic Structure and Mass

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47. Anions are negatively charged species that contain fewer electrons than protons.

a. True

b. False

*ANSWER:* False

*POINTS:* 1

*DIFFICULTY:* Easy

*QUESTION TYPE:* True / False

*HAS VARIABLES:* False

*TOPICS:* Ions

*DATE CREATED:* 1/19/2018 4:11 AM

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## **Chapter 02**

48. Barium is an alkali metal.

- a. True
- b. False

ANSWER: False

POINTS: 1

DIFFICULTY: Easy

QUESTION TYPE: True / False

HAS VARIABLES: False

TOPICS: The Periodic Table

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49. Which of the following is a metalloid?

- a. Boron
- b. Lithium
- c. Uranium
- d. Tungsten

ANSWER: a

POINTS: 1

DIFFICULTY: Easy

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: The Periodic Table

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50. Which of the following isotopes has the highest number of neutrons?

- a.  $^{85}\text{Rb}$
- b.  $^{28}\text{Si}$
- c.  $^{79}\text{Br}$
- d.  $^{83}\text{Kr}$

ANSWER: a

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Atomic Structure and Mass

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