

Test Bank for Chemistry for Engineering Students 4th Brown

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

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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

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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

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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

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TOPICS: The Periodic Table
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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
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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

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POINTS: 1
DIFFICULTY: Easy
QUESTION TYPE: True / False
HAS VARIABLES: False
TOPICS: The Periodic Table
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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
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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

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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
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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

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QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: The Periodic Table

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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. 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. PbN_3
- b. $\text{Pb}(\text{NO}_2)_3$
- c. $\text{Pb}(\text{NO}_3)_2$
- d. PNO_3

ANSWER: c

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

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HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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25. The molecular formula for ammonium chloride is _____.

- a. NH_3Cl
- b. NH_2Cl_2
- c. NH_4Cl
- d. NH_2Cl_3

ANSWER: c

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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26. The molecular formula for strontium chloride is _____.

- a. SrCl_2
- b. StCl_2
- c. SrClO_2
- d. SrCl

ANSWER: a

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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

- a. FeBr_3
- b. FeBr_2
- c. I_2Br_2
- d. IBr_3

ANSWER: b

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

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HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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28. The molecular formula for dinitrogen pentoxide is _____.

- a. N_2O_5
- b. $(\text{NO}_5)_2$
- c. 2NO_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. RuCl_2
- b. RbCl_2
- c. RuCl
- d. RbCl

ANSWER: d

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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30. The molecular formula for calcium phosphate is _____.

- a. Ca_3P_2
- b. 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

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HAS VARIABLES: False

TOPICS: Chemical Nomenclature

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

- a. TiO_2
- b. SnO_2
- c. SnO_4
- d. 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 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

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TOPICS: Chemical Nomenclature

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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

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35. The systematic (IUPAC) name of NaClO₄ 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

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36. How many neutrons are present in ²⁰¹Hg?

- 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

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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}O
- b. ^{19}F
- c. ^{35}S
- d. ^{32}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}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

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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}K , which has a mass of 38.96 amu and makes up 93.26 % of the natural potassium found; and ^{41}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

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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}Rb
- b. ^{28}Si
- c. ^{79}Br
- d. ^{83}Kr

ANSWER: a

POINTS: 1

DIFFICULTY: Moderate

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

TOPICS: Atomic Structure and Mass

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