

# Test Bank for CHEM 2 Chemistry in Your World 2nd Edition by Hogg ISBN 113396298X 9781133962984

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## Chapter 2—The Chemical View of Matter

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### MULTIPLE CHOICE

1. Which of the following is not one of the common states of matter?
  - a. solid
  - b. plasma
  - c. liquid
  - d. gas

ANS: B

2. Which of the following is one of the classes of pure substances?
  - a. compound
  - b. homogeneous mixture
  - c. solution
  - d. heterogeneous mixture

ANS: A

3. Which is not a mixture?
  - a. pure water
  - b. mayonnaise
  - c. strawberry Kool-Aid® drink
  - d. rock

ANS: A

4. Most samples of matter occur in nature as
  - a. elements.
  - b. compounds.
  - c. homogeneous samples.
  - d. mixtures.

ANS: D

5. Separating a mixture of iron and sulfur can be done
  - a. by filtration.
  - b. dissolving in water.
  - c. with a magnet.
  - d. by burning.

ANS: C

6. Which statement describes a physical property of oxygen?
- a. Oxygen supports burning of gasoline.
  - b. Oxygen has a density of 0.0014 g/mL.
  - c. Oxygen is required for human metabolism of food.
  - d. Oxygen combines with iron causing the formation of rust.

ANS: B

7. Which is a chemical property?
- a. boiling point
  - b. state

- c. odor
- d. flammability

ANS: D

8. A process is probably a chemical reaction if
- a. it produces light.
  - b. a solid appears when two solutions are mixed.
  - c. bubbles start to form when two substances are mixed.
  - d. all of these

ANS: D

9. Which of the following is not a chemical change?
- a. burning charcoal
  - b. rusting iron
  - c. melting ice
  - d. baking bread

ANS: C

10. Which term describes energy?
- a. motion
  - b. heat
  - c. light
  - d. all of these

ANS: D

11. Alfred Nobel \_\_\_\_\_?
- a. discovered dynamite
  - b. proposed the metric system
  - c. developed the STM, scanning tunneling microscope
  - d. discovered kinetic energy

ANS: A

12. Which mixture is heterogeneous?
- a. salt and water
  - b. water and oil
  - c. sweetened hot tea
  - d. Ivory soap bar

ANS: B

13. The element whose name is derived from the Latin *aurum*, meaning shining dawn
- a. gold.
  - b. aluminum.
  - c. silver.
  - d. chromium.

ANS: A

14. Which of the following elements is a metal?
- Ca, calcium
  - Na, sodium
  - Hg, mercury
  - all of these

ANS: D

15. Sublimation is a characteristic physical property of
- chlorine (Cl<sub>2</sub>, liquid).
  - oxygen (O<sub>2</sub>, gas).
  - bromine (Br<sub>2</sub>, liquid).
  - iodine (I<sub>2</sub>, solid).

ANS: D

16. What information is not provided by the formula, C<sub>4</sub>H<sub>10</sub>, for butane?
- butane being an organic compound
  - the molecular formula
  - the relative number of atoms of each kind
  - the shape of the molecule

ANS: D

17. Which of the following sets, is a list of the symbols for an element and a compound (in that order)?
- Mg, CO
  - CO, CO<sub>2</sub>
  - CO, Co
  - H<sub>2</sub>O<sub>2</sub>, P

ANS: A

18. Which of the following sets, is a list of the symbols that could represent the following substances, respectively?

lead      a compound of equal parts hydrogen and oxygen      elemental oxygen

- PB, H<sub>2</sub>O<sub>2</sub>, O
- Pb, HO, O
- Pb, H<sub>2</sub>O<sub>2</sub>, O<sub>2</sub>
- PB, HO, O<sub>2</sub>

ANS: C

19. In the balanced equation,  $2 \text{Al} + 6 \text{HCl} \rightarrow 2 \text{AlCl}_3 + 3 \text{H}_2$ , the sum of the coefficients of the reactants is
- 5.
  - 8.
  - 13.
  - none of these

ANS: B

20. The equation,  $2 \text{C(s)} + \text{O}_2\text{(g)} \rightarrow 2 \text{CO(g)}$ , tells us
- the number of atoms of each kind in reactants and products is the same.
  - carbon monoxide (CO) is a product.
  - two atoms of carbon undergo reaction.
  - all of these

ANS: D

21. How does the known number of nonmetals compare to that of metals?
- There are fewer metals.
  - There are an equal number of each.
  - There are fewer nonmetals.
  - This cannot be predicted because not all metals and nonmetals have been discovered.

ANS: C

22. What prefix is the largest?
- mega
  - centi
  - micro
  - kilo

ANS: A

23. A person weighs 165 lbs. Which of the following would calculate their mass in kilograms if  $2.2 \text{ lbs} = 1 \text{ kg}$ ?
- $165 \cdot 2.2$
  - $165 \div 2.2$
  - $2.2 \div 165$
  - $165 + 2.2$

ANS: B

24. The quantity  $10^{-9}$  (one billionth) is designated by the prefix
- pico.
  - nano.
  - centi.
  - mega.

ANS: B

25. Which of the following would convert 15 L of gasoline to gallons? ( $1.06 \text{ qt} = 1 \text{ L}$ ;  $4 \text{ qts} = 1 \text{ gal}$ )
- $(15) (1.06/1) (1/4)$
  - $(15) (1/1.06) (4/1)$
  - $(15) (1.06/1) (4/1)$
  - $(15) (1/1.06) (1/4)$

ANS: A

26. An example of a homogeneous mixture is
- oil in water.
  - a salt water solution.
  - a suspension.
  - a pure substance.

ANS: B

27. Which of the following is not a pure substance?
- pure gold
  - clean air
  - refined sugar
  - distilled water

ANS: B

28. Which state of matter is composed of charged particles which are dramatically affected by electric and magnetic fields?
- solids
  - liquids
  - gases
  - plasmas

ANS: D

29. How many categories of pure substances exist?
- 2
  - 3
  - thousands
  - about 100

ANS: A

30. A pure substance which can be decomposed into two or more pure substances is a(n)
- element.
  - compound.
  - mixture.
  - colloid.

ANS: B

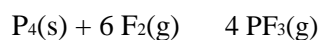
31. For which of the following is it necessary that there be a definite composition which cannot vary?
- mixture
  - solution
  - compound
  - colloid

ANS: C

32. How many phosphorus atoms are in the formula H<sub>3</sub>PO<sub>4</sub>?
- 4
  - 3
  - 7
  - 1

ANS: D

33. How many chemical formulas are in this chemical equation?



- 2
- 3
- 4
- 11

ANS: B

34. Which of the following is an SI unit of ?
- pound
  - kilogram
  - quart
  - calorie

ANS: B

35. Potential energy is defined as
- heat energy.
  - energy associated with motion.
  - stored energy.
  - the ability to do work.

ANS: C

36. Which of the following is a physical change?
- souring of milk
  - ripening of fruit
  - frying an egg
  - melting

ANS: D

37. The simplest form of matter is a(n)
- element.
  - mixture.
  - compound.
  - solution.

ANS: A

38. Which of the following is a compound?

- a. mercury
- b. blood
- c. sugar
- d. air

ANS: C

39. How would you separate a mixture of salt, sand, and water?

- a. by filtration, followed by evaporation
- b. freezing, followed by melting
- c. separating with tweezers, followed by evaporation
- d. by filtration, followed by burning

ANS: A

40. Which of the following is a physical property?

- a. freezing point
- b. color
- c. odor
- d. all of the above

ANS: D

41. Which of the following is an example of a chemical change?

- a. boiling water
- b. iodine sublimating
- c. barbecuing a steak
- d. breaking a piece of glass

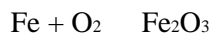
ANS: C

42. Identify the nonmetal among those listed below.

- a. Fe
- b. Na
- c. S
- d. Ag

ANS: C

43. What is the coefficient in front of iron when the following equation is balanced?



- a. 1
- b. 2
- c. 4
- d. 6

ANS: C



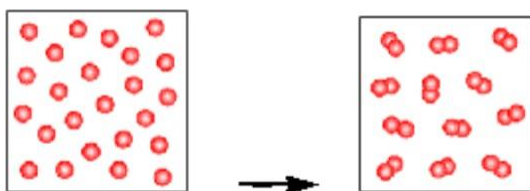
44. How many millimeters are in 100 cm?
- 10
  - 1000
  - 100
  - 1

ANS: B

45. Which of the following has the highest kinetic energy?
- boulder on the top of hill
  - water behind a dam
  - a ball falling from a 3 story building
  - a piece of wood

ANS: C

46. What kind of change is depicted in the following image?



- chemical change
- physical change
- both a chemical change and a physical change
- There is no change shown in the image.

ANS: A

### TRUE/FALSE

- A pure substance which can be decomposed into two or more pure substances is called a mixture. ANS: F
- 10 mg is larger than 100 ng. ANS: T
- Glucose has the chemical formula  $C_6H_{12}O_6$ . In one molecule of glucose there are 24 atoms. ANS: T
- The density of copper is 8.96 g/mL and that of gold is 19.3 g/mL. The ratio of the mass of a 10 mL block of copper to a 10 mL block of gold is 0.464.

ANS: T

5. The most common unit of volume used in chemistry is the millimeter.

ANS: F

6. In order to convert a measurement for the element mercury from mass to volume, one would multiply the starting measurement by the following factor.

$$\frac{13.6 \text{ g}}{1 \text{ mL}}$$

ANS: F

### COMPLETION

1. The chemical symbol for copper

is \_\_\_\_\_. ANS: Cu

2. Mg is the chemical symbol for

\_\_\_\_\_. ANS: magnesium

3. There are \_\_\_\_\_ mg in exactly 10. g.

ANS:  
10,000  
10000  
10<sup>4</sup>

4. The SI multiple of 10<sup>-3</sup> is indicated in a unit with the common prefix

\_\_\_\_\_. ANS: milli

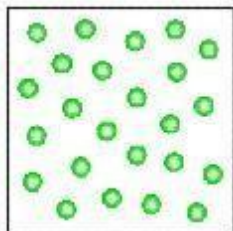
5. 1 Mm = \_\_\_\_\_ m

ANS:  
10<sup>6</sup>  
1,000,000  
1000000

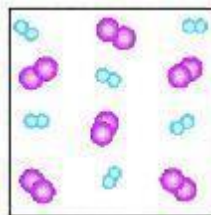
**MATCHING**

Use the pictures below to answer the following questions.

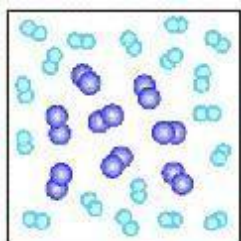
a.



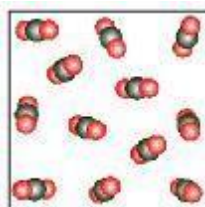
c.



b.



d.



1. Which figure above depicts a homogeneous mixture?
2. Which figure above depicts a heterogeneous mixture?
3. Which figure above depicts a compound?
4. Which figure above depicts an element?

1. ANS: C
2. ANS: B
3. ANS: D
4. ANS: A