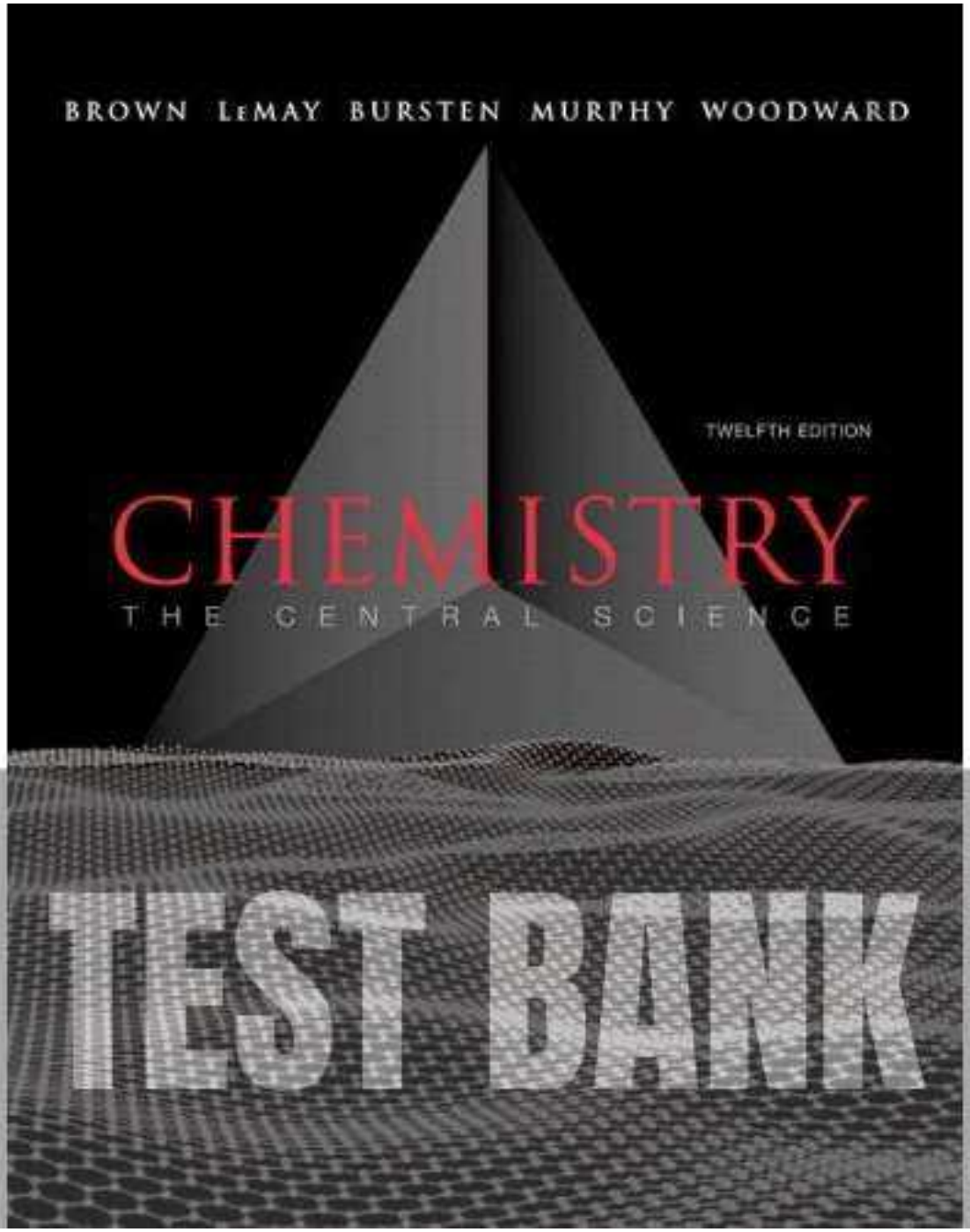
TEST BANK

Chemistry

The Central Science

Brown, LeMay, Bursten, Murphy, Woodward

12th Edition



Chemistry: The Central Science, 12e **(Brown et al.) Test Bank**

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***Chemistry: The Central Science, 12e* (Brown et al.)**
Chapter 1 Introduction: Matter and Measurement

1.1 Multiple-Choice Questions

1) In the following list, only_____is not an example of matter.
A) planets
B) light
C) dust
D) elemental phosphorus
E) table salt
Answer: B
Diff: 2 Page Ref: Sec. 1.1

2) What is the physical state in which matter has no specific shape but does have a specific volume?
A) gas
B) solid
C) liquid
D) salts
E) ice
Answer: C
Diff: 1 Page Ref: Sec. 1.2

3) The law of constant composition applies to_____.
A) solutions
B) heterogeneous mixtures
C) compounds
D) homogeneous mixtures
E) solids
Answer: C
Diff: 1 Page Ref: Sec. 1.2

4) A combination of sand, salt, and water is an example of a_____.
A) homogeneous mixture
B) heterogeneous mixture
C) compound
D) pure substance
E) solid
Answer: B
Diff: 1 Page Ref: Sec. 1.2

5) A small amount of salt dissolved in water is an example of a_____.
A) homogeneous mixture
B) heterogeneous mixture
C) compound
D) pure substance
E) solid
Answer: A
Diff: 1 Page Ref: Sec. 1.2

6) Which one of the following has the element name and symbol correctly matched?
A) P, potassium
B) C, copper
C) Mg, manganese
D) Ag, silver
E) Sn, silicon
Answer: D
Diff: 1 Page Ref: Sec. 1.2

7) Which one of the following has the element name and symbol correctly matched?
A) S, sodium
B) Tn, tin
C) Fe, iron
D) N, neon
E) B, bromine
Answer: C
Diff: 1 Page Ref: Sec. 1.2

8) Which one of the following elements has a symbol that is not derived from its foreign name?
A) tin
B) aluminum
C) mercury
D) copper
E) lead
Answer: B
Diff: 2 Page Ref: Sec. 1.2

9) Which one of the following is a pure substance?
A) concrete
B) wood
C) salt water
D) elemental copper
E) milk
Answer: D
Diff: 1 Page Ref: Sec. 1.2

10) Which one of the following is often easily separated into its components by simple techniques such as filtering or decanting?
A) heterogeneous mixture
B) compounds
C) homogeneous mixture
D) elements
E) solutions
Answer: A
Diff: 3 Page Ref: Sec. 1.2

11) Which states of matter are significantly compressible?
A) gases only
B) liquids only
C) solids only
D) liquids and gases
E) solids and liquids
Answer: A
Diff: 1 Page Ref: Sec. 1.2

12) For which of the following can the composition vary?
A) pure substance
B) element
C) both homogeneous and heterogeneous mixtures
D) homogeneous mixture
E) heterogeneous mixture
Answer: C
Diff: 2 Page Ref: Sec. 1.2

13) If matter is uniform throughout and cannot be separated into other substances by physical means, it is _____.
A) a compound
B) either an element or a compound
C) a homogeneous mixture
D) a heterogeneous mixture
E) an element
Answer: B
Diff: 2 Page Ref: Sec. 1.2

14) An element cannot _____.
A) be part of a heterogeneous mixture
B) be part of a homogeneous mixture
C) be separated into other substances by chemical means
D) interact with other elements to form compounds
E) be a pure substance
Answer: C
Diff: 2 Page Ref: Sec. 1.2

15) Homogeneous mixtures are also known as_____.
A) solids
B) compounds
C) elements
D) substances
E) solutions
Answer: E
Diff: 1 Page Ref: Sec. 1.2

16) The law of constant composition says_____.
A) that the composition of a compound is always the same
B) that all substances have the same composition
C) that the composition of an element is always the same
D) that the composition of a homogeneous mixture is always the same
E) that the composition of a heterogeneous mixture is always the same
Answer: A
Diff: 1 Page Ref: Sec. 1.2

17) Which of the following is an illustration of the law of constant composition?
A) Water boils at 100°C at 1 atm pressure.
B) Water is 11% hydrogen and 89% oxygen by mass.
C) Water can be separated into other substances by a chemical process.
D) Water and salt have different boiling points.
E) Water is a compound.
Answer: B
Diff: 3 Page Ref: Sec. 1.2

18) In the following list, only_____is not an example of a chemical reaction.
A) dissolution of a penny in nitric acid
B) the condensation of water vapor
C) a burning candle
D) the formation of polyethylene from ethylene
E) the rusting of iron
Answer: B
Diff: 2 Page Ref: Sec. 1.3

19) Gases and liquids share the property of_____.
A) compressibility
B) definite volume
C) incompressibility
D) indefinite shape
E) definite shape
Answer: D
Diff: 1 Page Ref: Sec. 1.3

20) Of the following, only_____is a chemical reaction.
A) melting of lead
B) dissolving sugar in water
C) tarnishing of silver
D) crushing of stone
E) dropping a penny into a glass of water
Answer: C
Diff: 1 Page Ref: Sec. 1.3

21) Which one of the following is not an intensive property?
A) density
B) temperature
C) melting point
D) mass
E) boiling point
Answer: D
Diff: 2 Page Ref: Sec. 1.3

22) Which one of the following is an intensive property?
A) mass
B) temperature
C) heat content
D) volume
E) amount
Answer: B
Diff: 2 Page Ref: Sec. 1.3

23) Of the following, only_____is an extensive property.
A) density
B) mass
C) boiling point
D) freezing point
E) temperature
Answer: B
Diff: 2 Page Ref: Sec. 1.3

24) Which of the following are chemical processes?
1. rusting of a nail
2. freezing of water
3. decomposition of water into hydrogen and oxygen gases
4. compression of oxygen gas
A) 2, 3, 4
B) 1, 3, 4
C) 1, 3
D) 1, 2
E) 1, 4
Answer: C
Diff: 3 Page Ref: Sec. 1.3

25) In the following list, only_____is not an example of a chemical reaction.

A) burning a plastic water bottle
B) the production of hydrogen gas from water
C) the tarnishing of a copper penny
D) chopping a log into sawdust
E) charging a cellular phone
Answer: C
Diff: 2 Page Ref: Sec. 1.3

26) Of the following,_____is the smallest mass.
A) 25 kg
B) 2.5×10^{-2} mg
C) 2.5×10^{15} pg
D) 2.5×10^{9} fg
E) 2.5×10^{10} ng
Answer: D
Diff: 2 Page Ref: Sec. 1.4

27) Of the following,_____is the largest mass.
A) 25 kg
B) 2.5×10^{-2} mg
C) 2.5×10^{15} pg
D) 2.5×10^{9} fg
E) 2.5×10^{10} ng
Answer: A
Diff: 2 Page Ref: Sec. 1.4

28) Which one of the following is the highest temperature?
A) 38 °C
B) 96 °F
C) 302 K
D) none of the above
E) the freezing point of water
Answer: A
Diff: 3 Page Ref: Sec. 1.4

29) Which one of the following is the highest temperature?
A) The boiling point of water
B) 220 °F
C) 373 K
D) 100°C
E) All of the above are identical temperatures
Answer: B
Diff: 3 Page Ref: Sec. 1.4

30) Which of the following is (are) the lowest temperature?
A) The freezing point of water
B) 5 °C
C) 30 °F
D) 280 K
E) A and D
Answer: C
Diff: 3 Page Ref: Sec 1.4

31) Which one of the following is true about the liter?
A) It is the SI base unit for volume.
B) It is equivalent to a cubic decimeter.
C) It is slightly smaller than a quart.
D) It contains 10^6 cubic centimeters.
E) It is slightly smaller than a gallon.
Answer: B
Diff: 4 Page Ref: Sec. 1.4

32) Of the objects below,_____is the most dense.
A) an object with a volume of 2.5 L and a mass of 12.5 kg
B) an object with a volume of 139 mL and a mass of 93 g
C) an object with a volume of 0.00212 m^3 and a mass of 4.22×10^4 mg
D) an object with a volume of 3.91×10^{-24} nm^3 and a mass of 7.93×10^{-1} ng
E) an object with a volume of 13 dm^3 and a mass of 1.29×10^3 g
Answer: D
Diff: 4 Page Ref: Sec. 1.4

33) Which calculation clearly shows a conversion between temperatures in degrees Celsius, t(°C), and temperature in Kelvins, T(K)?
A) T(K) = t(°C) + 273.15
B) T(K) = 273.15 - t(°C)
C) T(K) = [t(°C) - 32] / 1.8
D) T(K) = [t(°C) + 32] × 1.8
E) T(K) = t(°C)
Answer: A
Diff: 1 Page Ref: Sec. 1.4

34) Express the temperature, 422.35 K, in degrees Celsius.
A) 792.23 °C
B) 149.20 °C
C) 695.50 °C
D) 50.89 °C
E) 22.78 °C
Answer: B
Diff: 2 Page Ref: Sec. 1.4

35) Which of the following liquids has the greatest density?

A) 13 cm^3 with a mass of 23 g

B) 3.5 cm^3 with a mass of 10 g

C) 0.022 cm^3 with a mass of 0.10 g

D) 54 cm^3 with a mass of 45 g

E) 210 cm^3 with a mass of 12 g

Answer: C

Diff: 2 Page Ref: Sec. 1.4

36) You have to calculate the mass of a 30.0 mL liquid sample with density of 1.52 g/mL, but you have forgotten the formula. Which way of reasoning would help you in finding the correct mass?

A) If 1 mL of a liquid has the mass of 1.52 g, then 30.0 mL has the mass of_____g.

B) If 1.52 mL of a liquid has the mass of 1 g, then 30.0 mL has the mass of_____g.

Answer: A

Diff: 2 Page Ref: Sec. 1.4

37) You have to calculate the volume of a gas sample with mass of 1.000×10^3 g and density of 1.027 g/L, but you have forgotten the formula. Which way of reasoning would help you in finding the correct mass?

A) If 1.027 g of a gas takes up a volume of 1 L, then 1.000×10^3 g of the same gas takes up a volume of _____.

B) If 1.027 L of gas has a mass of 1 g, then_____L has the mass of 1.000×10^3 g.

Answer: A

Diff: 2 Page Ref: Sec. 1.4

38) Osmium has a density of 22.6 g/cm^3. What volume (in cm^3) would be occupied by a 21.8 g sample of osmium?

A) 0.965

B) 1.04

C) 493

D) 2.03×10^{-3}

E) 2.03×10^3

Answer: A

Diff: 2 Page Ref: Sec. 1.4

39) Gold has a density of 0.01932 kg/cm^3. What volume (in cm^3) would be occupied by a 33.3 g sample of gold?

A) 0.663

B) 5.80×10^{-4}

C) 5.80

D) 0.581

E) 1.72

Answer: E

Diff: 1 Page Ref: Sec. 1.4

40) Iron has a density of 7.9 g/cm^3. What is the mass of a cube of iron with the length of one side equal to 55.0 mm?
A) 2.1 x 10^4 g
B) 4.3 x 10^2 g
C) 1.3 x 10^3 g
D) 1.4 g
E) 2.3 x 10^{-2} g
Answer: C
Diff: 1 Page Ref: Sec. 1.4

41) A cube of an unknown metal measures 1.61 mm on one side. The mass of the cube is 36 mg. Which of the following is most likely the unknown metal?

Metal	Density (g/ cm^3)
rhodium	12.4
copper	8.96
niobium	8.57
vanadium	6.11
zirconium	6.51

A) copper
B) rhodium
C) niobium
D) vanadium
E) zirconium
Answer: C
Diff: 3 Page Ref: Sec. 1.4

42) Precision refers to_____.
A) how close a measured number is to other measured numbers
B) how close a measured number is to the true value
C) how close a measured number is to the calculated value
D) how close a measured number is to zero
E) how close a measured number is to infinity
Answer: A
Diff: 1 Page Ref: Sec. 1.4

43) Accuracy refers to_____.
A) how close a measured number is to zero
B) how close a measured number is to the calculated value
C) how close a measured number is to other measured numbers
D) how close a measured number is to the true value
E) how close a measured number is to infinity
Answer: D
Diff: 1 Page Ref: Sec. 1.4

44) Which of the following has the same number of significant figures as the number 1.00310?
A) 1×10^6
B) 199.791
C) 8.66
D) 5.119
E) 100
Answer: B
Diff: 2 Page Ref: Sec. 1.4

45) Acceleration due to gravity of a free-falling object is 9.8 m/s^2. Express this in millimeters/$millisecond^2$.
A) 9.8×10^{-9}
B) 9.8×10^3
C) 9.8×10^{-6}
D) 9.8×10^6
E) 9.8×10^{-3}
Answer: E
Diff: 2 Page Ref: Sec. 1.4

46) If an object is accelerating at a rate of 25 m/s^2, how long (in seconds) will it take to reach a speed of 550 m/s? (Assume an initial velocity of zero.)
A) 22
B) 1.4×10^4
C) 0.045
D) 1.2×10^4
E) 2.3×10^2
Answer: A
Diff: 4 Page Ref: Sec. 1.4

47) If an object is accelerating at a rate of 25 m/s^2, how fast will it be moving (in m/s) after 1.50 min? (Assume an initial velocity of zero.)
A) 17
B) 3.6
C) 38
D) 2.3×10^3
E) 0.060
Answer: D
Diff: 4 Page Ref: Sec. 1.4