Chemistry, 11e (Brown)
Chapter 1: Introduction: Matter and Measurement

Multiple Choice and Bimodal

1) Solids have a _____ shape and are not appreciably _____.
A) definite, compressible
B) definite, incompressible
C) indefinite, compressible
D) indefinite, incompressible
E) sharp, convertible
Answer: A
Diff: 1 Page Ref: Sec. 1.2

2) _____ is the chemical symbol for elemental sodium.
A) S
B) W
C) So
D) Na
E) Sn
Answer: D
Diff: 1 Page Ref: Sec. 1.2

3) If matter is uniform throughout, cannot be separated into other substances by physical processes, but can be decomposed into other substances by chemical processes, it is called a (an) _____.
A) heterogeneous mixture
B) element
C) homogeneous mixture
D) compound
E) mixture of elements
Answer: D
Diff: 4 Page Ref: Sec. 1.2

4) The symbol for the element potassium is _____.
A) Pt
B) P
C) K
D) S
E) Ca
Answer: C
Diff: 1 Page Ref:Sec. 1.2

5) The symbol for the element magnesium is _____.
A) Rb
B) Mn
C) Ne
D) Si
E) Mg
Answer: E
Diff: 1 Page Ref:Sec. 1.2

6) The initial or tentative explanation of an observation is called a(n) _____.
A) law
B) theory
C) hypothesis
D) experiment
E) test
Answer: C
Diff: 2 Page Ref:Sec. 1.3

7) A concise verbal statement or mathematical equation that summarizes a broad variety of observations and experiences is called a(n) _____.
A) law
B) theory
C) hypothesis
D) experiment
E) test
Answer: A
Diff: 2 Page Ref:Sec. 1.3

8) A separation process that depends on differing abilities of substances to form gases is called _____.
A) filtration
B) solvation
C) distillation
D) chromatography
E) all of the above are correct
Answer: C
Diff: 3 Page Ref:Sec. 1.3

9) The SI unit for mass is _____.
A) kilogram
B) gram
C) pound
D) troy ounce
E) none of the above
Answer: A
Diff: 1 Page Ref:Sec. 1.4

10) A one degree of temperature difference is the smallest on the _____ temperature scale.
A) Kelvin
B) Celsius
C) Fahrenheit
D) Kelvin and Celsius
E) Fahrenheit and Celsius
Answer: C
Diff: 3 Page Ref:Sec. 1.4

11) A common English set of units for expressing velocity is miles/hour. The SI unit for velocity is _____?
A) km/hr
B) km/s
C) m/hr
D) m/s
E) cm/s
Answer: D
Diff: 3 Page Ref:Sec. 1.4

12) The unit of force in the English measurement system is $\frac{\text{lb} \cdot \text{ft}}{\text{s}^2}$. The SI unit of force is the Newton, which is _____ in base SI units.

A) $\frac{\text{g} \cdot \text{cm}}{\text{s}^2}$

B) $\frac{\text{kg} \cdot \text{m}}{\text{hr}^2}$

C) $\frac{\text{kg} \cdot \text{m}}{\text{s}^2}$

D) $\frac{\text{g} \cdot \text{m}}{\text{s}^2}$

E) $\frac{\text{g} \cdot \text{cm}}{\text{s}}$

Answer: C
Diff: 4 Page Ref:Sec. 1.4

13) Momentum is defined as the product of mass and velocity. The SI unit for momentum is _____?

A) $\frac{\text{kg} \cdot \text{m}}{\text{s}}$

B) $\frac{\text{kg} \cdot \text{m}}{\text{hr}}$

C) $\frac{\text{g} \cdot \text{m}}{\text{s}}$

D) $\frac{\text{g} \cdot \text{km}}{\text{s}}$

E) $\frac{\text{kg} \cdot \text{km}}{\text{hr}}$

Answer: A
Diff: 4 Page Ref:Sec. 1.4

14) The SI unit of temperature is _____.
A) K
B) °C
C) °F
D) t
E) T
Answer: A
Diff: 2 Page Ref:Sec. 1.4

15) The temperature of 25°C is _____ in Kelvins.
A) 103
B) 138
C) 166
D) 248
E) 298
Answer: E
Diff: 1 Page Ref:Sec. 1.4

16) The freezing point of water at 1 atm pressure is _____.
A) 0°F
B) 0 K
C) 0°C
D) -273°C
E) -32°F
Answer: C
Diff: 2 Page Ref:Sec. 1.4

17) A temperature of 400 K is the same as _____°F.
A) 261
B) 286
C) 88
D) 103
E) 127
Answer: A
Diff: 2 Page Ref:Sec. 1.4

18) A temperature of _____ K is the same as 63°F.
A) 17
B) 276
C) 290
D) 29
E) 336
Answer: C
Diff: 2 Page Ref:Sec. 1.4

19) 1 nanometer = _____ picometers
A) 1000
B) 0.1
C) 0.01
D) 1
E) 10
Answer: A
Diff: 2 Page Ref:Sec. 1.4

20) 1 picometer = _____ centimeters
A) 1×10^{10}
B) 1×10^{-10}
C) 1×10^{8}
D) 1×10^{-8}
E) 1×10^{-12}
Answer: B
Diff: 2 Page Ref:Sec. 1.4

21) 1 kilogram = _____ milligrams
A) 1×10^{-6}
B) 1,000
C) 10,000
D) 1,000,000
E) none of the above
Answer: D
Diff: 2 Page Ref:Sec. 1.4

22) "Absolute zero" refers to _____.
A) 0 Kelvin
B) 0° Fahrenheit
C) 0° Celsius
D) °C + 9/5(°F - 32)
E) 273.15°C
Answer: A
Diff: 1 Page Ref:Sec. 1.4

23) An object will sink in a liquid if the density of the object is greater than that of the liquid. The mass of a sphere is 9.83 g. If the volume of this sphere is less than _____ cm^3, then the sphere will sink in liquid mercury (density = 13.6 g/cm^3).
A) 0.723
B) 1.38
C) 134
D) 7.48
E) none of the above
Answer: A
Diff: 3 Page Ref:Sec. 1.4

24) The density (in g/cm^3) of a gold nugget that has a volume of 1.68 cm^3 and a mass of 32.4 g is _____.
A) 0.0519
B) 19.3
C) 54.4
D) 0.0184
E) 32.4
Answer: B
Diff: 1 Page Ref:Sec. 1.4

25) The density of silver is 10.5 g/cm^3. A piece of silver with a mass of 61.3 g would occupy a volume of _____ cm^3.
A) 0.171
B) 644
C) 10.5
D) 0.00155
E) 5.84
Answer: E
Diff: 2 Page Ref:Sec. 1.4

26) The density of silver is 10.5 g/cm^3. A piece of silver that occupies a volume of 23.6 cm^3 would have a mass of _____g.
A) 248
B) 0.445
C) 2.25
D) 112
E) 23.6
Answer: A
Diff: 2 Page Ref:Sec. 1.4

27) A certain liquid has a density of 2.67 g/cm^3. 1340 g of this liquid would occupy a volume of _____ L.
A) 1.99×10^{-3}
B) 50.2
C) 3.58
D) 35.8
E) 0.502
Answer: E
Diff: 2 Page Ref:Sec. 1.4

28) A certain liquid has a density of 2.67 g/cm^3. 30.5 mL of this liquid would have a mass of _____ Kg.
A) 81.4
B) 11.4
C) 0.0875
D) 0.0814
E) 0.0114
Answer: D
Diff: 2 Page Ref:Sec. 1.4

29) Osmium has a density of 22.6 g/cm^3. The mass of a block of osmium that measures 1.01 cm × 0.233 cm × 0.648 cm is _____ g.
A) 6.75×10^{-3}
B) 3.45
C) 148
D) 6.75×10^{3}
E) 34.5
Answer: B
Diff: 3 Page Ref:Sec. 1.4

30) 3.337 g/cm^3 = _____ kg/cm^3
A) 3.337×10^{-9}
B) 3.337×10^{-5}
C) 3337
D) 0.3337
E) 333.7
Answer: C
Diff: 2 Page Ref:Sec. 1.4

31) The number 0.00430 has _____ significant figures.
A) 2
B) 3
C) 5
D) 6
E) 4
Answer: B
Diff: 1 Page Ref:Sec. 1.4

32) The number 1.00430 has _____ significant figures.
A) 2
B) 3
C) 5
D) 6
E) 4
Answer: D
Diff: 1 Page Ref:Sec. 1.4

33) The correct answer (reported to the proper number of significant figures) to the following is _____.

$6.3 \times 3.25 =$ _____
A) 20.
B) 20.475
C) 20.48
D) 20.5
E) 21
Answer: A
Diff: 2 Page Ref:Sec. 1.4

34) One side of a cube measures 1.55 m. The volume of this cube is _____ cm^3.
A) 2.40×10^4
B) 3.72×10^6
C) 2.40
D) 3.72
E) 155
Answer: B
Diff: 4 Page Ref:Sec. 1.4

35) The length of the side of a cube (in cm) having a volume of 44.4 L is _____.
A) 875
B) 35.4
C) 6.66
D) 66.6
E) 0.354
Answer: B
Diff: 4 Page Ref:Sec. 1.4

36) 45 m/s = _____ km/hr
A) 2.7
B) 0.045
C) 1.6×10^2
D) 2.7×10^3
E) 1.6×10^5
Answer: C
Diff: 2 Page Ref:Sec. 1.4