Chapter 1   Introduction: Matter, Energy, and Measurement

1) What is the physical state in which matter has a specific volume but does not have a specific shape?

A) gas
B) solid
C) liquid
D) salts
E) ice

2) The law of constant composition applies to _____.

A) solutions
B) heterogeneous mixtures
C) compounds
D) homogeneous mixtures
E) solids

3) 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

4) Which one of the following is often separated into its components by simple techniques such as filtering or decanting?

A) heterogeneous mixture
B) compounds
C) homogeneous mixture
D) elements
E) solutions

5) 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

6) Which one of the following is an intensive property?
A) mass
B) temperature
C) length
D) volume
E) amount

7) 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

8) 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

9) 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

10) Round the number 3456.5 to two significant figures.

A) 3400.0
B) 3400
C) 3000
D) 3500
E) 3000.0

11) Convert 1 cm^3 to Å^3.
A) 10^{24}
B) 10^{-24}
C) 10^{30}
D) 10^{-30}
E) 10^{-9}

12) The SI unit of temperature is _____.
A) K
B) °C
C) °F
D) t
E) T

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

$$12.75 \times 1.3621 = \underline{\hspace{2cm}}$$
A) 17.367
B) 17.40
C) 17.37
D) 17.4
E) 17.0

14) 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

15) The density of silver is 10.5 g/cm^3. A piece of silver that occupies a volume of 42.5 cm^3 would have a mass of _____ g.

A) 446
B) 0.247
C) 7.64
D) 4.05
E) 23.6

1) Answer: C

2) Answer: C

3) Answer: B

4) Answer: A

5) Answer: B

6) Answer: B

7) Answer: C

8) Answer: A

9) Answer: C

10) Answer: D

11) Answer: A

12) Answer: A

13) Answer: C

14) Answer: E

15) Answer: A