

**CHEM 110 Chapter 1 Practice Test Questions****Multiple Choice**

- 1) Solids have a \_\_\_\_\_ shape and are not appreciably \_\_\_\_\_.
  - A) definite, compressible
  - B) definite, incompressible
  - C) indefinite, compressible
  - D) indefinite, incompressible
  - E) sharp, convertible
  
- 2) 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
  
- 3) The symbol for the element magnesium is \_\_\_\_\_.
  - A) Rb
  - B) Mn
  - C) Ne
  - D) Si
  - E) Mg
  
- 4) The initial or tentative explanation of an observation is called a(n) \_\_\_\_\_.
  - A) law
  - B) theory
  - C) hypothesis
  - D) experiment
  - E) test
  
- 5) 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
  
- 6) The SI unit for mass is \_\_\_\_\_.
  - A) kilogram
  - B) gram
  - C) pound
  - D) troy ounce
  - E) none of the above

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

8) The temperature of  $25^\circ\text{C}$  is \_\_\_\_\_ in Kelvins.

A) 103

B) 138

C) 166

D) 248

E) 298

9) A temperature of 400 K is the same as \_\_\_\_\_  $^\circ\text{F}$ .

A) 261

B) 286

C) 88

D) 103

E) 127

10) 1 nanometer = \_\_\_\_\_ picometers

A) 1000

B) 0.1

C) 0.01

D) 1

E) 10

11) 1 kilogram = \_\_\_\_\_ milligrams

A)  $1 \times 10^{-6}$

B) 1,000

C) 10,000

D) 1,000,000

12) The density (in  $\text{g}/\text{cm}^3$ ) of a gold nugget that has a volume of  $1.68 \text{ cm}^3$  and a mass of 32.4 g is \_\_\_\_\_.

A) 0.0519

B) 19.3

C) 54.4

D) 0.0184

E) 32.4

13) A certain liquid has a density of  $2.67 \text{ g/cm}^3$ . 1340 g of this liquid would occupy a volume of \_\_\_\_\_ L.

- A)  $1.99 \times 10^{-3}$
- B) 50.2
- C) 3.58
- D) 35.8
- E) 0.502

14) The number 0.00430 has \_\_\_\_\_ significant figures.

- A) 2
- B) 3
- C) 5
- D) 6
- E) 4

15) The correct answer (reported to the proper number of significant figures) to the following is \_\_\_\_\_.

$$6.3 \times 3.25 = \underline{\hspace{2cm}}$$

- A) 20.
- B) 20.475
- C) 20.48
- D) 20.5
- E) 21

16) The correct result (indicating the proper number of significant figures) of the following addition is \_\_\_\_\_.

$$\begin{array}{r} 12 \\ 1.2 \\ 0.12 \\ + \underline{0.012} \end{array}$$

- A) 13
- B) 13.3
- C) 13.33
- D) 13.332

17) The volume of a regular cylinder is  $V = \pi r^2 h$ . Using the value 3.1416 for the constant  $\pi$ , the volume ( $\text{cm}^3$ ) of a cylinder of radius 2.34 cm and height 19.91 cm expressed to the correct number of significant figures is \_\_\_\_\_.

- A) 342.49471
- B) 342.495
- C) 342.49
- D) 343
- E) 342

18) The density of mercury is  $13.6 \text{ g/cm}^3$ . The density of mercury is \_\_\_\_\_  $\text{kg/m}^3$ .

- A)  $1.36 \times 10^{-2}$
- B)  $1.36 \times 10^4$
- C)  $1.36 \times 10^8$
- D)  $1.36 \times 10^{-5}$
- E)  $1.36 \times 10^{-4}$

- 19) The quantity  $1.0 \text{ mg/cm}^2$  is the same as  $1.0 \times \text{_____ kg/m}^2$ .
- A)  $10^{-4}$
  - B)  $10^2$
  - C)  $10^{-6}$
  - D)  $10^{-2}$
  - E)  $10^4$
- 20) The density of lead is  $11.4 \text{ g/cm}^3$ . The mass of a lead ball with a radius of  $0.50 \text{ mm}$  is \_\_\_\_\_ g. ( $V_{\text{sphere}} = 4\pi r^3 / 3$ )
- A) 6.0
  - B)  $4.6 \times 10^{-2}$
  - C)  $4.6 \times 10^{-5}$
  - D)  $6.0 \times 10^{-3}$
  - E) 4.6
- 21) Which states of matter are significantly compressible?
- A) gases only
  - B) liquids only
  - C) solids only
  - D) liquids and gases
  - E) solids and liquids
- 22) 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
- 23) Homogeneous mixtures are also known as \_\_\_\_\_.
- A) solids
  - B) compounds
  - C) elements
  - D) substances
  - E) solutions
- 24) 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
- 25) Which one of the following is an intensive property?
- A) mass
  - B) temperature
  - C) heat content
  - D) volume
  - E) amount

26) Of the following, only \_\_\_\_\_ is an extensive property.

- A) density
- B) mass
- C) boiling point
- D) freezing point
- E) temperature

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

- A)  $13 \text{ cm}^3$  with a mass of 23 g
- B)  $3.5 \text{ cm}^3$  with a mass of 10 g
- C)  $0.022 \text{ cm}^3$  with a mass of 0.10 g
- D)  $54 \text{ cm}^3$  with a mass of 45 g
- E)  $210 \text{ cm}^3$  with a mass of 12 g

28) 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

29) In which one of the following numbers are all of the zeros significant?

- A) 100.090090
- B) 0.143290
- C) 0.05843
- D) 0.1000
- E) 00.0030020