Test Bank for Investigating Chemistry Introductory Chemistry From A Forensic Science Perspective 4th Johll

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Name:_____ Class:_____ Date:_____

Chapter 2

1. Identify each of the following as either a chemical change or a physical change.
A) burning charcoal _____
B) caramelizing sugar _____
C) melting chocolate _____
D) formation of acid rain _____
ANSWER: chemical; chemical; physical; chemical

2. Identify each of the following as either a chemical property or a physical property.
A) brittleness _____
B) malleability _____
C) toxicity _____
D) viscosity _____
ANSWER: physical; physical; chemical; physical

3. Select the metric prefix for micro.
a. m
b. M
c. μ
d. mi
ANSWER: c

4. Select the metric prefix that corresponds to the decimal equivalent of 1,000,000,000.
a. G
b. k
c. M
d. D
ANSWER: a

5. Convert 192,000 g to mg.
ANSWER: 0.192 mg

6. Convert 24.21 m/s to mi/hr.
ANSWER: 54.16 mi/hr

7. For each of the following, write the number of significant figures.
A) 0.510400 _____
B) 12,000 _____
C) 0.000012402 _____
D) 2,908.0 _____
ANSWER: 6; 2; 5; 5

8. Select the number that corresponds to 5.4801×10^{-3} written in decimal notation.
a. 5.4801
b. 0.0054801

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c. 0.054801
d. 54801
e. 548.01

ANSWER: b

9. Select the number that corresponds to 785.0 written in scientific notation.

a. 7.85×10^{2}
b. 7.85×10^{-2}
c. 7.850×10^{2}
d. 7.850×10^{-2}

ANSWER: c

10. Rewrite the number 0.00324010 in scientific notation, and round the answer to contain 4 significant figures.
ANSWER: 3.240×10^{-3}

11. Using the correct number of significant figures, solve 21.056 + 32.0008 + 0.002 = _____
ANSWER: 53.059

12. Using the correct number of significant figures, solve 32.5 × 0.0025 ÷ 2.900 = _____
ANSWER: 0.028

13. Using the correct number of significant figures, solve (19.3209 – 14.20) * 100.0 = _____
ANSWER: 512

14. A student measures the mass of a beaker three times on a scale. The mass of the beaker is reported as 100.25 g, 100.22 g, and 100.30 g. The manufacturer states that the mass of the beaker is 110.28 g. Select the answer that best describes the student's measurement.

a. precise but not accurate
b. accurate but not precise
c. both accurate and precise
d. neither accurate nor precise

ANSWER: a

15. A student is trying to determine the density of an unknown metal object. The mass of the object is 15.34 g. When the object was submerged in a graduated cylinder, the volume of the cylinder rose from 17.25 mL to 19.02 mL. What is the density of the metal?
ANSWER: 8.67 g/mL

16. An experiment calls for 26.4 g of ethyl alcohol. The density of ethyl alcohol is 0.789 g/mL. Calculate the volume, in mL, of ethyl alcohol that should be used in this experiment.
ANSWER: 33.5 mL

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17. Calculate the mass, in kg, of 76.47 L of a solution with a density of 1.54 g/mL.
ANSWER: 118 kg

18. Cyanide poisoning can be deadly at blood levels of 3 mg/L. What is this dosage in g/mL?
ANSWER: 3×10^{-6} g/mL

19. Use the table to answer the following question.

Type of Glass	Softening Point (°C)	Density (g/mL)	Refractive Index
Alkali borosilicate	718	2.29	1.486
Lead borosilicate	447	5.46	1.860
Potash soda lead	630	3.05	1.560
Soda-lime	696	2.47	1.510

A 13.58-g piece of glass was recovered from a crime scene. When the glass was submerged in a graduated cylinder, the volume increased from 27.89 mL to 32.41 mL.
A) The density of the glass is _____.
B) This type of glass is most likely _____.
ANSWER: 3.00 g/mL; potash soda lead

20. Use the table to answer the following question.

Type of Glass	Softening Point (°C)	Density (g/mL)	Refractive Index
Alkali borosilicate	718	2.29	1.486
Lead borosilicate	447	5.46	1.860
Potash soda lead	630	3.05	1.560
Soda-lime	696	2.47	1.510

A sample of glass is recovered from a crime scene. It is determined that the glass has a softening point in the range of 690°C to 720°C. The density of the sample is determined to be 2.19 g/mL. The type of glass is _____.
ANSWER: alkali borosilicate

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