TEST BANK FOR

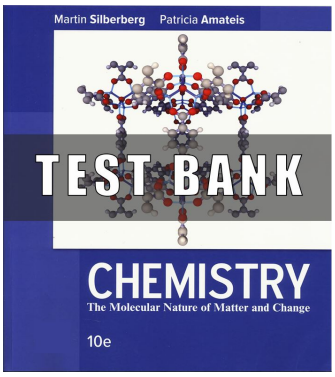
Chemistry The Molecular Nature of Matter and Change, 10th Edition, Martin Silberberg, Patricia Amateis

Chapter 1-24 Answers are at the End of Each Chapter

Chapter 1

Student name:_____

1) Which one of the following is a "substance" in the sense of the word as used in your textbook?



A) Air
B) Tap water
C) Sea water
D) Water
E) Toothpaste

2) Select the best statement.

A) Physical changes may be reversed by changing the temperature.
B) Physical changes alter the composition of the substances involved.
C) Physical properties are not valid characteristics for identifying a substance.
D) Physical properties are mostly extensive in nature.
E) Physical changes are usually accompanied by chemical changes.

3) Select the best statement.

A) Chemical changes provide the only valid basis for identification of a substance.
B) Chemical changes are easily reversed by altering the temperature of the system.
C) Chemical changes always produce substances different from the starting materials.
D) Chemical changes are associated primarily with extensive properties.
E) Chemical changes are accompanied by changes in the total mass of the substances involved.

4) Which of the following is a chemical change?

A) Boiling of water
B) Melting wax
C) Broiling a steak on a grill
D) Condensing water vapor into rainfall
E) Carving a piece of wood

5) Water vapor is less dense than ice because

A) molecules in the gas phase are in constant motion.
B) molecules in the gas phase have more potential energy than in solids.
C) molecules in the gas phase have more kinetic energy than in solids.
D) gaseous molecules have less mass.
E) molecules in the gas phase have more space between them than in solids.

6) During the swing of a frictionless pendulum, what energy form(s) remain constant?

A) Kinetic energy only
B) Potential energy only
C) Both kinetic energy and potential energy
D) Kinetic plus potential energy
E) None of these choices are correct.

7) The most significant contribution to modern science made by alchemists was

A) their fundamental work in the transmutation of the elements.
B) their widespread acceptance of observation and experimentation.
C) their systematic method of naming substances.
D) their understanding of the nature of chemical reactions.
E) their discovery of phlogiston.

8) Select the best statement about chemistry before 1800.

A) Alchemy focused on objective experimentation rather than mystical explanations of processes.
B) The phlogiston theory laid a valuable theoretical basis for modern chemistry.
C) Lavoisier's quantitative work on the role of oxygen in combustion was the beginning of modern chemistry.
D) The interpretation of data by alchemists was not biased by their overall view of life.
E) Alchemists failed because they did not develop any practical chemical methods.

9) Which of the following activities is not a part of good science?

A) Proposing a theory
B) Developing a hypothesis
C) Making quantitative observations
D) Designing experiments
E) Indulging in speculation

10) A scientist made careful measurements of the pressure and temperature of many different gases. Based on these measurements, he concluded that "the pressure of a fixed amount of gas, measured at constant volume, is directly proportional to its absolute temperature." This statement is best described as a

A) theory.
B) hypothesis.
C) law.
D) experiment.
E) definition.

11) A dictionary has the following definition for a word: "A tentative explanation that accounts for a set of facts." Which of the following words best fits that definition?

A) Theory
B) Hypothesis
C) Law
D) Experiment
E) Definition

12) A detailed explanation of natural phenomena that is generally accepted and has been extensively tested is called a

A) theory.
B) hypothesis.
C) law.
D) fact.
E) postulate.

13) The distance between carbon atoms in ethylene is 134 picometers. Which of the following expresses that distance in meters?

A) 1.34×10^{-13} m
B) $1.34 \times 10^{-}12$ m
C) 1.34×10^{-10} m
D) 1.34×10^{-7} m
E) 1.34×10^{-6} m

14) The average distance from Earth to the Sun is 150 megameters. What is that distance in meters?

A) 1.5×10 8 m
B) 1.5×10 6 m
C) 1.5×10 5 m
D) 1.5×10 3 m
E) 1.5×10 −6 m

15) The mass of a sample is 550 milligrams. Which of the following expresses that mass in kilograms?

A) 5.5×10 8 kg
B) 5.5×10 5 kg
C) 5.5×10 −4 kg
D) 5.5×10 −6 kg
E) 5.5×10 −1 kg

16) A dose of medication was prescribed to be 35 microliters. Which of the following expresses that volume in centiliters?

A) 3.5×10^{5} cL
B) 3.5×10^{4} cL
C) 3.5 cL
D) 3.5×10^{-4} cL
E) 3.5×10^{-3} cL

17) Which of the following represents the largest volume?

A) 10,000 μL
B) 1000 pL
C) 100 mL
D) 10 nL
E) 10 cm^3

18) You prepare 1000. mL of tea and transfer it to a 1.00-quart pitcher for storage. Which of the following statements is true?

A) The pitcher will be filled to 100% of its capacity with no tea spilled.
B) The pitcher will be filled to about 95% of its capacity.
C) The pitcher will be filled to about 50% of its capacity.
D) The pitcher will be completely filled and a small amount of tea will overflow.
E) The pitcher will be completely filled and most of the tea will overflow.

19) In an average year, the American chemical industry produces more than 9.5 million metric tons of sodium carbonate. Over half of this is used in the manufacture of glass while another third is used in the production of detergents and other chemicals. How many pounds of sodium carbonate are produced annually?

A) 2.1×10 10 lb
B) 4.3×10 9 lb
C) 1.1×10 7 lb
D) 2.2×10 6 lb
E) 2.1×10 4 lb

20) A large pizza has a diameter of 15 inches. Express this diameter in centimeters.

A) 38 cm
B) 24 cm
C) 18 cm
D) 9.3 cm
E) 5.9 cm

21) The average distance between the Earth and the Moon is 240,000 miles. Express this distance in kilometers.

A) 6.1×10^{5} km
B) 5.3×10^{5} km
C) $3.9 \times l0^{5}$ km
D) 1.5×10^{5} km
E) 9.4×10^{4} km

22) The area of a 15-inch pizza is 176.7 in^2. Express this area in square centimeters.

A) 1140. cm^2
B) 448.8 cm^2
C) 96.8 cm^2
D) 69.57 cm^2
E) 27.39 cm^2