

General, Organic & Biological Chemistry, 5e (Timberlake)

Chapter 1 Chemistry in Our Lives

1.1 Multiple-Choice Questions

1) Water, H₂O, is an example of a(n)

- A) chemical.
- B) solid.
- C) wave.
- D) electric charge.
- E) element.

Answer: A

Objective: 1.1

Global Outcomes: GO2

2) In this list, which substance can be classified as a chemical?

- A) salt
- B) sleep
- C) cold
- D) heat
- E) temperature

Answer: A

Objective: 1.1

Global Outcomes: GO2

3) One example of a chemical used in toothpaste is

- A) chlorine.
- B) sulfur.
- C) carbon dioxide.
- D) calcium carbonate.
- E) sugar.

Answer: D

Objective: 1.1

Global Outcomes: GO2

4) Which of the following is not a chemical?

- A) salt
- B) water
- C) light
- D) carbon dioxide
- E) sugar

Answer: C

Objective: 1.1

Global Outcomes: GO2

5) Sodium fluorophosphate is a chemical used in toothpaste to

- A) make the paste white.
- B) disinfect the toothbrush.
- C) keep the paste from spoiling.
- D) remove plaque.
- E) strengthen tooth enamel.

Answer: E

Objective: 1.1

Global Outcomes: GO2

6) Titanium dioxide is a chemical used in toothpaste to

- A) make the paste white.
- B) disinfect the toothbrush.
- C) keep the paste from spoiling.
- D) remove plaque.
- E) strengthen tooth enamel.

Answer: A

Objective: 1.1

Global Outcomes: GO2

7) When a part of the body is injured, substances called _____ are released.

- A) aspirins
- B) pain relievers
- C) nitrogen oxides
- D) chlorofluorocarbons
- E) prostaglandins

Answer: E

Objective: 1.1

Global Outcomes: GO2

8) Which of the following is a chemical?

- A) sugar
- B) heat
- C) light
- D) noise
- E) a wave

Answer: A

Objective: 1.1

Global Outcomes: GO2

9) You notice that there is more traffic between 8 and 9 in the morning. This would be a(n)

- A) observation.
- B) hypothesis.
- C) experiment.
- D) theory.
- E) all the above

Answer: A

Objective: 1.2

Global Outcomes: GO1

10) There is more traffic between 8 and 9 in the morning because most people start work at 9. This would be a(n)

- A) observation.
- B) hypothesis.
- C) experiment.
- D) theory.
- E) all the above

Answer: B

Objective: 1.2

Global Outcomes: GO1

11) One way to enhance your learning in chemistry is to

- A) study a little every day.
- B) form a study group.
- C) go to office hours.
- D) be an active learner.
- E) all the above

Answer: E

Objective: 1.2

Global Outcomes: GO2

12) In order to enhance your learning in chemistry, you should not

- A) study a little every day.
- B) form a study group.
- C) go to office hours.
- D) be an active learner.
- E) wait until the night before the exam to study.

Answer: E

Objective: 1.3

Global Outcomes: GO2

13) Which of the following would not be part of a study plan to learn chemistry?

- A) study a little every day
- B) skip your instructor's office hours
- C) form a study group
- D) read the chapter before class
- E) work the sample problems

Answer: B

Objective: 1.3

Global Outcomes: GO2

14) In the number 12.345, the 4 is in the _____ place.

- A) tens
- B) ones
- C) tenths
- D) hundredths
- E) thousandths

Answer: D

Objective: 1.4

Global Outcomes: GO4

15) In the number 12.345, the 1 is in the _____ place.

- A) tens
- B) ones
- C) tenths
- D) hundredths
- E) thousandths

Answer: A

Objective: 1.4

Global Outcomes: GO4

16) In the number 12.345, the 3 is in the _____ place.

- A) tens
- B) ones
- C) tenths
- D) hundredths
- E) thousandths

Answer: C

Objective: 1.4

Global Outcomes: GO4

17) The product of $(-4) \times (-5)$ is

- A) -20.
- B) +20.
- C) -1.
- D) +1.
- E) 0.

Answer: B

Objective: 1.4

Global Outcomes: GO4

18) For the equation $4x + 2 = 10$, x equals

- A) 8.
- B) 12.
- C) 3.
- D) 2.
- E) -2.

Answer: D

Objective: 1.4

Global Outcomes: GO4

19) For the equation $-10 - (-4) =$

- A) 6.
- B) -6.
- C) 14.
- D) -14.
- E) 4.

Answer: B

Objective: 1.4

Global Outcomes: GO4

20) 12 is what percent of 36?

- A) 3%
- B) 30%
- C) 33%
- D) 330%
- E) 12%

Answer: C

Objective: 1.4

Global Outcomes: GO4

21) 16 is what percent of 80?

- A) 200%
- B) 20%
- C) 2%
- D) 5%
- E) 50%

Answer: B

Objective: 1.4

Global Outcomes: GO4

22) Written in scientific notation, 540 000 is

- A) 0.54×10^6 .
- B) 54×10^8 .
- C) 5.4×10^{-5} .
- D) 5.4×10^5 .
- E) 5.4.

Answer: D

Objective: 1.4

Global Outcomes: GO4

23) Written in scientific notation, 8300 is

- A) 8.3×10^2 .
- B) 8.3×10^3 .
- C) 8.3×10^4 .
- D) 8.3×10^{-3} .
- E) 8.3×10^{-2} .

Answer: B

Objective: 1.4

Global Outcomes: GO4

24) Written in scientific notation, 0.000 000 33 is

- A) 3.3×10^7 .
- B) 3.3×10^{-7} .
- C) 3.3×10^{-8} .
- D) 3.3×10^8 .
- E) 3.3.

Answer: B

Objective: 1.4

Global Outcomes: GO4

25) Written in scientific notation, 0.000 004 03 is

- A) 4.03×10^{-7} .
- B) 4.03×10^{-6} .
- C) 4.03×10^6 .
- D) 0.403×10^{-5} .
- E) 4.03.

Answer: B

Objective: 1.4

Global Outcomes: GO4

1.2 True/False Questions

1) Titanium dioxide in toothpaste is used as a detergent.

Answer: FALSE

Objective: 1.1

Global Outcomes: GO2

2) Calcium carbonate is used to sweeten toothpaste.

Answer: FALSE

Objective: 1.1

Global Outcomes: GO2

3) Paracelsus was a Greek philosopher.

Answer: FALSE

Objective: 1.1

Global Outcomes: GO2

4) The first step in the scientific method is to draw a conclusion.

Answer: FALSE

Objective: 1.2

Global Outcomes: GO1

5) Doing experiments to test your hypothesis is part of the scientific method.

Answer: TRUE

Objective: 1.2

Global Outcomes: GO1

6) Working with a group of students can help you learn chemistry.

Answer: TRUE

Objective: 1.3

Global Outcomes: GO2

7) Keeping a problem notebook will help you do well in your chemistry class.

Answer: TRUE

Objective: 1.3

Global Outcomes: GO2

8) It is a good idea to wait until the night before an exam to start to study.

Answer: FALSE

Objective: 1.3

Global Outcomes: GO2

9) In the number 123.45, the digit 5 is in the hundreds place.

Answer: FALSE

Objective: 1.4

Global Outcomes: GO4

10) When -7 is added to -5 the answer is 12.

Answer: FALSE

Objective: 1.4

Global Outcomes: GO4

11) If a negative number is divided by another negative number, the answer will be a positive number.

Answer: TRUE

Objective: 1.4

Global Outcomes: GO4

12) 3.5×10^3 is equal to 3500.

Answer: TRUE

Objective: 1.4

Global Outcomes: GO4

13) 2.25×10^{-4} is equal to 22500.

Answer: FALSE

Objective: 1.4

Global Outcomes: GO4

1.3 Short Answer Questions

1) A substance that consists of one type of matter and always has the same composition and properties is called a _____.

Answer: chemical

Objective: 1.1

Global Outcomes: GO2

2) Any material used in or produced by a chemical reaction is a _____.

Answer: chemical

Objective: 1.1

Global Outcomes: GO2

3) An abrasive used in toothpaste is _____.

Answer: calcium carbonate

Objective: 1.1

Global Outcomes: GO2

4) The substances released when tissues are injured are _____.

Answer: prostaglandins

Objective: 1.1

Global Outcomes: GO2

5) Substances which prevent spoilage are called _____.

Answer: antioxidants

Objective: 1.1

Global Outcomes: GO2

6) The chemical used to make cans and foil is _____.

Answer: aluminum

Objective: 1.1

Global Outcomes: GO2

7) The first step in the scientific method is to _____.

Answer: make observations

Objective: 1.2

Global Outcomes: GO2

8) The second step in the scientific method is to _____.

Answer: make a hypothesis

Objective: 1.2

Global Outcomes: GO2

9) In the number 45.678, the digit 6 is in the _____ place.

Answer: tenths

Objective: 1.4

Global Outcomes: GO2

Express each of the following numbers using scientific notation.

10) 351 000 000 000

Answer: 3.51×10^{11}

Objective: 1.4

Global Outcomes: GO4

11) 0.000 860

Answer: 8.60×10^{-4}

Objective: 1.4

Global Outcomes: GO4

12) 5 207 000

Answer: 5.207×10^6

Objective: 1.4

Global Outcomes: GO4

13) 0.000 000 050

Answer: 5.0×10^{-8}

Objective: 1.4

Global Outcomes: GO4