***Introduction to General, Organic & Biological Chemistry, 12e* (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

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

A) salt

B) sleep

C) cold

D) heat

E) temperature

Answer: A

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) One example of a chemical used in toothpaste is \_\_\_\_\_\_\_\_.

A) chlorine

B) sulfur

C) carbon dioxide

D) calcium carbonate

E) sugar

Answer: D

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) Which of the following is not a chemical?

A) salt

B) water

C) light

D) carbon dioxide

E) sugar

Answer: C

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

6) 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

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

7) The production of smog from NO gas requires \_\_\_\_\_\_\_\_.

A) nitrogen

B) chlorine

C) water

D) oxygen

E) CFCs

Answer: D

Page Ref: 1.1

Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

8) 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

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

9) Which of the following is a chemical?

A) sugar

B) heat

C) light

D) noise

E) a wave

Answer: A

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

10) 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

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Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

11) 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

Page Ref: 1.2

Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

12) 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

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Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

13) 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

Page Ref: 1.3

Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

A) tens

B) ones

C) tenths

D) hundredths

E) thousandths

Answer: D

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

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

A) tens

B) ones

C) tenths

D) hundredths

E) thousandths

Answer: A

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

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

A) tens

B) ones

C) tenths

D) hundredths

E) thousandths

Answer: C

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

17) The product of (-4) × (-5) is \_\_\_\_\_\_\_\_.

A) -20

B) +20

C) -1

D) +1

E) 0

Answer: B

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

18) For the equation 4x + 2 = 10, x equals \_\_\_\_\_\_\_\_.

A) 8

B) 12

C) 3

D) 2

E) -2

Answer: D

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

19) For the equation -10 - (-4) = \_\_\_\_\_\_\_\_.

A) 6

B) -6

C) 14

D) -14

E) 4

Answer: B

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

20) 12 is what percent of 36?

A) 3%

B) 30%

C) 33%

D) 330%

E) 12%

Answer: C

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

21) Write 540 000 in scientific notation.

A) 0.54 × 106

B) 54 × 108

C) 5.4 × 10-5

D) 5.4 × 105

E) 5.4

Answer: D

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

22) Write 0.000 000 33 in scientific notation.

A) 3.3 × 107

B) 3.3 × 10-7

C) 3.3 × 10-8

D) 3.3 × 108

E) 3.3

Answer: B

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

23) The measurement 0.000 004 3 m, expressed correctly using scientific notation, is \_\_\_\_\_\_\_\_.

A) 4.3 ×  m

B) 4.3 ×  m

C) 4.3 ×  m

D) 0.43 ×  m

E) 4.3 m

Answer: B

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

1.2 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

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

Answer: chemical

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) An abrasive used in toothpaste is \_\_\_\_\_\_\_\_.

Answer: calcium carbonate

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) The substances released when tissues are injured are \_\_\_\_\_\_\_\_.

Answer: prostaglandins

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

5) Substances which prevent spoilage are called \_\_\_\_\_\_\_\_.

Answer: antioxidants

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

Answer: aluminum

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

Answer: make observations

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Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

*Express each of the following numbers using scientific notation.*

8) 351 000 000 000

Answer: 3.51 × 

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

9) 0.000 860

Answer: 8.60 × 

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

10) 5 207 000

Answer: 5.207 × 

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

11) 0.000 000 050

Answer: 5.0 × 

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

1.3 True/False Questions

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

Answer: FALSE

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) Calcium carbonate is used to sweeten toothpaste.

Answer: FALSE

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) Paracelsus was a Greek philosopher.

Answer: FALSE

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Learning Obj.: 1.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

Answer: FALSE

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Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

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

Answer: TRUE

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Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

Answer: FALSE

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Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

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

Answer: FALSE

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

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

Answer: TRUE

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.