CHEMISTRY · NORTH DAKOTA

Chemistry

Practice Test

Unit 2: Bonding and Chemical Reactions

25 Questions

Original practice test based on the North Dakota curriculum. Work through each question, then check your answers at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

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Question 1

An ionic bond forms when electrons are

A) transferred from a metal to a nonmetal

B) shared equally between two metals

C) shared between two noble gases

D) destroyed by the metal atom

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Question 2

Magnesium forms Mg^{2+} and chlorine forms Cl^{-}. The formula of the ionic compound formed is

A) MgCl

B) $MgCl_2$

C) Mg_2Cl

D) $MgCl_3$

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Question 3

In the balanced equation $2\,H_2 + O_2 \rightarrow 2\,H_2O$,

the coefficient of water is ____

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Question 4

A covalent bond forms when atoms

A) transfer all their protons

B) lose all their neutrons

C) share pairs of electrons

D) become positively charged only

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Question 5

Carbon dioxide has a central carbon atom bonded to two oxygen atoms and no lone pairs. The shape of the molecule is

A) bent

B) trigonal planar

C) tetrahedral

D) linear

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Question 6

Ammonia has a central nitrogen atom bonded to three hydrogen atoms and one lone pair. The shape of the molecule is

A) tetrahedral

B) trigonal pyramidal

C) linear

D) bent

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Question 7

Methane has a central carbon atom bonded to four hydrogen atoms and no lone pairs. The shape of the molecule is

A) tetrahedral

B) square planar

C) bent

D) linear

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Question 8

Which of these molecules can form hydrogen bonds with other molecules of the same kind

A) CH_4

B) CO_2

C) NH_3

D) O_2

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Question 9

The total number of atoms in one formula unit of Al_2O_3 is ____

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Question 10

The reaction $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$ is a

A) synthesis reaction

B) single replacement reaction

C) decomposition reaction

D) double replacement reaction

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Question 11

The reaction $CaCO_3 \rightarrow CaO + CO_2$ is a

A) synthesis reaction

B) combustion reaction

C) single replacement reaction

D) decomposition reaction

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Question 12

The reaction $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ is a

A) double replacement reaction

B) synthesis reaction

C) decomposition reaction

D) combustion reaction

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Question 13

The reaction $CH_4 + 2\,O_2 \rightarrow CO_2 + 2\,H_2O$ is a

A) decomposition reaction

B) synthesis reaction

C) combustion reaction

D) single replacement reaction

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Question 14

In the balanced equation $4\,Al + 3\,O_2 \rightarrow 2\,Al_2O_3$,

the coefficient of aluminum is ____

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Question 15

Which of these molecules is polar

A) H_2O

B) CO_2

C) CH_4

D) N_2

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Question 16

A typical property of an ionic compound is a

A) low melting point

B) high melting point

C) soft waxy solid

D) very low boiling point

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Question 17

Metallic bonding is best described as

A) shared pairs between two atoms

B) electrons transferred to a nonmetal

C) hydrogen bonds between molecules

D) a sea of delocalized electrons around metal ions

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Question 18

The total number of oxygen atoms in $2\ H_2\ SO_4$ is ____

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Question 19

Neutralization of an acid by a base produces

A) a salt and water

B) a salt and hydrogen

C) an acid and oxygen

D) a base and carbon dioxide

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Question 20

London dispersion forces are present

A) only between polar molecules

B) only between ions

C) between all molecules

D) only between metals

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Question 21

In a water molecule, the oxygen atom has this many lone pairs of electrons

A) 0

B) 2

C) 1

D) 4

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Question 22

In the balanced equation $CH_4 + 2\,O_2 \rightarrow CO_2 + 2\,H_2O$,

the coefficient of oxygen is ____

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Question 23

Aluminum forms Al^{3+} and oxygen forms O^{2-}. The formula of the compound formed is

A) AlO

B) Al_2O_3

C) Al_3O_2

D) AlO_2

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Question 24

The strongest intermolecular force among these substances is found in

A) CH_4

B) HCl

C) HF

D) CO_2

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Question 25

The total number of atoms in three molecules of NH_3 is ____

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ANSWER KEY

1. A
2. B
3. 2
4. C
5. D
6. B
7. A
8. C
9. 5
10. B
11. D
12. A
13. C
14. 4
15. A
16. B
17. D
18. 8
19. A
20. C
21. B
22. 2
23. B
24. C
25. 12

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