PENNSYLVANIA CHEMISTRY · UNIT 2

Bonding and Chemical Reactions — Practice Test

Pennsylvania Chemistry • 25 questions

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.

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

Understand It with Pulse | Flag a mistake

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** $MgCl_3$

Understand It with Pulse | Flag a mistake

3 **In the balanced equation $2H_2 + O_2 \rightarrow 2H_2O$, the coefficient of water is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

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

ANSWER _____

Understand It with Pulse | Flag a mistake

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

- A synthesis reaction
- B combustion reaction
- C single replacement reaction
- D decomposition reaction

Understand It with Pulse | Flag a mistake

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

A decomposition reaction

B synthesis reaction

C combustion reaction

D single replacement reaction

Understand It with Pulse | Flag a mistake

14 **In the balanced equation $4Al + 3O_2 \rightarrow 2Al_2O_3$, the coefficient of aluminum is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

15 **Which of these molecules is polar**

A H_2O

B CO_2

C CH_4

D N_2

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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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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

Understand It with Pulse | Flag a mistake

18 **The total number of oxygen atoms in $2H_2SO_4$ is _____**

ANSWER _____

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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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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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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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22 In the balanced equation $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$, the coefficient of oxygen is _____

ANSWER

Understand It with Pulse | Flag a mistake

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

Understand It with Pulse | Flag a mistake

24 **The strongest intermolecular force among these substances is found in**

- **A** CH_4
- **B** HCl
- **C** HF
- **D** CO_2

Understand It with Pulse | Flag a mistake

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

ANSWER _____

Understand It with Pulse | Flag a mistake

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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