ILLINOIS CHEMISTRY · UNIT 2 · 25 QUESTIONS

# Bonding and Chemical Reactions — Practice Test

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

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

ANSWER _____

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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

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**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

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

ANSWER _____

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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

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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

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**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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**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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**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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