

Choose the correct answer:

1. The reaction for dissolving gaseous HCl in water is $\text{HCl (g)} \rightarrow \text{H}^+ \text{(aq)} + \text{Cl}^- \text{(aq)}$.

How many bonds are broken per HCl formula unit when a sample of gaseous HCl dissolves?

- A. Zero
- B. One
- C. Two
- D. Many

2. Gases have shapes and volumes.

- A. definite - definite
- B. definite - indefinite
- C. indefinite - definite
- D. indefinite – indefinite

3. The valence electrons of elements are.....

- A. in **s** orbitals only.
- B. located in the outermost occupied major energy level.
- C. located closest to the nucleus.
- D. located in **d** orbitals.

4. What is the SI unit for amount of substance?

- A. Gram
- B. Kilogram
- C. Mole
- D. Milliliter

5. What volume of 5 M HCl must be added to enough water to prepare 5 liters of 3 M HCl?

- A. 15 L.
- B. 5 L.
- C. 10 L.
- D. 3 L.

6. The boiling point is

- A. the temperature at which a liquid changes to a gas.
- B. the temperature at which a solid changes to a gas.
- C. the temperature at which a gas changes to a solid.
- D. the temperature at which a liquid changes to a solid.

7. How many electrons can the third shell ($n = 3$) hold?

- A. 10
- B. 6
- C. 18
- D. 8

8. The chemical formula of magnesium nitrate is.....

- A. $MgNO_3$
- B. Mg_2NO_3
- C. $Mg(NO_3)_2$
- D. $Mg(NO_2)_3$

9. Which combination of elements will most likely form an ionic compound?

- A. Hydrogen and fluorine
- B. Sodium and magnesium
- C. Magnesium and oxygen
- D. Oxygen and chlorine

10. All the following are strong acids except.....

- A. H_2SO_4
- B. CH_3COOH
- C. HCl
- D. HNO_3

11. The sublimation process refers to.....

- A. the change of the matter from the solid state to the liquid state.
- B. the change of the matter from the liquid to the solid state.
- C. the change of the matter from the solid to the gas state.
- D. the change of the matter from the gas to the solid state.

12. What is the mass of 0.5 moles of calcium carbonate, CaCO_3 (atomic masses: Ca = 40, C = 12, O = 16)?

- A. 50
- B. 25
- C. 100
- D. 200

13. The element used mainly for fabricating the solar cells is

- A. magnesium
- B. sodium
- C. calcium
- D. silicon

14. All of the following involve a chemical change except.....

- A. the formation of HCl from H_2 and Cl_2
- B. the color change when NO_2 is exposed to air
- C. the formation of steam from burning H_2 and O_2
- D. the solidification of vegetable oil at low temperatures

15. What is the frequency of light having a wavelength of 4.50×10^{-6} cm (speed of light = 3.00×10^8 m/sec)?

- A. $2.84 \times 10^{-12} \text{ s}^{-1}$
- B. $2.10 \times 10^4 \text{ s}^{-1}$
- C. $1.06 \times 10^{22} \text{ s}^{-1}$
- D. $6.67 \times 10^{15} \text{ s}^{-1}$

16. What is the number of moles of CO_2 which contains 16 g of oxygen?

- A. 0.50 mol
- B. 0.25 mol
- C. 0.40 mol
- D. 0.60 mol

17. Which of the following is a pure compound?

- A. Petrol
- B. Air
- C. Glucose
- D. Sea water

18. In exothermic reactions.....

- A. heat moves to the system from the surrounding.
- B. heat moves from the system to the surrounding.
- C. heat does not move from or to the system.
- D. heat moves from and to the system at the same time.

19. Which gas can be produced by incomplete combustion of hydrocarbons?

- A. Sulfur dioxide
- B. Nitrogen dioxide
- C. Hydrogen chloride
- D. Carbon monoxide

20. According to the first law of thermodynamics, the total sum of all energy in an isolated system always

- A. increase.
- B. decrease.
- C. constant.
- D. All of the above.

Good Luck