

1) Which of the following is an alkaline earth metal :

A- Cl

B- Fe

C- Na

D- Be

2) If you have 5 moles of sodium (Na), how many grams do you have ? (molar mass of Na = 23 g/mol) :

A- 4 g

B- 56 g

C- 200 g

D- 115 g

3) What is the pressure of 3.74 atm in Pascals (Pa) :

A- 3.78×10^5

B- 2842.2

C- 378.9

D- 760

4) If you have 3.01×10^{23} molecules of H_2O , how many moles of water do you have :

A- 0.5 moles

B- 2 moles

C- 1 mole

D- 1.5 moles

5) There are _____ neutrons in an atom of $^{131}_{53}I$:

A- 53

B- 80

C- 131

D- 78

6) The molar volume of an ideal gas at STP = :

A- 0.082 L

B- 22.4 L

C- 670 L

D- 273 L

7) How would you describe the state of $CaCO_3$, represented by the symbol (s), in the chemical reaction below?



A- Solid

B- Solution

C- Gas

D- Liquid

8) _____ typically form ions with a (+1) charge :

- A- Alkaline earth metals B- Nobel Gases C- Halogens D- Alkali metals

9) What is the formula of ionic compound formed between magnesium (Mg) and oxide (O) ions :

- A- Mg_2O_3 B- Mg_3O_2 C- MgO_2 D- MgO

10) Which of the following statements is true :

- A- Atomic mass and molar mass have the same numerical value but different units
B- The atomic mass is always higher than the molar mass
C- Atomic mass is expressed in g/mol, while molar mass is expressed in (amu)
D- Atomic mass and molar mass have different numerical values but the same units

11) A balloon has a volume of 34.2 L at 20°C and a pressure of 2.42 atm, calculate the number of moles :

- A- 0.0198 B- 0.29 C- 50.46 D- 3.44

12) The vertical columns in the periodic table are called :

- A- Subshells B- Groups C- Periods D- Orbitals

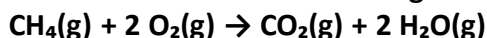
13) Which of the following is the correct name of the polyatomic ion (SO_4^{2-}) :

- A- Sulfate ion B- Carbonate ion C- Phosphate ion D- Permanganate ion

14) A compound is found to contain 40% sulfur and 60% oxygen by mass. What is the empirical formula of this compound :

- A- S_3O B- SO C- SO_3 D- S_2O

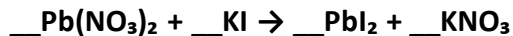
15) The combustion process of methane is shown in the following reaction :



If 7.0 moles of CH_4 are reacted, what is the volume of H_2O (in liters) produced at 23.0°C and 0.985 atm :

- A- 344.98 L B- 60 L C- 100 L D- 600 L

16) Balance the following equation :



What are the correct coefficients :

A- 2, 2, 1, 2

B- 1, 2, 1, 1

C- 1, 2, 1, 2

D- 2, 4, 2, 4

17) A cation is :

A- Positively charged ions

B- Typically formed from metals

C- Formed by losing electrons

D- All answers are correct

18) All the following are compounds except _____ :

A- NO

B- H₂O

C- H₂SO₄

D- O₂

19) Of the following, _____ is a correct statement of Boyle's law :

A- PV = constant

B- P/V = constant

C- V/P = constant

D- V/T = constant

20) What is the percent composition by mass of hydrogen in (CH₃OH) :

A- 9.7 %

B- 50 %

C- 12.5 %

D- 37.5 %

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21) _____ are subatomic particles located in the nucleus with no charges :

A- electrons

B- protons

C- protons and neutrons

D- neutrons

22) If the empirical formula of a compound is C₃H₄O₃ and its molar mass is 180 g/mol, what is its molecular formula :

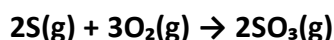
A- C₃H₄O₃

B- C₉H₁₂O₉

C- C₁₂H₁₆O₁₂

D- C₆H₈O₆

23) The reaction of 1 g (S) with 1 g (O₂) produced 0.80 g of (SO₃). The percent yield in the experiment is..... if O₂ is limiting reactant :



A- 30%

B- 48%

C- 21%

D- 35%

"جرب . اكتشف . كرر . الكيمياء لا تنتهي"

24) Which law stated the relationship between the volume of a gas and the number of moles of the gas present :

A- Charles's Law

B- Avogadro's Law

C- Boyle's law

D- Newton's Law

25) In this reaction



To produce H_2O , what is the limiting reactant if you start with 8 moles of NH_3 and 5 moles of O_2 :

A- O_2

B- NO

C- NH_3

D- H_2O

26) Which one of the following molecular formulas is also an empirical formula :

A- $\text{C}_2\text{H}_6\text{SO}$

B- $\text{H}_2\text{P}_4\text{O}_6$

C- C_6H_6

D- H_2O_2

27) How many grams of CO_2 are produced when 3 moles of C_8H_{18} are completely combusted in excess oxygen :



A- 1056 g

B- 24 g

C- 704 g

D- 16 g

28) A structural formula shows _____ :

A- which atoms are attached to which in a molecule

B- the simplest whole-number ratio of different atoms in a compound

C- the isotope of each element in a compound

D- none of them

29) The molecular formula of a compound is always a whole-number multiple of its :

A- Empirical formula

B- Molar mass

C- Atomic mass

D- Stoichiometric coefficient

30) Which of the following is a homonuclear polyatomic molecule :

A- Cl_2

B- CH_3OH

C- O_3

D- HCl