

Choose the correct answer

A-1 Prefixes giga and deci represent, respectively:

- a) 10^{-9} and 10^{-1} . b) 10^6 and 10^{-3} . c) 10^3 and 10^{-3} **d) 10^9 and 10^{-1} .**

A-2 If 586 g of bromine occupies 188 mL, what is the density of bromine in g/mL?

- a) 3.12g/ml** b) 0.321 g/ml c) 3.63g/ml d) 3.08g/ml

A-3 3.5 ^{10⁹} nanometer contains how many ^{10⁶} micrometers?

- a) $3.5 \times 10^{+3}$ **b) 3.5×10^{-3}** c) $3.5 \times 10^{+8}$ d) 3.5×10^{-8}

A-4 The element in group 2A and period 3 is:

- a) Ga b) Be c) Al **d) Mg**

A-5 Predict the formula of a compound formed from Sr and Cl?

- a) Sr_2Cl b) Sr_2Cl_2 **c) SrCl_2** d) SrCl

A-6 Which compound has the same empirical formula as $\text{C}_6\text{H}_{12}\text{O}_6$?

- a) $\text{C}_{12}\text{H}_{20}\text{O}_4$ b) $\text{C}_2\text{H}_8\text{O}_4$ c) $\text{C}_6\text{H}_3\text{O}_6$ **d) $\text{C}_{12}\text{H}_{24}\text{O}_{12}$**

A-7 An atom is

- a) Smallest unit of matter that maintains its chemical identity.
- b) The smallest unit of a compound.
- c) Always made of carbon
- d) Smaller than electron

A-8 The right answer is:

- a) Compounds are: N_2 , NH_3 , H_2O and CH_4
- b) Elements are: N_2 , H_2O , H_2 and F_2
- c) Molecules are: N_2 , H_2 , F_2 and Cl_2 and Fe_2SO_4
- d) Compounds are: NH_3 , O_2 , H_2O and CH_4

A-9 Rubidium (Rb) and cesium (Cs) are members of which of the following categories?

- a) Halogens
- b) Alkali metals
- c) Alkaline earth metals
- d) Noble gases

A-10 What is the number of protons, electrons and neutrons in the atom of

- a) 32 protons, 34 electrons, 16 neutrons
- b) 16 protons, 16 electrons, 16 neutrons
- c) 16 protons, 18 electrons, 16 neutrons
- d) 18 protons, 16 electrons, 32 neutrons

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A-11 The correct systematic name for Cr_2O_3 is

- a) Chromium (III) oxide. b) Dichromium trioxide.
c) Chromium trioxide d) Chromium oxide.

A-12 The correct formula for calcium sulfate is

- a) CaHSO_4 b) CaSO_4 c) CaS d) $\text{Ca}(\text{HSO}_4)_2$

A-13 Gallium consists of 60.108% ^{69}Ga with a mass of 68.9256 amu, and 39.892% ^{71}Ga with a mass of 70.9247 amu, the average atomic mass of gallium is:

- a) 70.93 amu b) 71.62 amu c) 68.93 amu d) 69.723 amu

A-14 Which pair of Atoms would be most likely to form an ionic compound?

- a) C and N b) K and Ca c) P and Ar d) Ba and S

A-15 Two isotopes of the same element differ only in their

- a) Number of neutron b) Atomic number
c) Number of protons d) Number of electron

A-16 What is the mass in grams of one atom of iron (Fe)?

- a) 6.02×10^{23} g b) 1.66×10^{-24} g c) 9.3×10^{-23} g d) 55.85 g

A-17 A 4.691 g sample of MgCl_2 is dissolved in enough water to give 750 mL of solution. What is the molarity of this solution?

- a) 3.70×10^{-2} M b) 1.05×10^{-2} M c) 6.58×10^{-2} M d) 4.93×10^{-2} M

A-18 Calculate the percent composition by mass of C in picric acid



- a) 1.3 % b) 18.3 % c) 31.4 % d) 48.9 %

A-19 How many molecules of ethane (C_2H_6) are present in 0.30 g of C_2H_6 ?

- a) 1.20×10^{22} b) 1.00×10^{22} c) 8.03×10^{21} d) 6.02×10^{21}

A-20 The empirical formula of an organic compound with 85.7% C and 14.3% H is

- a) CH b) CH_2 c) C_2H d) CH_4

A-21 After balancing the following equation, the coefficients are:



- a) $a=1, b=5, c=2, d=4$ b) $a=2, b=5, c=3, d=4$
 c) $a=1, b=3, c=3, d=4$ d) $a=1, b=5, c=3, d=4$

3 4 2

A-22 Calculate the number of O atoms in 2.50 g of sucrose ($C_{12}H_{22}O_{11}$)

- a) 3.87×10^{22} b) 4.84×10^{22} c) 5.81×10^{22} d) 6.78×10^{22}

A-23 An empirical formula of an organic compound is $C_3H_4O_2$, if the molecular weight of the compound is (360 g/mol), the molecular formula of the compound will be:

- a) $C_6H_8O_4$ b) $C_{12}H_{16}O_8$ c) $C_9H_{12}O_6$ d) $C_{15}H_{20}O_{10}$

A-24 How many moles of $FeSO_4$ are present in a 500 mg of this salt?

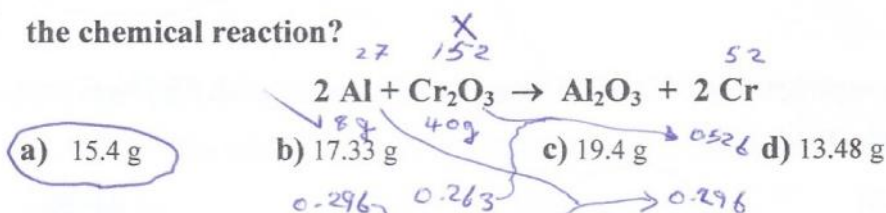
- a) 1.64×10^{-3} b) 2.30×10^{-3} c) 3.29×10^{-3} d) 4.93×10^{-3}

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A-25 How many milliliter of water must be added to 200 mL of 0.15M Na_2CO_3 to prepare 0.05 M Na_2CO_3 ?

- a) 200 mL b) 300 mL **c) 400 mL** d) 450 mL

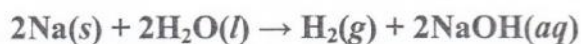
A-26 What is the theoretical yield of chromium (Cr) that can be produced by the reaction of 40.0 of Cr_2O_3 with 8.00 g of aluminum (Al) according to the chemical reaction?



A-27 If the actual yield for the experiment in question (26) produced 13.0g, what is the percentage yield?

- a) **84.4%** b) 75.0% c) 67% d) 96.4%

A-28 The mass of Na that will react with excess of water to produce 16.0 g NaOH is



- a) 5.75 g b) 6.90 g c) 8.05 g **d) 9.20 g**

A-29 A 100.0 mL of 0.25 M HCl is diluted with water to a total volume of 200.0 mL. What is the final concentration in the resulting solution?

- a) **0.125M** b) 0.083 M c) 0.05 M d) 0.0625 M

A-30 What is the mass of carbon in 10 g carbon dioxide (CO_2)?

- a) 4.1 g **b) 2.73 g** c) 6.82 g d) 5.45 g