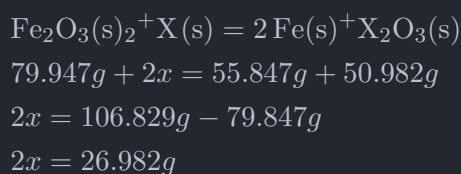


Ap Chem Summer Assignment #3

Shaurya Singh

August 25, 2021

1 The following reaction was performed, Identify element X.



Since the atomic weight of 2Fe is the same as the given weight (55.847g), the atomic weight of 2x is 26.982g or Aluminium (Al)

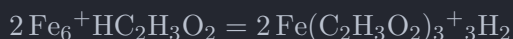
2 Balance the following equations

1. $2\text{AgI} + \text{Na}_2\text{S} \rightarrow 2\text{Ag}_2\text{S} + \text{NaI}$
2. $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \rightarrow \text{Cr}_2\text{O}_3 + \text{N}_2 + \text{H}_2\text{O}$
3. $\text{Na}_3\text{PO}_4 + \text{HCl} \rightarrow 3\text{NaCl} + \text{H}_3\text{PO}_4$
4. $\text{TiCl}_4 + \text{H}_2\text{O} \rightarrow \text{TiO}_2 + \text{HCl}$
5. $\text{Ba}_3\text{N}_2 + \text{H}_2\text{O} \rightarrow 3\text{Ba}(\text{OH})_2 + \text{NH}_3$
6. $3\text{HNO}_2 + \text{HNO}_3 \rightarrow 2\text{NO} + \text{H}_2\text{O}$

3 Balance the following equation:

$4\text{NH}_4\text{OH}(\text{aq}) + \text{KAl}(\text{SO}_4)_4 \cdot 12\text{H}_2\text{O} = \text{Al}(\text{OH})_3(\text{s}) + (\text{NH}_4)_2\text{Cr}_2\text{O}_7 + \text{KOH}(\text{aq}) + 12\text{H}_2\text{O}$ We can multiply NH_4OH by 4, and increase NH_4 and H_2O on the product side to compensate

4 Balance the following equation



5 How many grams of water vapor can be generated from the combustion of 18.74 g of ethanol (C₂H₆O)?

6 How many grams of potassium iodide are necessary to completely react with 20.61g of Mercury (II) chloride

First we balance the equation $\text{HgCl}_2 + 2\text{KI} = \text{HgI}_2 + 2\text{KCl}$ Next we find the total atomic weight. $200.59 + 2(35.45) + 2(39.10 + 126.90)$ Afterwards, we calculate the ratio needed $\frac{332}{271.49} = 1.22$ Finally we multiply $20.61 \times 1.22 = 25.203$

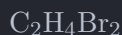
7 How many grams of water vapor can be generated from the combustion of 18.74 g of ethanol (C₂H₆O)?

8 A reaction combines 64.81 grams of silver nitrate with 92.67 grams of potassium bromide

1. 72g
2. AgNO_3 is the limiting reactant
3. 47.3g
4. 20.5%

9 The molecular weight of an insecticide, dibromoethane, is 187.9. Its molecular formula is $C_2H_4Br_2$, What percent by mass of bromine does dibromoethane contain?

$$C = 12.011 \quad H = 1.008 \quad Br = 79.90$$



$$= 24.022 + 4.032 + 159.8 = 187.9 = 159.8 / 187.9 = .8505$$

$$= \%85.05$$

10 A given sample of xenon fluoride contains molecules of a single type of XeF_n , where n is some whole number. Given that 9.03×10^{20}

$$\text{moles} = 9.03 \times 10^{20} / 6.022 \times 10^{23} = 1.5 \times 10^{-3} = 0.31 \quad 0.31 / 131 + 19n = 186.5 + 23.5n = 310$$

$$n = 4 \text{ therefore its } XeF_4$$

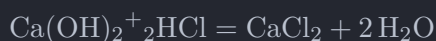
11 Molar mass of $KClO$

$$K = 39.0983 \quad Cl = 35.45 \quad O = 16.00$$

$$39.0983 + 35.45 + 3 \times 16 = 122.55 \text{g} \quad 6.32 / 122.55 = 0.052 \text{ moles} \quad 2 \text{ mol } KClO_3 = 3 \text{ mol } O_2$$

$$2 = 3 \quad 0.052 \times 3 / 2 = 0.078 \text{ mol}$$

12 The equation (balanced) is



Therefore the coefficient is 2

