Quiz 3.1 – Molar Mass

Name: *Key*
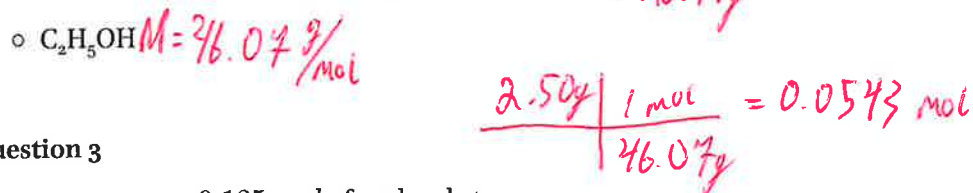
Question 1

Give the molar mass for the following substances:
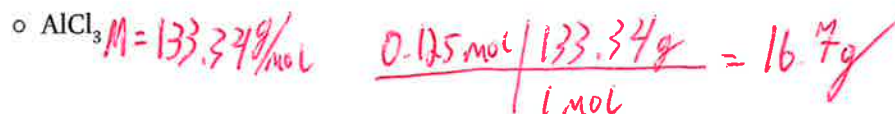
- $C_2H_4O_2$ 60.05 g/mol
- $Fe(NO_3)_2$ 179.85 g/mol

Question 2

How many moles are in 2.50 g of each substance:

- $NiSO_4 \cdot 2\,H_2O$ → $M = 190.79$ g/mol

$$\frac{2.50\,g \mid 1\,mol}{190.74\,g} = 0.0131\,mol$$

- C_2H_5OH $M = 46.07$ g/mol

$$\frac{2.50\,g \mid 1\,mol}{46.07\,g} = 0.0543\,mol$$

Question 3

How many g are in 0.125 mol of each substance:

- CH_2O $M = 30.03$ g/mol

$$\frac{0.125\,mol \mid 30.03\,g}{1\,mol} = 3.75\,g$$

- $AlCl_3$ $M = 133.34$ g/mol

$$\frac{0.125\,mol \mid 133.34\,g}{1\,mol} = 16.7\,g$$

Question 4

Three compounds share the empirical formula of CH_2O, and the molar masses listed below. Give the molecular formula for each compound $M = 30.03$ g/mol

- $M = 30.03 g/mol$ $\dfrac{}{30.03 \text{ g/mol}} = 1 \rightarrow CH_2O$

- $M = 60.05 g/mol$ $\dfrac{}{30.03 \text{ g/mol}} = 2 \rightarrow C_2H_4O_2$

- $M = 180.16 g/mol$ $\dfrac{}{30.03 \text{ g/mol}} = 6 \rightarrow C_6H_{12}O_6$