

- ii 1 solid barium carbonate dissolves
2 effervescence of colourless gas

b i $2 \times \frac{25}{1000} = 0.05 \text{ mol}$

ii $2 : 1$ $x = 0.025 \text{ mol}$
 $0.05 : x$

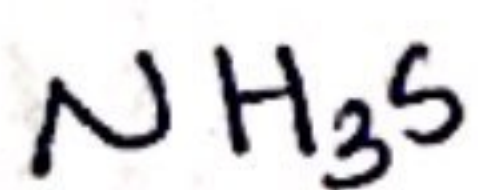
$0.025 \times 197.3 = 4.93 \text{ g}$

iii so that all of the acid is reacted.

iv filtration of reaction mixture. barium chloride solution is the filtrate.

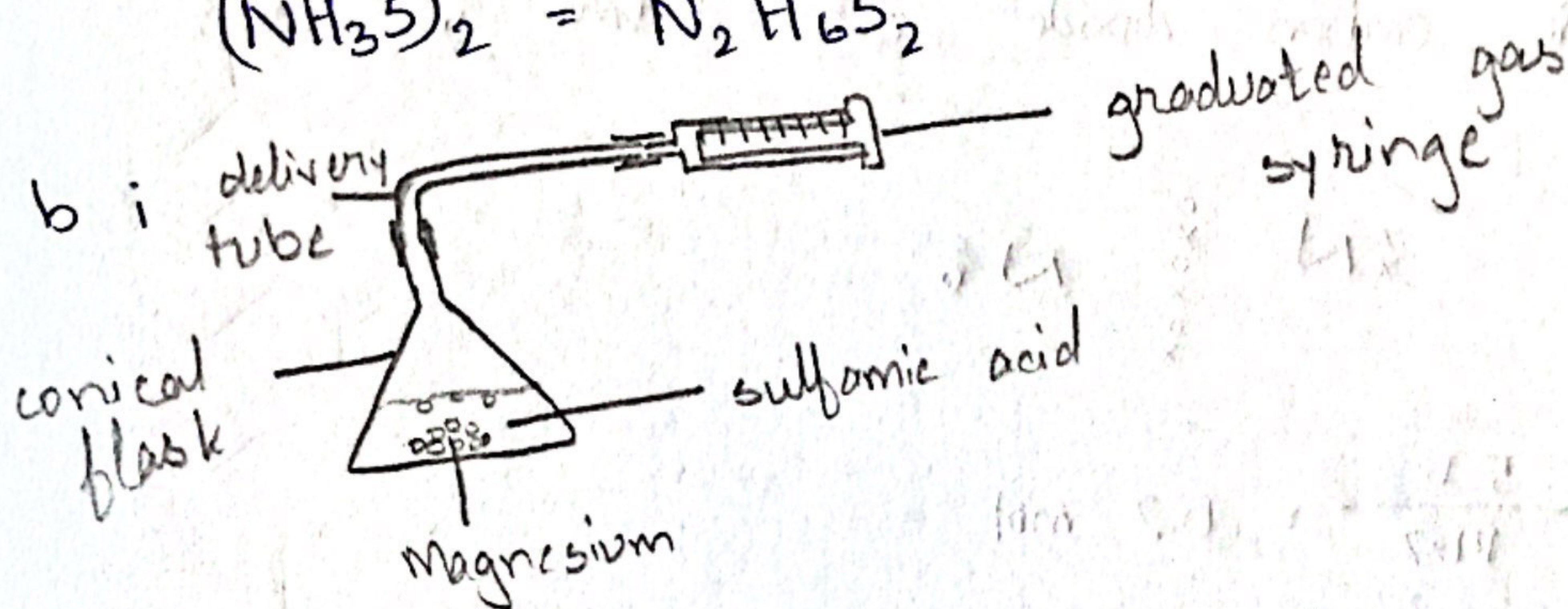
v Some crystals may be in beaker of original reaction, or in filter paper.

2	a	i	N	H	S
			14.42	3.09	33.06
			1.03	3.09	1.033125
			1	3	1



$$\text{ii } 14 + 3 + 32 = 49$$

$$\frac{97.1}{49} = 1.98 \approx 2$$

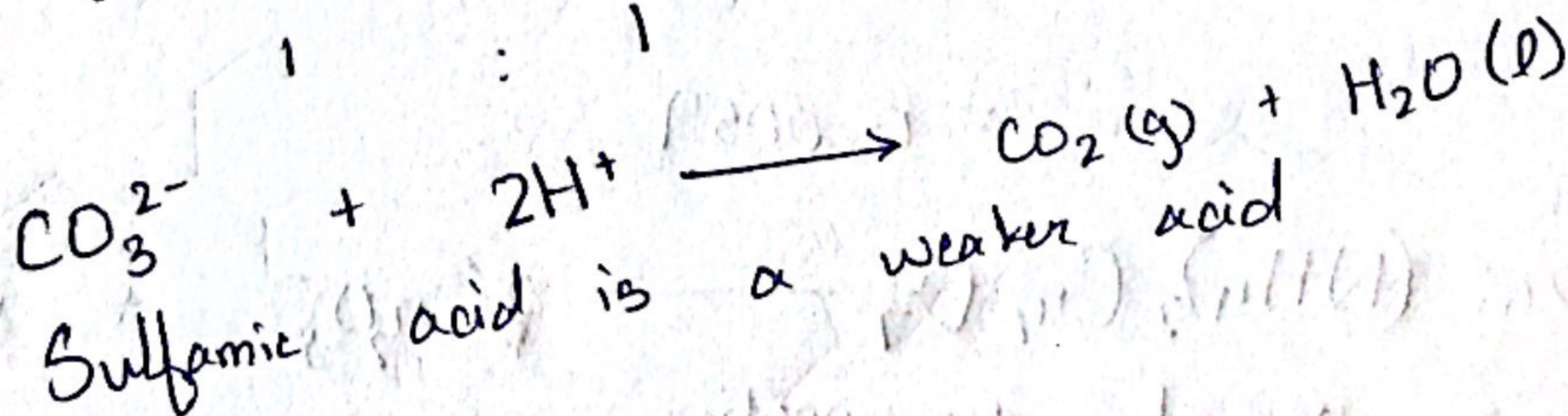


$$\text{ii } \text{mol} = \frac{66}{24,000} = 0.00275 \text{ mol}$$

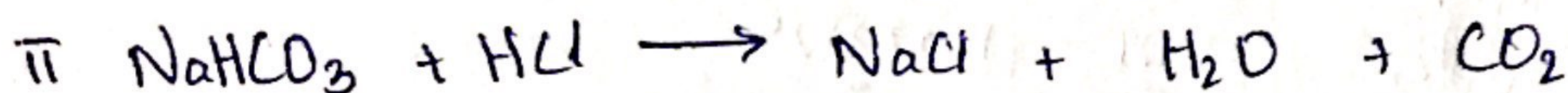
$$\text{iii } 0.00275 \text{ mol of } \text{H}_2 \rightarrow 2 \times 0.00275 \text{ mol of } \text{H}^+ = 5.5 \times 10^{-3} \text{ mol of } \text{H}^+$$

$$\text{mol of } \text{H}^+ : \text{mol of acid} = 5.5 \times 10^{-3} : 5.5 \times 10^{-3}$$

$$1 : 1$$



a i ~~2.43 mol~~ $\frac{58.4}{24000} = 0.00243 \text{ mol}$

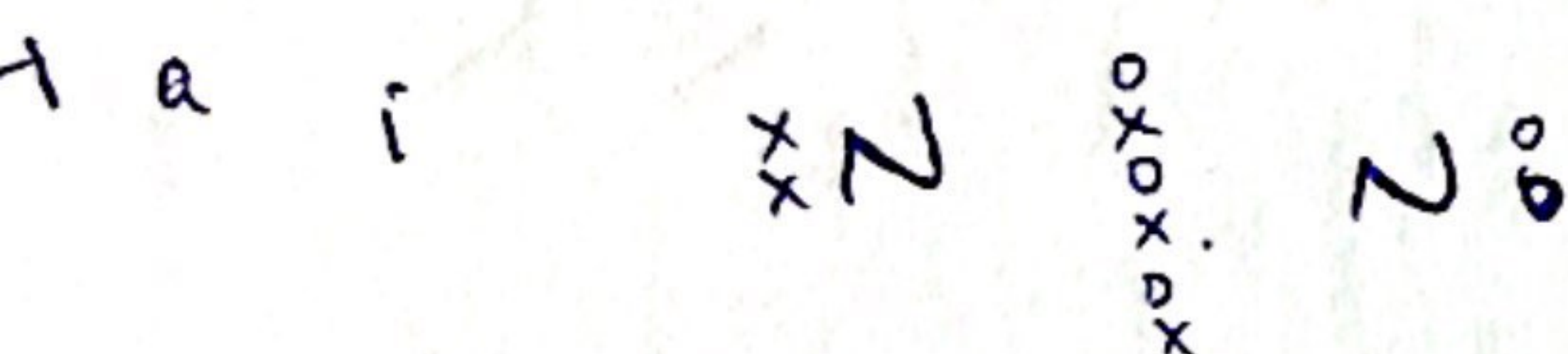


$0.00243 \times 84 = 0.204 \text{ g}$

iii $\frac{0.204 \text{ g}}{0.227 \text{ g}} \times 100 = 89.9\% = 90\%$

b iv $\frac{0.4}{58.4} \times 100 = 0.68\%$

ii carbon dioxide can dissolve in water



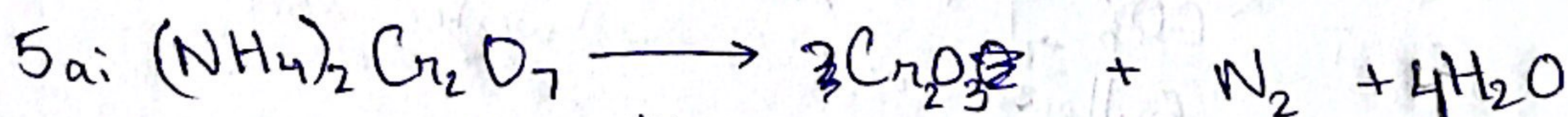
ii $\frac{5.6}{14 \times 2} = 0.2 \text{ mol}$

iii $0.2 \times 2 \times 6.02 \times 10^{23} = 2.408 \times 10^{23}$

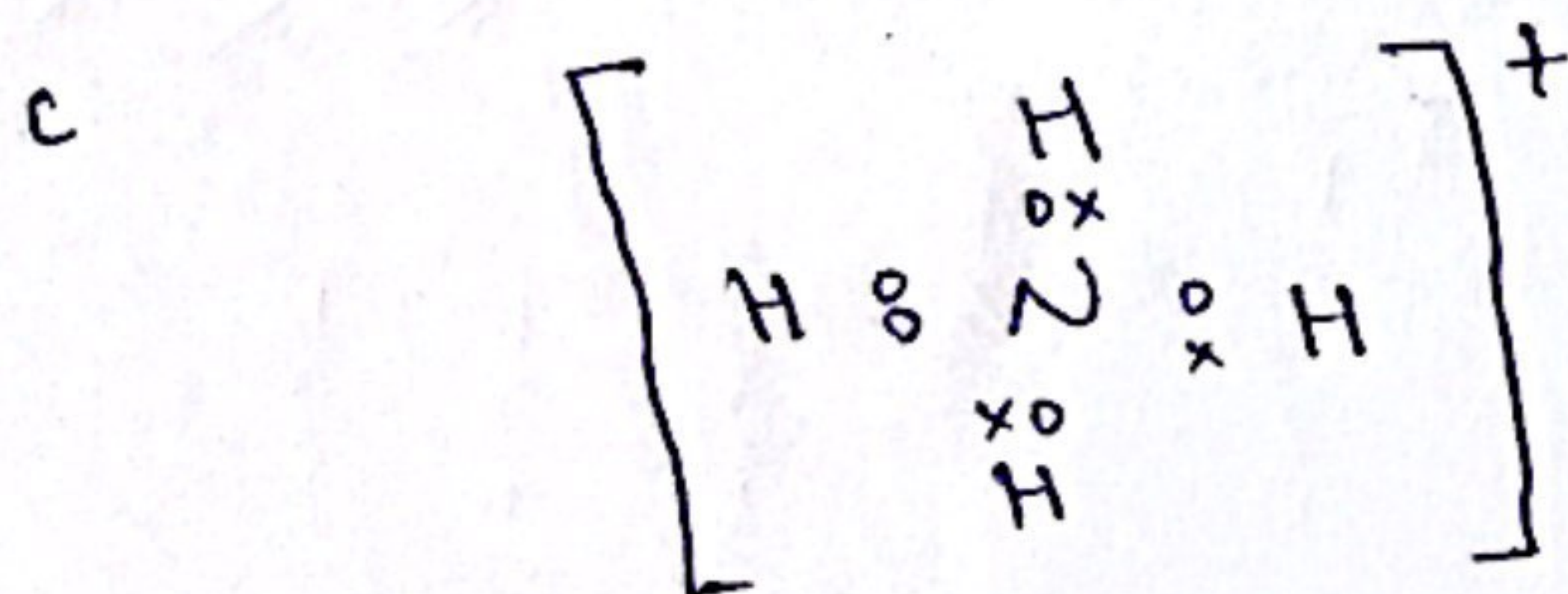
iii $PV = nRT$

$n = \frac{PV}{RT} = \frac{1.36 \times 10^5 \times 100 \times \frac{1}{1 \times 10^6}}{8.31 \times (25 + 273)}$

$= 0.0059$



ii thermal decomposition



It is a strong oxidizer, so can result in
alkanes burning

$$2.95 \times 1.1 = 3.245$$

$$\frac{3.245}{1000} = 3.245 \times 10^{-3} \text{ mol}$$

$$\frac{230}{1000} = 0.23 \times 10^{-3} \text{ mol}$$

