

V = 10 lit

$$\begin{array}{ccc} 2 & 4 & 2 \\ 0.2 - x & 0.4 - x & 2x \end{array}$$

$$K_c = \frac{(2x)^2}{(0.2-x)(0.4-x)} = 4$$

$$0.08 + x^2 - 0.6x = x^2$$

$$x = \frac{0.08}{0.6} = \frac{8}{60} = \frac{2}{15}$$

$$0.2 - \frac{2}{15}$$

$$\left(\frac{1}{15}\right)$$

$$\left(\frac{4}{15}\right)$$

$$\left(\frac{4}{15}\right)$$

$$V = 10 \text{ lit}$$



$$\begin{array}{ccc} 2 & 4 & 2 \\ 0.2 - x & 0.4 - x & 2x \end{array}$$

$$\frac{(2x)^2}{(0.2-x)(0.4-x)} = 2$$

$$2x^2 = 0.08 + x^2 - 0.6x$$

$$x^2 + 0.6x - 8 \times 10^{-2} = 0$$

$$x = \frac{-0.6 \pm \sqrt{36 \times 10^{-2} + 4 \times 8 \times 10^{-2}}}{2}$$

$$= \frac{-6 \times 10^{-1} + \sqrt{68} \times 10^{-1}}{2} = \frac{(8.25 - 6) \times 10^{-1}}{2}$$

$$x = \frac{1.25 \times 10^{-1}}{2}$$

Q.



$$K_c = 10^{-5} \text{ M}$$

$$\frac{10^{-5}}{0.1} = 10^{-4}$$

$V = 10 \text{ lit}$

1 mol
 $0.1 - x$

0
 x 0
 x

$$10^{-5} = \frac{x^2}{0.1 - x}$$

$$\frac{10^{-3}}{0.1} \times 100 = 1\%$$

$$x^2 + 10^{-5}x - 10^{-6} = 0$$

$$x = \frac{-10^{-5} + \sqrt{10^{-10} + 4 \times 10^{-6}}}{2} = \frac{-10^{-5} + 2 \times 10^{-3}}{2}$$

$$= \frac{-10^{-5} + 200 \times 10^{-5}}{2}$$

$$= \frac{199 \times 10^{-5}}{2} = 99.5 \times 10^{-5} = 0.995 \times 10^{-3} \approx 10^{-3}$$

$$10^{-5} = \frac{x^2}{0.1 - x} \quad 0.1 \quad 10^{-3}$$

$$x^2 = 0.1 \times 10^{-5} = 10^{-6}$$

$$x = 10^{-3}$$

if $\frac{K_c}{[\text{initial conc}]} \leq 10^{-3}$
then x can be neglected w.r.t C

Q.

1 mol

0

0

 10^{-5}

0

0

 $10^{-5} - x$ x x

$$10^{-5} = \frac{x^2}{10^{-5} - x}$$

$$10^{-5} = \frac{x^2}{10^{-5} - x}$$

~~$$x = 10^{-5}$$~~

$$x^2 + 10^{-5}x - 10^{-10} = 0$$

$$x = \frac{-10^{-5} \pm \sqrt{10^{-10} + 4 \times 10^{-10}}}{2}$$

$$x = \frac{\sqrt{5} - 1}{2} \times 10^{-5} = 0.62 \times 10^{-5}$$

$$\sqrt{5} = 2.23$$

$$\approx 2.24$$

$$\frac{K_c}{C} = \frac{10^{-5}}{10^{-5}} = 1 > 10^{-3}$$

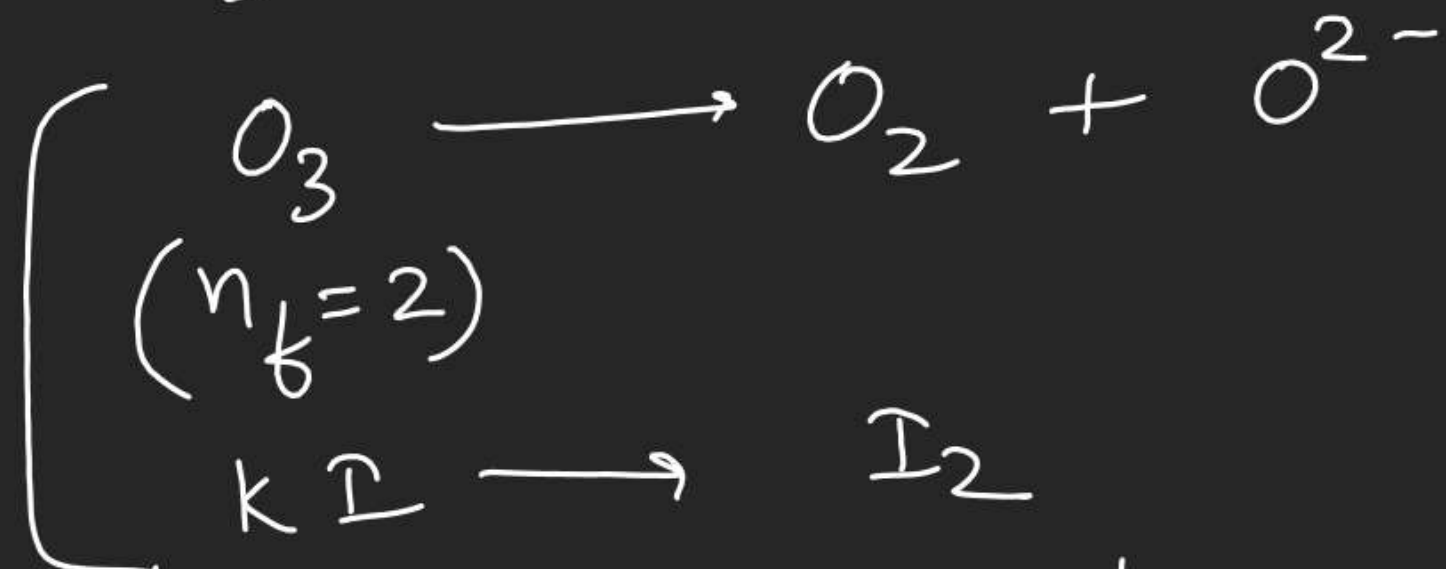
eg/b^m

$$0 - I - 15$$

$$5 - I - 10$$

$$\begin{array}{r|l}
 & 8.24 \\
 \hline
 8 & 68 \\
 8 & 64 \\
 \hline
 162 & 400 \\
 2 & 324 \\
 \hline
 1644 & 7600 \\
 4 & 6576 \\
 \hline
 1648 &
 \end{array}$$

(8)

lit at STP

$$eq\ of\ O_3 = eq\ of\ hyp$$

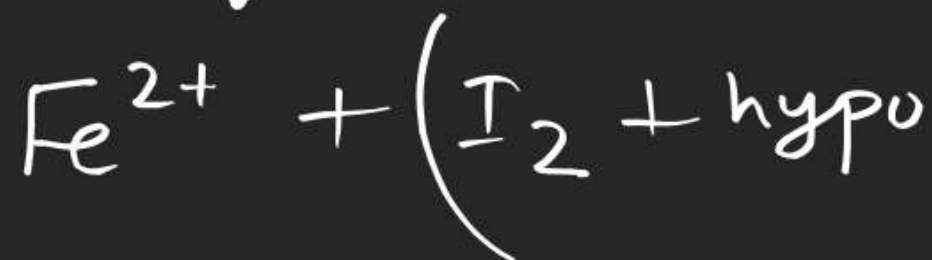
$$\underline{n_{O_3}} \times 2 = \frac{40 \times 1}{1000} \times 1$$

$$n_{O_2} = 2 \times 10^{-3}$$

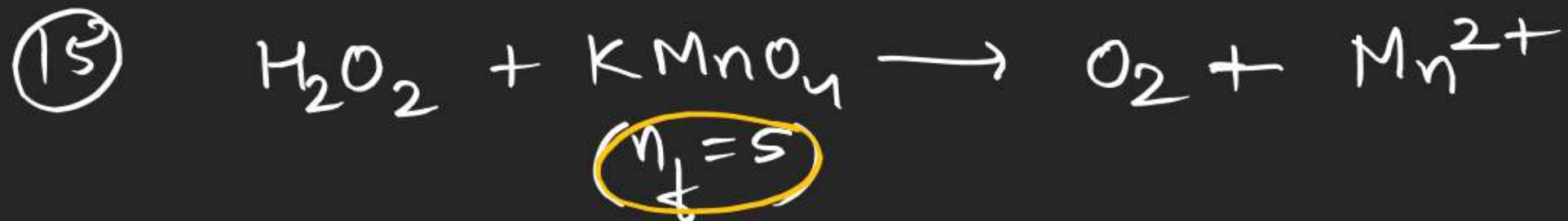
(13)



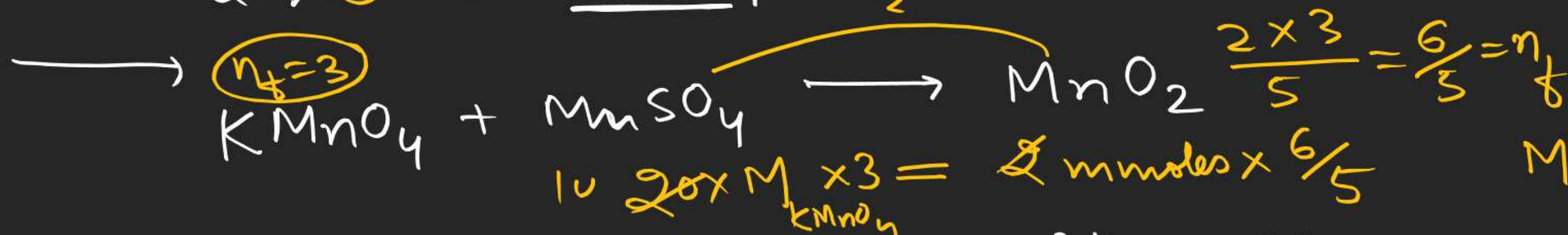
KI



$$\frac{20}{150} (2x + 2y) = 11 \times 0.5 \times 1$$

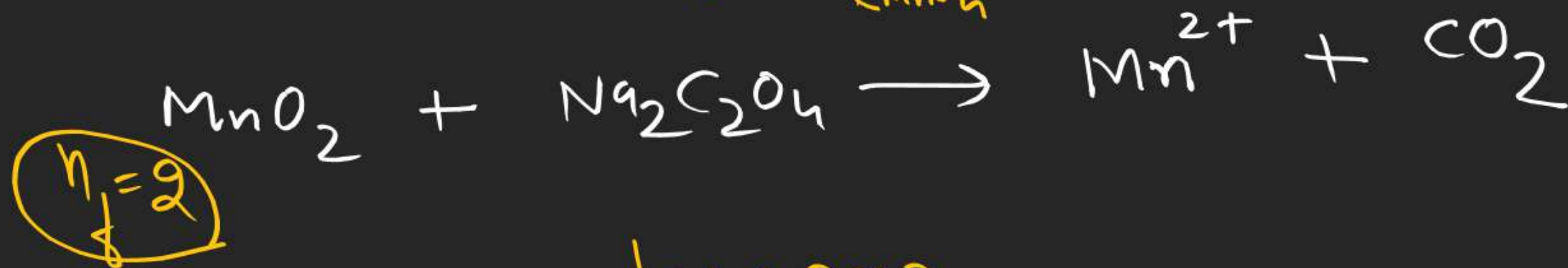


$$20 \times M \times 2 = \frac{M_{\text{KMnO}_4} \times 20 \times 5}{2}$$



$$M_{\text{KMnO}_4} = \frac{1}{25}$$

10
13
15



4 meq
2 mmol

$$10 \times 0.2 \times 2 = 4 \text{ meq}$$