12 PM - 1 PM

3rd Yr

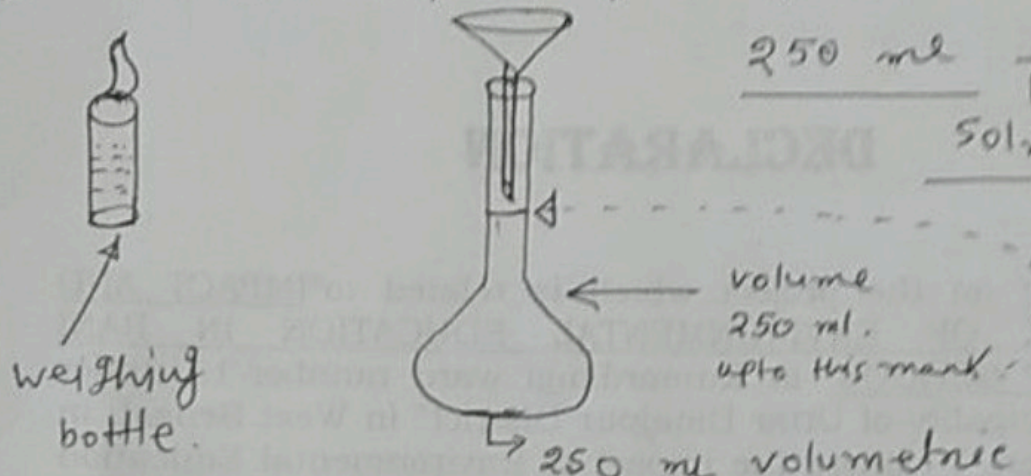
21 - 12/05/2021

class code:- SGIIIP2

Practical class

1) Calculation of strength of soln.

250 ml $\frac{N}{10}$ $K_2Cr_2O_7$ Soln Prep^n



Initial weight of weighing bottle + $K_2Cr_2O_7$ W_1 g	Final weight of weighing bottle + $K_2Cr_2O_7$ W_2 g	wt. of $K_2Cr_2O_7$ taken $(W_1 - W_2)$ g	Strength of soln $\frac{W_1 - W_2}{1.225}\left(\frac{N}{10}\right)$
25.3752 gm = 20g + 5g + 200mg + 100mg + 75.2mg (chain)	24.1510 gm = 20 gm + 2gm + 2gm + 100 mg + 51 mg (chain)	25.3752 − 24.1510 = 1.2242 g	$\frac{1.2242}{1.225}\left(\frac{N}{10}\right)$ = 0.999 $\left(\frac{N}{10}\right)$

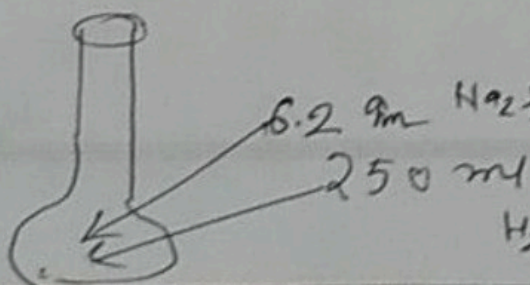
25.3752
1.2250
24.1502 gm

250 ml $\left(\frac{N}{10}\right)$ $Na_2S_2O_3.5H_2O$ soln.

1000 ml 1(N) ---- 248 gm

250 ml $\frac{N}{10}$ ---- $\frac{248 \times 250}{1000 \times 10}$;;

= 6.2 gm.



× 250 ml ($\frac{N}{10}$) $KMnO_4$ soln.

wt = ?

1000 ml 1(N) ---- 31.8 gm

250 " $\frac{N}{10}$ ---- $\frac{31.8 \times 250}{1000 \times 10}$ "

$= 0.795$ "

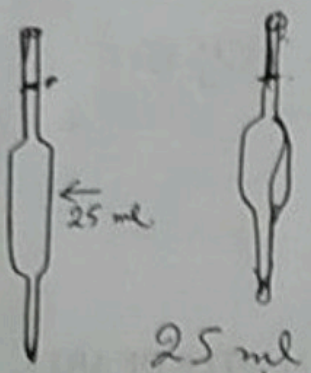
oxalic acid — soln
$K_2Cr_2O_7$ — soln
} Primary standard soln

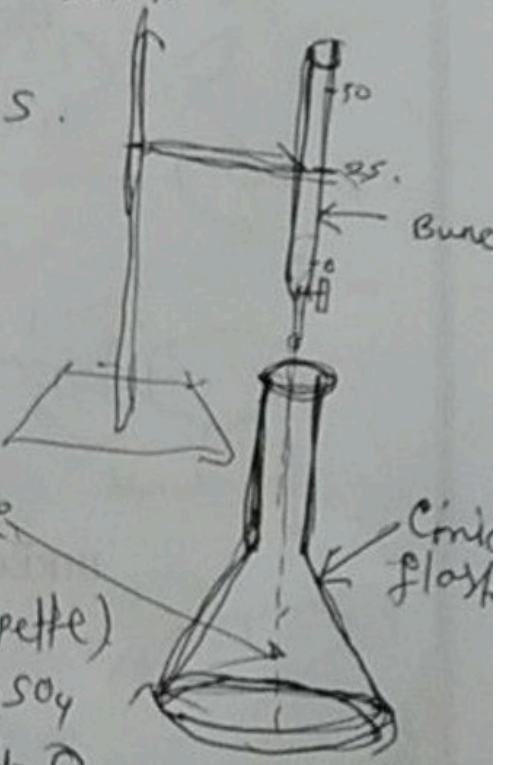
$KMnO_4$ soln
$Na_2S_2O_3 \cdot 5H_2O$
} secondary standard soln

* standardisation of secondary standard solution by Primary standard soln.

eg. standardisation of $KMnO_4$ soln by standard oxalic acid soln.

→ Titration Process.





25 ml oxalic acid ↓ (by Pipette)

5 ml Conc. H_2SO_4 + 120 ml H_2O

heat → 60°C - 70°C

$COO^{\ominus}$ | + $MnO_4^{\ominus}$ → CO_2 + Mn^{2+}

$COO^{\ominus}$

(redox rexn)

$$MnO_4^{\ominus} + 8H^+ + 5e \longrightarrow Mn^{2+} + 4H_2O \quad \text{(Reduction)} \times 2$$

$$\begin{matrix} COO^{\ominus} \\ | \\ COO^{\ominus} \end{matrix} \longrightarrow 2CO_2 + 2e \quad \times 5$$

$$2MnO_4^{\ominus} + 16H^+ + \cancel{10e} + \begin{matrix} COO^{\ominus} \\ | \\ COO^{\ominus} \end{matrix} \longrightarrow 2Mn^{2+} + 8H_2O + 10CO_2 + \cancel{10e}$$

$$\Rightarrow 2MnO_4^{\ominus} + 5\begin{matrix} COO^{\ominus} \\ | \\ COO^{\ominus} \end{matrix} + 16H^+ \longrightarrow 2Mn^{2+} + 8H_2O + 10CO_2$$

No. of obs.	Vol of oxalic acid soln (V_1)	Strength of oxalic acid soln (S_1)	(Burette reading) Vol of $KMnO_4$. Initial vol	Final vol.	Diff.	Mean vol (V_2)	Strength of $KMnO_4$ soln (S_2)
1.	25 ml	0.994 $(\frac{N}{10})$	0 ml	25.3 ml	25.3 ml		$V_1S_1 = V_2S_2$
2.	25 ml	"	0 ml	25.2 ml	25.2 ml	25.2 ml	$S_2 = \frac{V_1 \times S_1}{V_2}$
3.	25 ml	"	0 ml	25.1 ml	25.1 "		$= \frac{25 \times 0.0994}{25.2}$ $= 0.0986$ (N)

∴ Prep^n of 250 ml $(\frac{N}{10})$ Mohr's salt soln

1000 ml 1 (N) - Soln Req - 392 gm.

1 " 1 (N) - - - - $\frac{392}{1000}$ "

250 m $\frac{N}{10}$ - - - - - $\frac{392 \times 250}{1000 \times 10}$ "

$= 9.8$ "

∴ 250 ml $\frac{N}{10}$ $CuSO_4.5H_2O \longrightarrow$?? gm

250 ml $\frac{N}{10}$ $FeCl_3 \longrightarrow$?? gm