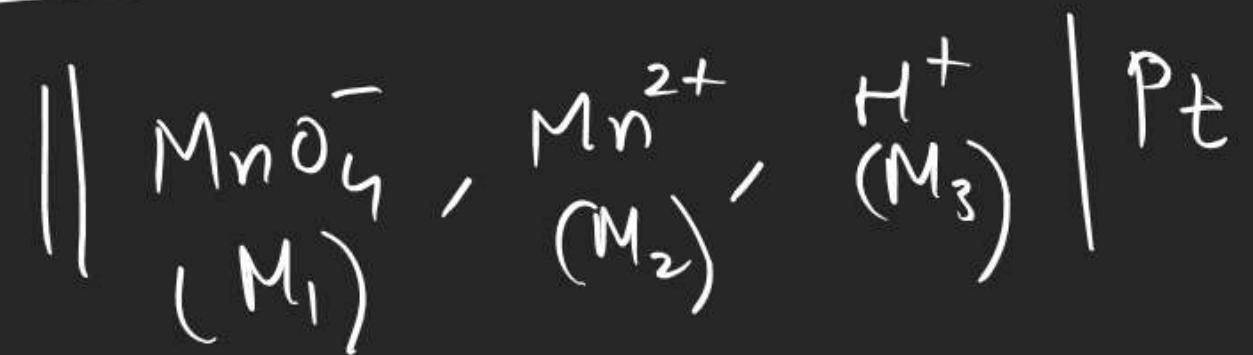
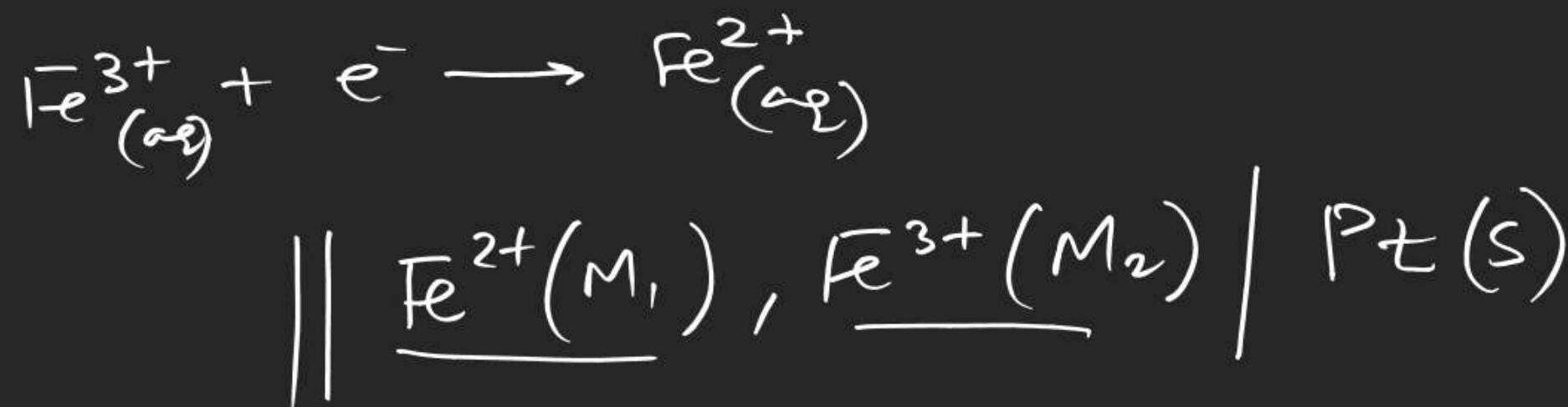
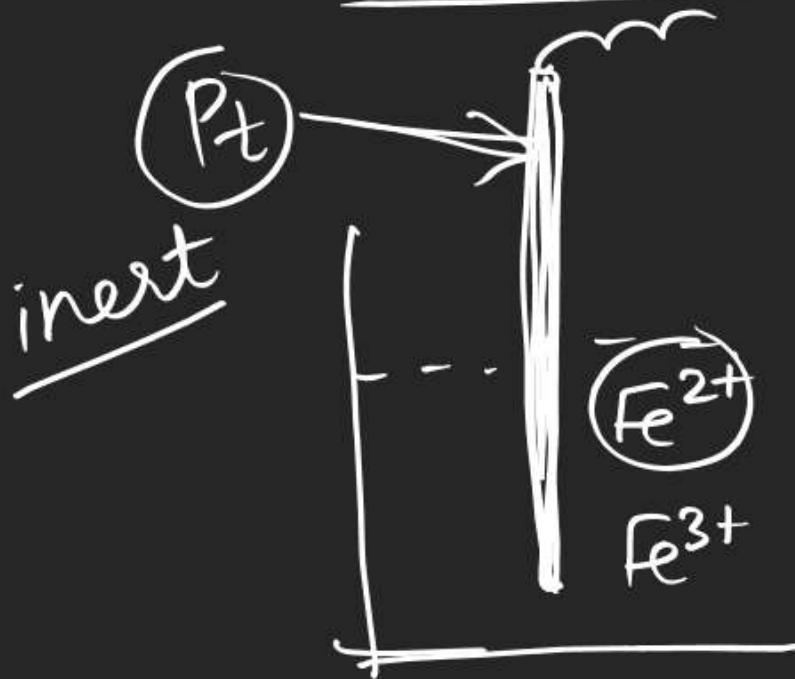
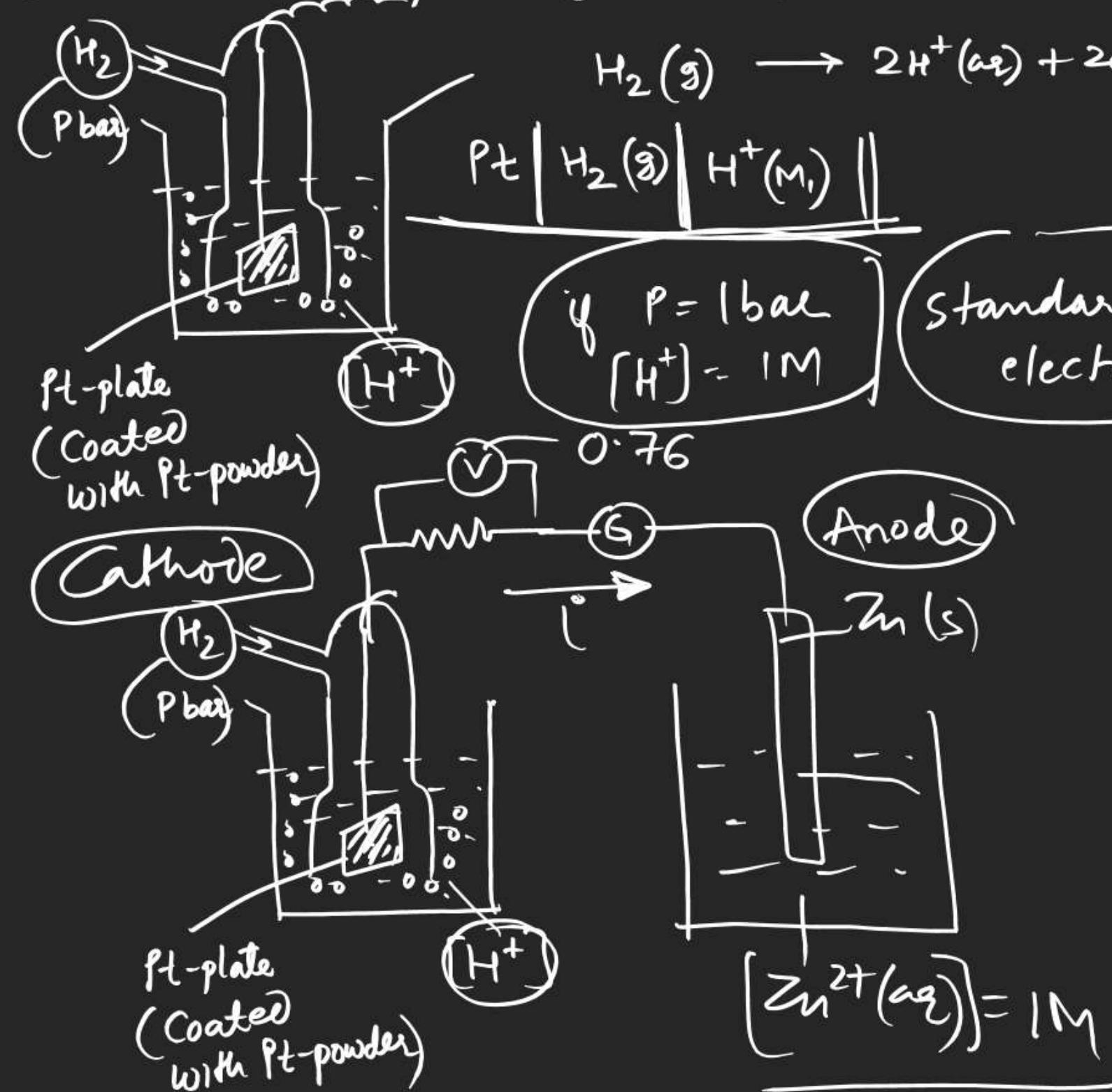


(11)

Oxidⁿ- Redⁿ half cell (electrode)

Gaseous half cell (electrode)



$$E^\circ_{\text{cell}} = E^\circ_{\text{Oxid}} + E^\circ_{\text{Red}}$$

$$0.76 = E^\circ_{\text{Oxid}} + E^\circ_{\cancel{\text{Red}}}$$

$$0.76 = E^\circ_{Zn/Zn^{2+}}$$

Nishant Vindal

Variation of electrode potential with concentration

(Nernst eqn) :-

$$\Delta G = \Delta G^\circ + RT \ln Q$$

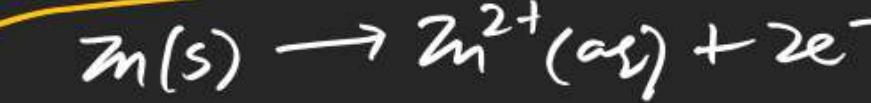
$$-nFE = -nFE^\circ + 2.303RT \log Q$$

$$E = E^\circ - \frac{2.303RT}{nF} \log Q$$

If $T = 298$

$$E = E^\circ - \frac{0.059}{n} \log Q$$

$$E_{\text{Cell}} = E_{\text{cell}}^\circ - \frac{0.059}{2} \log \frac{[Zn^{2+}]}{[Cu^{2+}]}$$



$$E_{\text{Oxid}} = E_{\text{Oxid}}^\circ - \frac{0.059}{2} \log [Zn^{2+}]$$



$$E_{H^+/H_2} = E_{H^+/H_2}^\circ - \frac{0.059}{2} \log \frac{P_{H_2}}{[H^+]^2}$$



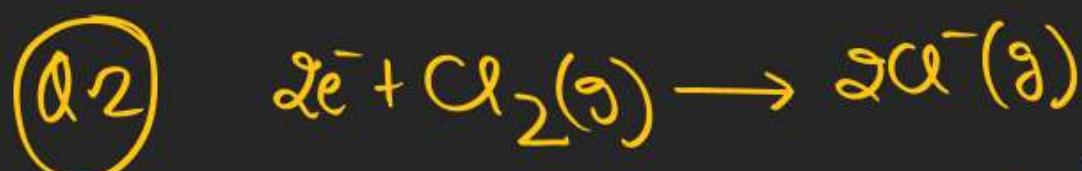
Q.1 find $E_{Zn/Zn^{2+}(0.1M)}^{\circ} = ?$ $E_{Zn/Zn^{2+}}^{\circ} = 0.76 \text{ volt}$

0.79
0.82

Q.2 find $E_{Cl_2(10\text{ atm})/Cl^{-}(0.1M)}^{\circ}$ $E_{Cl_2/Cl^{-}}^{\circ} = 1.36 \text{ volt}$ 1.45

Q.3 find $E_{Fe^{3+}(0.1M)/Fe^{2+}(0.01M)}^{\circ}$ $E_{Fe^{2+}/Fe^{3+}}^{\circ} = 0.5 \text{ volt}$ -0.44

Q.1 $E_{Zn/Zn^{2+}} = 0.76 - \frac{0.06}{2} \log 10^{-1}$
 $= 0.79$



$$E = 1.36 - \frac{0.06}{2} \log \frac{(Cl)^2}{P_{Cl_2}} = 1.36 - 0.03 \log \frac{10^{-2}}{10} \\ = 1.36 + 0.03 \times 3 = 1.45$$



$$E_{Red^n} = -0.5 - \frac{0.06}{1} \log \frac{10^{-2}}{10^{-1}} \\ = -0.5 + 0.06 \\ = -0.44$$

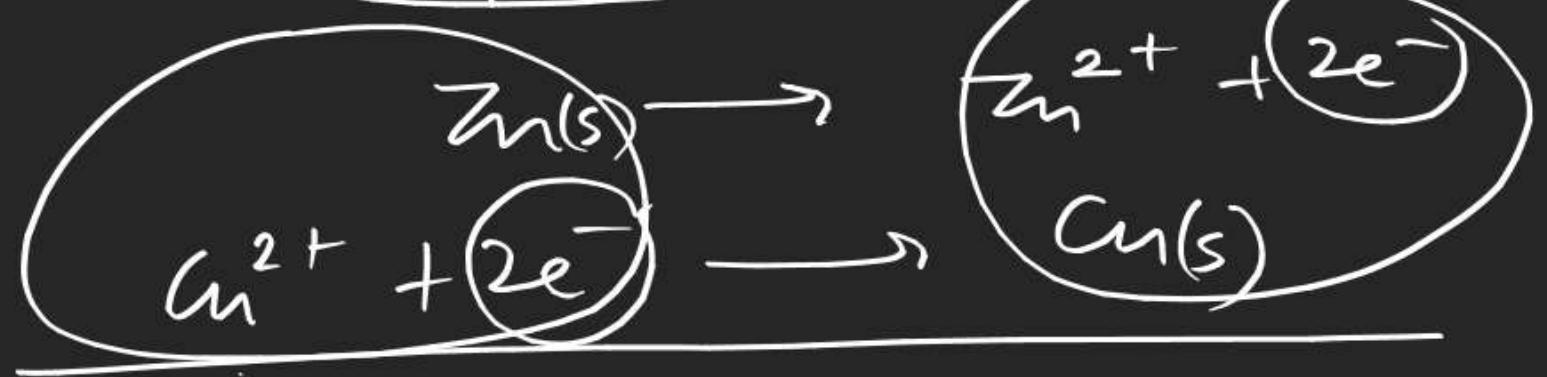
Q



$$E_{\text{Zn}}^{\circ} / \text{Zn}^{2+} = 0.76$$

$$E_{\text{Cu}^{2+}/\text{Cu}}^{\circ} = 0.34$$

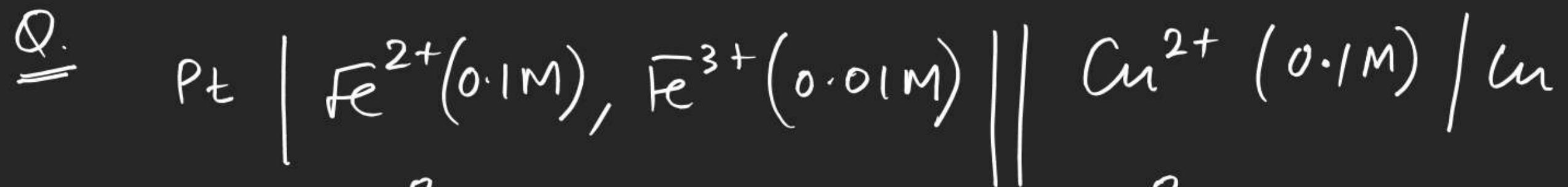
$$E_{\text{cell}} = ?$$



$$E_{\text{cell}} = 1.1 - \frac{0.06}{2} \log \frac{0.1}{0.01}$$

$$= 1.1 - 0.03 \log 10$$

$$= 1.07$$



$$E^{\circ}_{\text{Fe}^{2+}/\text{Fe}^{3+}} = 0.5 \text{ volt}$$

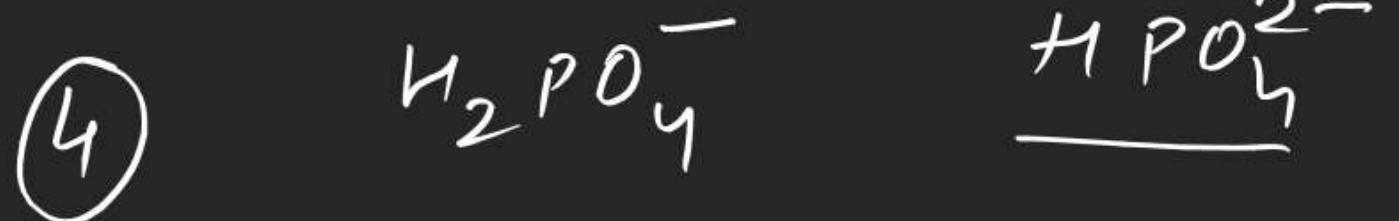
$$E^{\circ}_{\text{Cu}^{2+}/\text{Cu}} = 0.34 \text{ volt}$$

0-1

16-39

electrochemistry

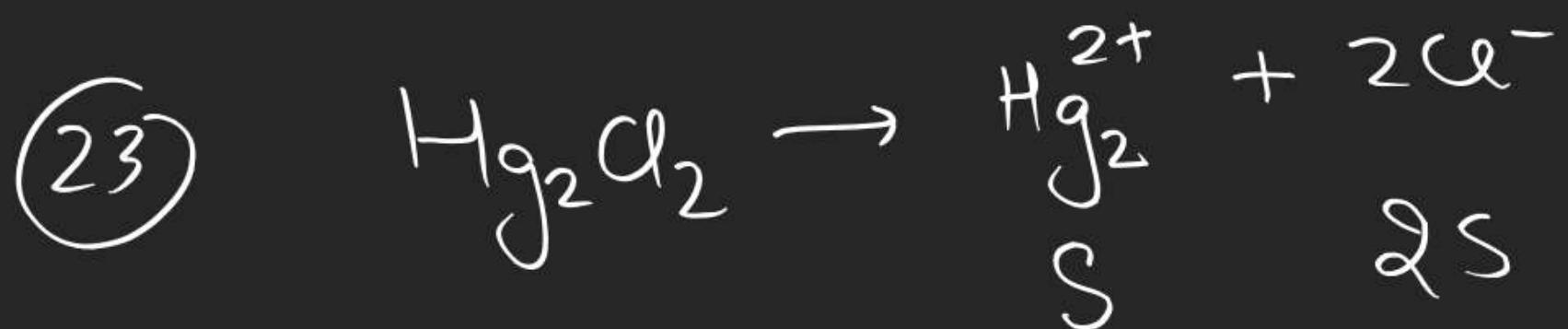
J-Mains Ionic



⑦ ⑬ $[Ag^+] = 0.05$

$$[KBr^-] = ?$$

$$\underline{[Ag^+]} \underline{[Br^-]} = 5 \times 10^{-13}$$



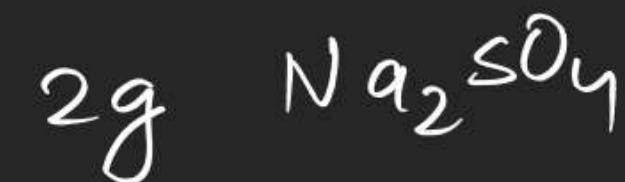
JEE - Mains

Ionic

$$\left(\frac{K_{sp}}{10^8} \right)^{1/5}$$

$$\underline{K_{sp} = 4S^3}$$

36



$$\gamma_{\text{Na}_2\text{SO}_4} = 0.014$$

Ca(OH)₂

0.1

0.086

0.014

6

0.014

$$= 0.014 \times 136$$

$$= 1.9$$

33

$$\frac{0.1}{278} = \text{moles} = \eta$$

$$S = \frac{n}{V}$$

$$k_{sp} = 4S^3 = 4 \left(\frac{n}{V}\right)^3$$

(35)



4

(32)

M₃work

Electro O-I

$$\Delta G^\circ = -nFE^\circ$$

$$\Delta G^\circ = \underline{-2 \times 96500 \times 0.6}$$



(14)

$$0.4 + 0.8 = 1.2 - \epsilon^o$$

$$\Delta G^o = -n F \epsilon^o$$

$$= -2 \times 96500 \times 1.2$$

$$= -231.6 \text{~}$$

$$= \underline{-231.6}$$