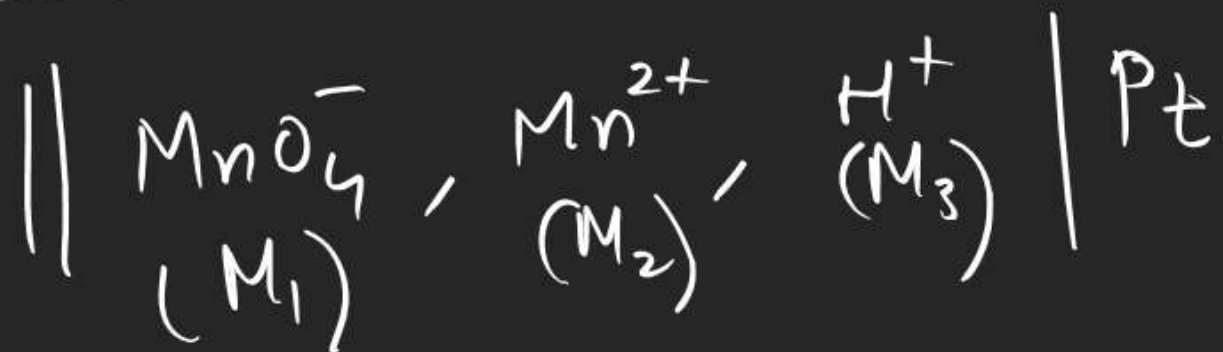
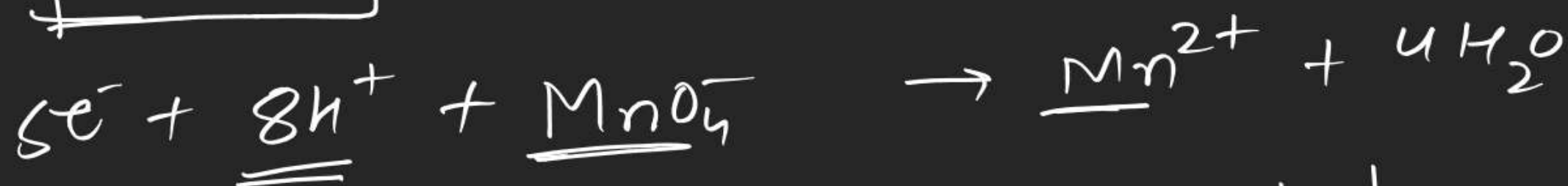
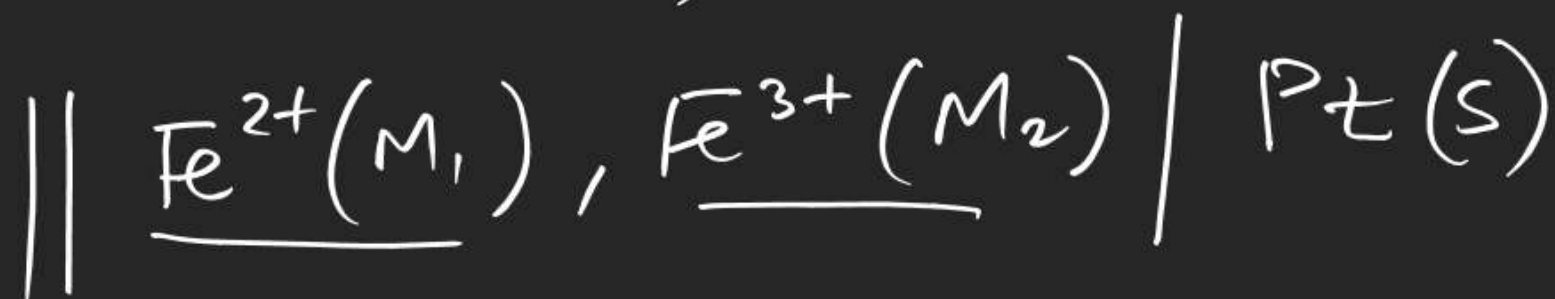
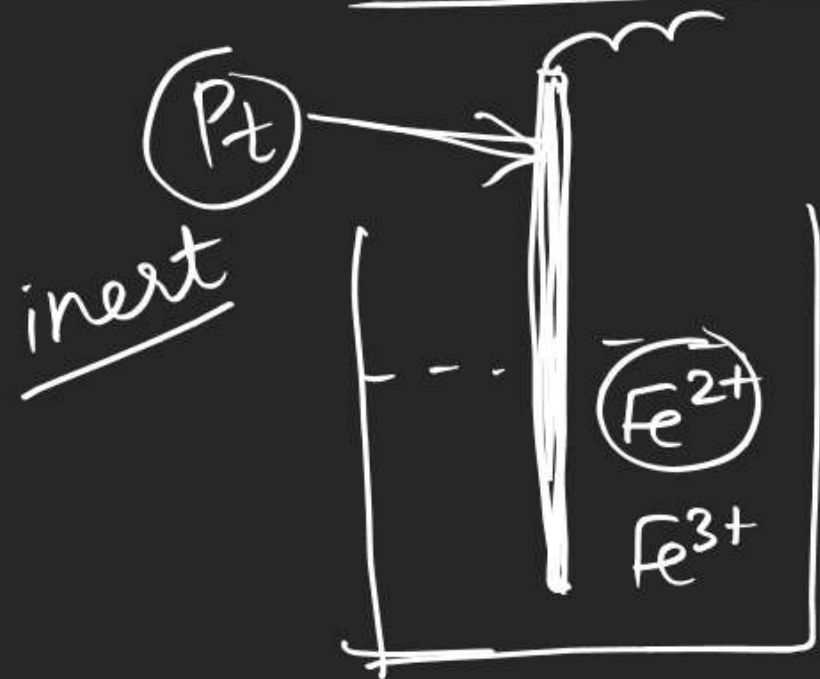
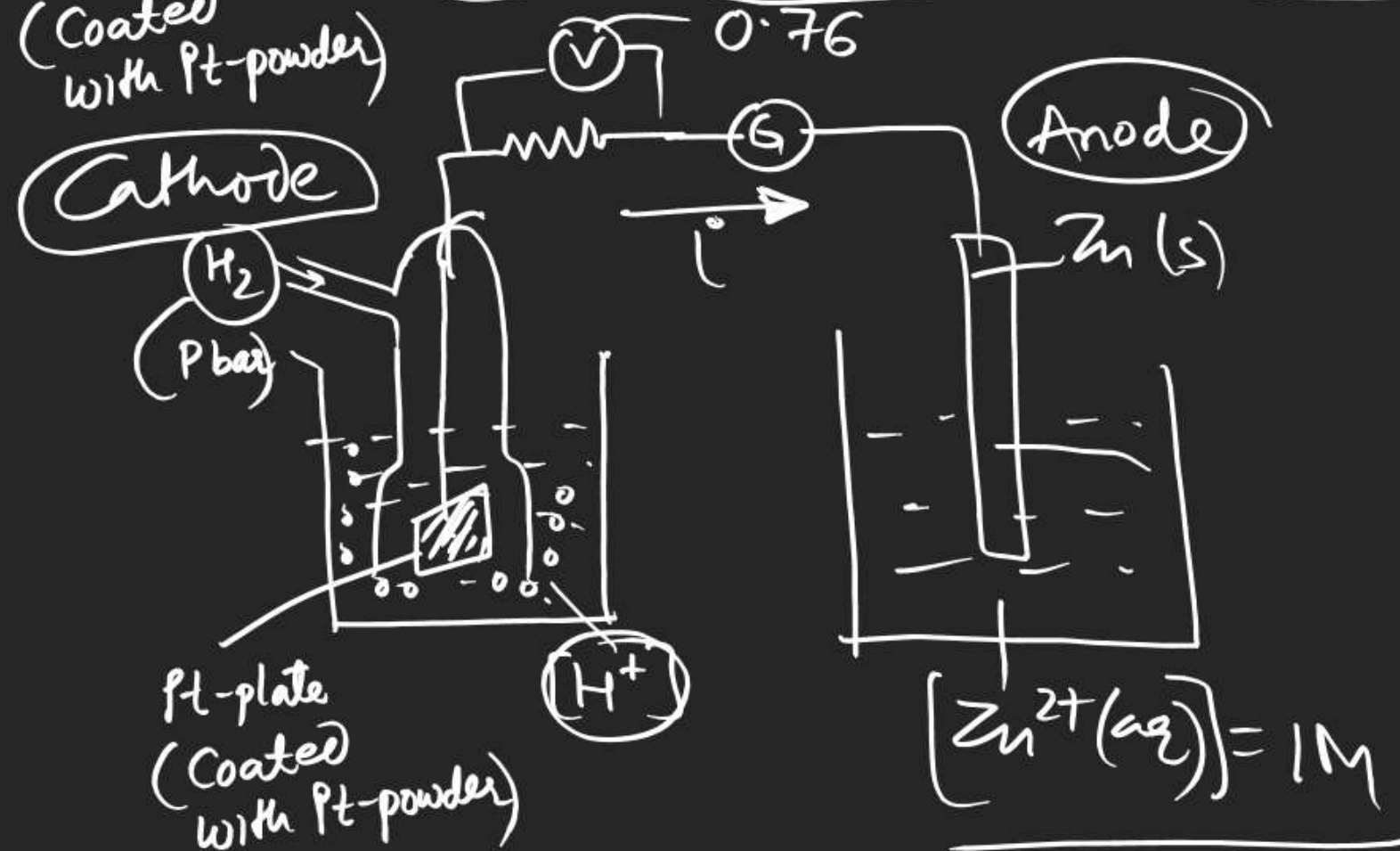
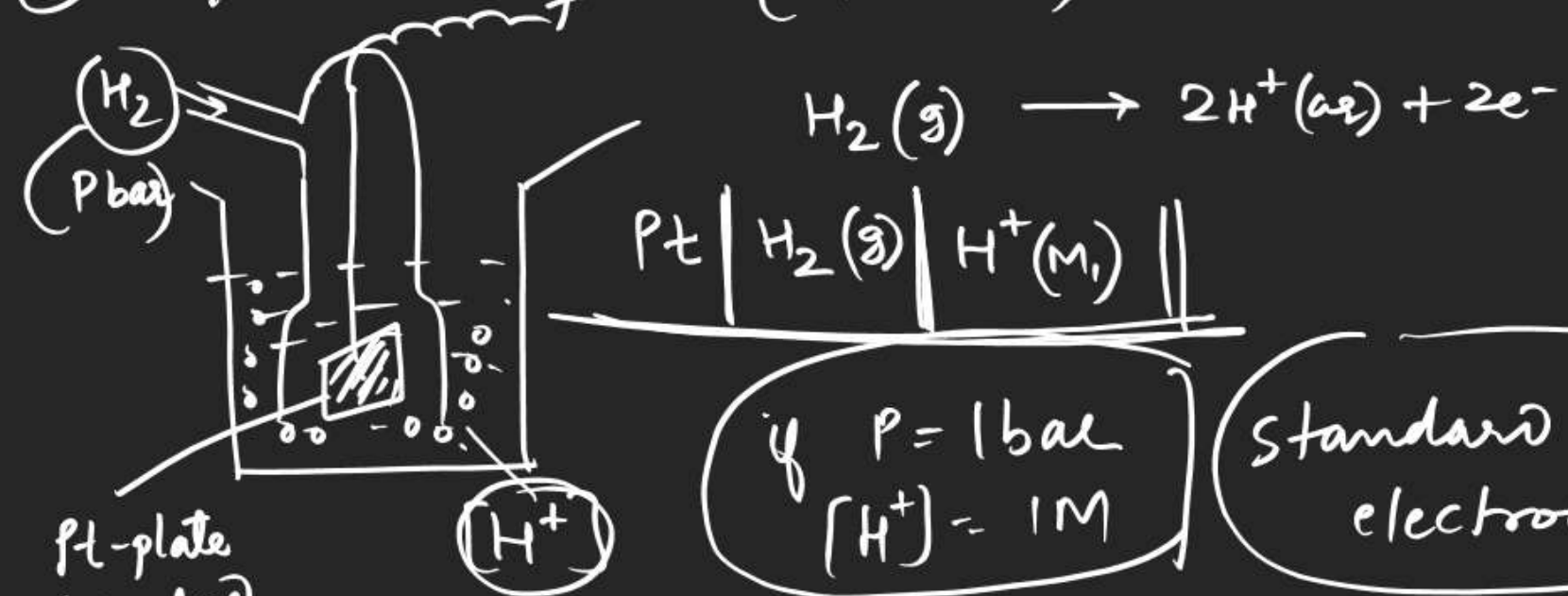


(ii) oxidⁿ - redⁿ half cell (electrode)



(III) Gaseous half cell (electrode)



$$E_{cell}^{\circ} = E_{oxid}^{\circ} + E_{red}^{\circ}$$

$$0.76 = E_{oxid}^{\circ} + E_{red}^{\circ}$$

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

Variation of electrode potential with concentration
(Nernst eqⁿ): \rightarrow

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

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

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

If $T = 298$

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

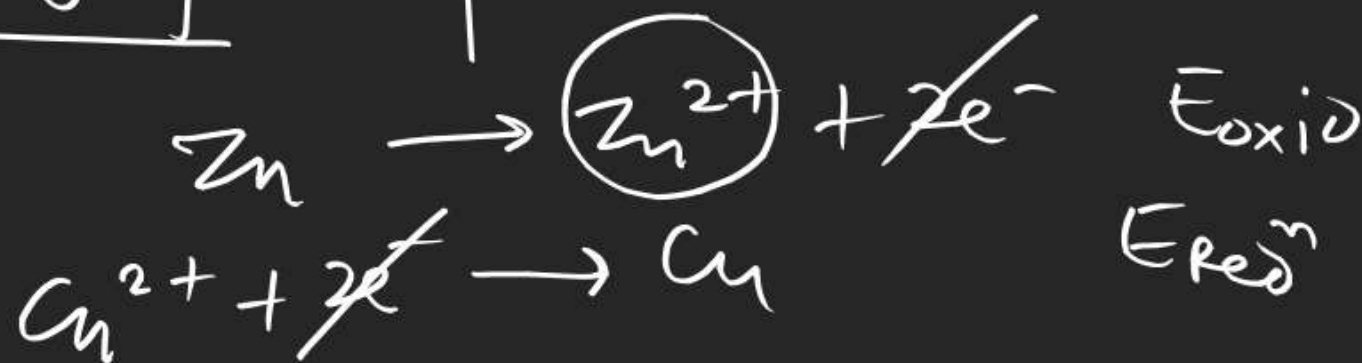
$$E_{\text{cell}} = E_{\text{cell}}^\circ - \frac{0.059}{2} \log \frac{[Zn^{2+}]}{[Cu^{2+}]}$$



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



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

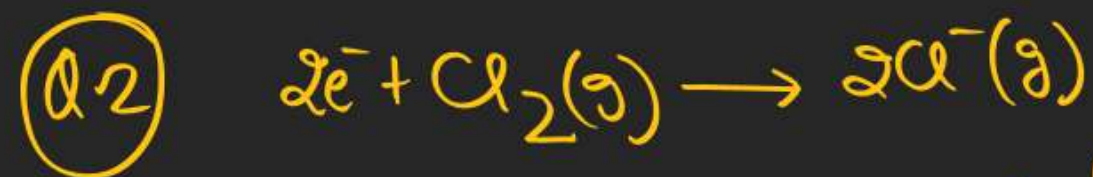


Q.1 find $E_{Zn/Zn^{2+}(0.1M)} = ?$ $E^{\circ}_{Zn/Zn^{2+}} = 0.76 \text{ volt}$ $\frac{0.79}{0.82}$

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

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

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



$$E = 1.36 - \frac{0.06}{2} \log \frac{[Cl^{-}]^2}{P_{Cl_2}} = 1.36 - 0.03 \log \frac{10^{-2}}{10}$$

$$= 1.36 + 0.03 \times 3 = 1.45$$



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

$$= -0.5 + 0.06$$

$$= -0.44$$

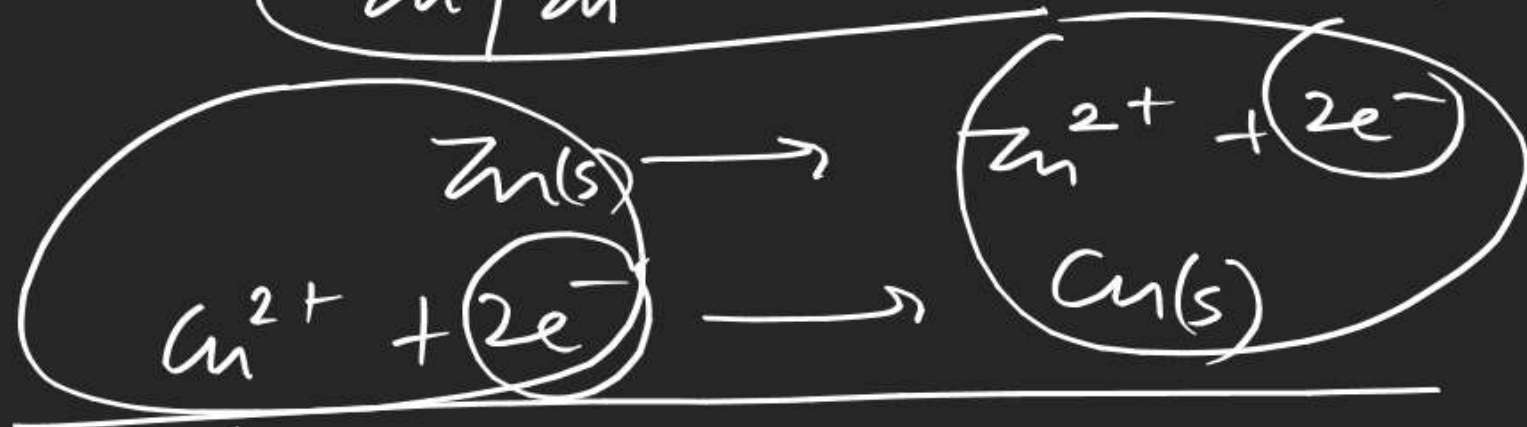
Q



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

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

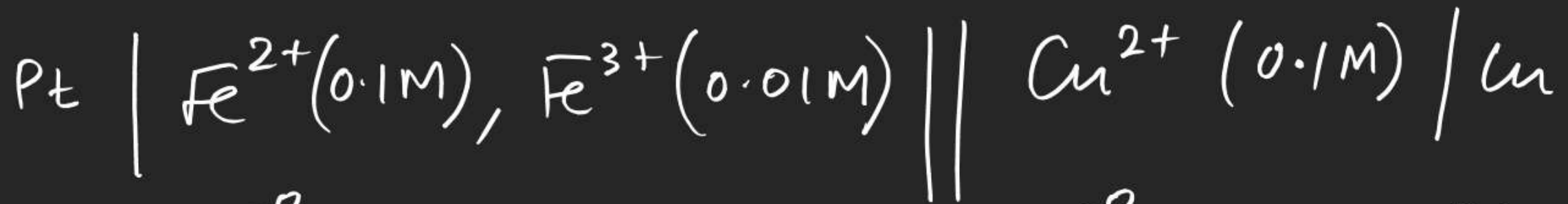
$$E_{\text{cell}} = ?$$



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

$$= 1.1 - 0.03 \log 10$$

$$= \underline{1.07}$$

Q.

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

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

?

0-1

16-39

electrochemistry

④



17

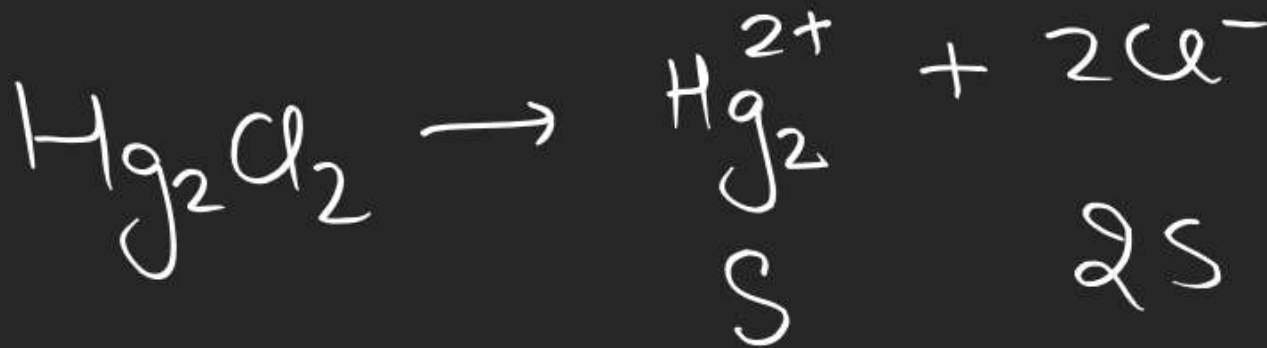
13

$$[Ag^+] = 0.05$$

$$[KBr] = ?$$

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

23



$$\underline{K_{sp} = 4 \text{ s}^3}$$

JEE - Mains

Ionic

$$\left(\frac{K_{sp}}{108} \right)^{1/5}$$

(36)

2g Na_2SO_4

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



0.1

0.086



0.014

0



0.014

$$= 0.014 \times 136$$

$$= 1.9$$

(38)

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

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

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

35



32



Electro 0-1

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

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



(14)

$$0.4 + 0.8 = 1.2 = E^{\circ}$$

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

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

$$= -231600$$

$$= \underline{\underline{-231.6}}$$