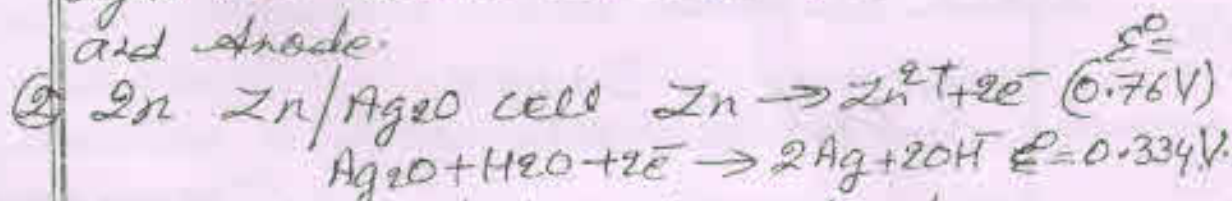


# HOLIDAY ASSIGNMENT.

## Electrochemistry XII

1. What is a fuel cell? Draw labelled diagram and write reactions at cathode and anode.

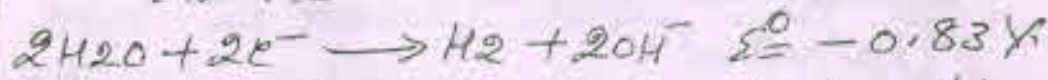
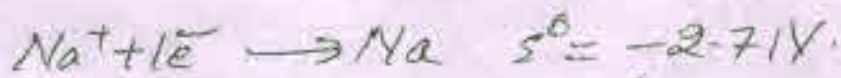


3. What is (a) oxidised (b) reduced.

(ii) Find  $E^\circ_{cell}$  and  $\Delta G$  in joules

4. Calculate the electrode potential of a copper wire dipped in 0.1M CuSO<sub>4</sub> solution at 25°C. Standard electrode potential of copper is 0.34V.

5. Following two reactions can occur at cathode during electrolysis of aq. NaCl



Which reaction takes place preferably and why?

6. Define standard hydrogen electrode

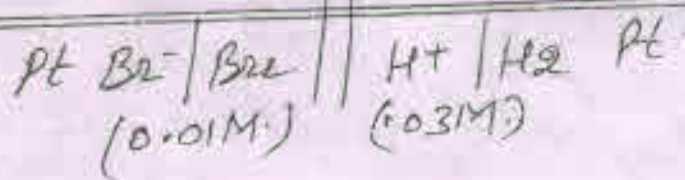
7. How does molar conductance of a strong and weak electrolyte vary on dilution and why?

8. How many coulombs will be required to discharge half mole of  $Al^{3+}$  ions.

9. Can a Nickel spatula be used to stir solution of copper sulphate.



10. Write Nernst equation and find emf of the following cell at 25°C.

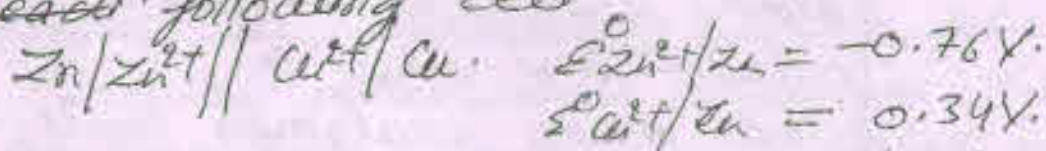


$$E^\circ_{\text{Br}_2/\text{Br}^-} = -1.08 \text{ V}$$

10. Calculate the pH of the following half cell



11. Define molar conductivity and write its units
12. What will happen to the voltage, if salt bridge is removed between the two half cells?
13. What is the effect of conc. on electrode potential?
14. Why rusting is faster in saline water?
15. Why galvanization is better than tinning to prevent iron from rusting?
16. Calculate free energy change for the reaction following cell



Also calculate equilibrium constant.

17. Calculate  $\Lambda_m$  of  $\text{Al}^{3+}$  ions when  $\Lambda_m$  of  $\text{Al}_2(\text{SO}_4)_3$  and  $\text{SO}_4^{2-}$  ions are 858 and  $160 \text{ Ohm}^{-1} \text{ cm}^2 \text{ mol}^{-1}$ .
18. Calculate strength of current required to deposit 1.2g of magnesium from  $\text{MgCl}_2$  in one hour.  $C/F = 96500 \text{ coulomb}$