  
WORK SHEET: 1 DATE: 22/5/19

TOPIC: ELECTROCHEMISTRY DATE OF SUBMISSION: 24/5/19

1. Arrange the following metals in the order in which they displace each other from the solution of their salts. Al, Cu, Fe, Mg and Zn.

2. Given the standard electrode potentials,

K +/K = −2.93V,

Ag+/Ag = 0.80V, Hg2+/Hg = 0.79V

Mg2+/Mg = −2.37 V,

Cr 3+/Cr = − 0.74V. Arrange these metals in their increasing order of reducing power.

3. Depict the galvanic cell in which the reaction Zn(s) + 2Ag+(aq) → Zn2+(aq) + 2Ag(s) takes place. Further show:

(i) Which of the electrode is negatively charged?

(ii) The carriers of the current in the cell.

(iii) Individual reaction at each electrode.

4. Calculate the standard cell potentials of galvanic cells in which the following reactions take place: (i) 2Cr(s) + 3Cd2+(aq) → 2Cr3+(aq) + 3Cd

(ii) Fe2+(aq) + Ag+(aq) → Fe3+(aq) + Ag(s) .Calculate the ∆rGθ and equilibrium constant of the reactions.

5. Write the Nernst equation and emf of the following cells at 298 K:

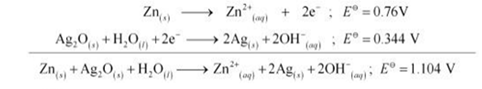
(i) Mg(s) | Mg2+ (0.001M) || Cu2+(0.0001 M) | Cu(s)

(ii) Fe(s) | Fe2+ (0.001M) || H+ (1M)|H2(g)(1bar) | Pt(s)

(iii) Sn(s) | Sn2+ (0.050 M) || H+(0.020 M) | H2(g) (1 bar) | Pt(s)

(iv) Pt(s) | Br2 (l) | Br− (0.010 M) || H+(0.030 M) | H2(g) (1 bar) | Pt(s).

6. In the button cells widely used in watches and other devices the following reaction takes place:



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