1, This because in every electrochemical cell involves a redox reaction takes place. We know that in redox reaction both Oxidation and reduction takes place. Simultaneously so we can conclude that in an electrochemical cell reduction reaction is accompanied by oxidation reaction.

Example:

Reduction half-reaction :

$$Br_{2(aq)} + 2e^- \longrightarrow 2Br^-_{(aq)}$$

Oxidation half-reaction:

$$Zn_{(s)} \rightarrow Zn^{+2}_{(aq)} + 2e^-.$$

Overall cell reaction $\Rightarrow$ $Zn_{(s)} + Br_{2(aq)} \longrightarrow Zn^{2+}_{(aq)} + 2Br^-_{(aq)}$

3, Generally we use standard potential of 2 cells for comparing their output. This is because the emf of cell is independent of parameters like Concentration, temperature etc. So, the emf or cell potential of any 2 cells makes no sense unless we define the conditions of temperature and Concentration.

4, Since we usually measure the standard induction reduction potential of a halfcell as its ability to gain electron, a negative stand-
-ard reduction potential implies that a given Compound has a greater tendency to lose electrons then gaining of electron and Since we know that oxidation is the process of loss of

electrons from a system, we could conclude that a large negative value at standard reduction potential for a cell indicates that the half cell is likely to undergo oxidation.

5, Since Pb is given,

from the data given Co ion is on LHS and Cu is on R.H.S.

Here,

Co is angle, Cu is cathode

Thus

$$E^\circ_{Cu^{+2}/Cu} - E^\circ_{Co^{+2}/Co} = 0.614 \rightarrow (1)$$

and similarly

$$E^\circ_{Cu^{+2}/Cu} - E^\circ_{Fe^{+2}/Fe} = 0.777 \rightarrow (2)$$

Now,

(2) - (1) gives

$$E^\circ_{Cu^{+2}/Cu} - E^\circ_{Fe^{2+}/Fe} = 0.777$$

$$(-)\ E^\circ_{Cu^{2+}/Cu} - E^\circ_{Co^{2+}/Co} = 0.614$$

$$E^\circ_{Co^{2+}/Co} - E^\circ_{Fe^{2+}/Fe} = 0.163.$$

The total potential of the given cell is 0.163 V.

6, Given, $[Cu^{+2}] = 4.8 \times 10^{-3}$ M

$[Zn^{+2}] = 0.1$ M

and cell reaction is : $Zn + Cu^{2+} \rightarrow Cu + Zn^{+2}$

(It is a voltaic cell given)

$\therefore$ From nernest equation,

$$E_{cell} = E^{\circ}_{cell} - \frac{0.0592}{2} \log \frac{[Zn^{+2}]}{[Cu^{+2}]}$$

$$= 1.1 - 0.0296 \log \left(\frac{4 \times 10^{3}}{48} \right)$$

$$= 1.1 - 0.0296 (1.92)$$

$$= 1.1 - 0.0568$$

$$= 1.0432 V .$$

2, Galvanic Cell | Voltaic cell

Galvanic Cell	Voltaic cell
* Spontaneous redox reactions Convert the chemical energy to an electric energy.	* Non Spontaneous redox reactions Convert the electrical energy to Chemical energy.
* Electrical energy is generated by redox reactions.	* Electrical energy brings about the chemical reaction with the help of external source.
* The cathode is the positive electrode and anode is the negative electrode.	* The anode is the positive electrode and cathode is the negative electrode.

* The process of oxidation takes place at the anode and the reduction process occurs at the cathode.

* Half cells are get up in different containers and are connected through salt bridges.

* Appilication lies in batteries.

* Here the oxidation process occurs at the cathode while the reduction process takes place at anode.

* Electrode are kept in the same container in a molten or solution electrolyte.

* Appilication lies in purifying copper and electroplating.