

### Cell constant and Electrochemical Cells

51. (b) Elements with lower reduction potential act as anode. It is placed above  $Cu$  in electrochemical series so it has lesser reduction potential and thus act as anode and  $Cu$  act as cathode.
52. (d) Fuel cells are more efficient as they are free from pollution and hence they run till the reactants are active. They have longer life than lead storage cells.

53. (c) For gold plating, the used electrolyte is  $K[Au(CN)_2]$ .

54. (a) Dil.  $H_2SO_4$  is used in lead in lead storage battery as electrolyte.

55. (c) Cell constant =  $\frac{\text{Specific conductivity}}{\text{Observed conductance}}$   
 $= \frac{0.002765}{1/R} = 0.002765 \times 400 = 1.106$

56. Answer: (d) Antimony

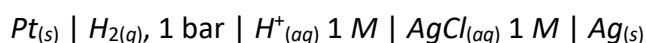
Explanation:

- Antimony is added to **lead plates** in lead-acid batteries to **increase hardness and improve mechanical strength**.
- It also helps in **reducing corrosion** of the plates and prolongs battery life.

57. (b)  $2AgCl_{(s)} + H_{2(g)} \rightarrow 2HCl_{(aq)} + 2Ag_{(s)}$

The activities of solids and liquids are taken as unity and at low concentrations, the activity of a solute is approximated to its molarity.

The cell reaction will be



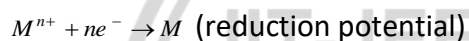
58. (a)  $E_{cell} = \frac{0.059}{n} \log \frac{1}{C} = -\frac{0.059}{2} \log \frac{1}{100}$

$$= -\frac{0.059}{2}(-2) = 0.059 \text{ V} = 59 \text{ mV} . \text{ (increase)}$$

59. (a)  $E_{cell} = -0.059 \log \frac{10^{-6}}{10^{-3}} = -0.059 \log 10^{-3}$

$$= -0.059 \times (-3) = 0.177 \text{ V} .$$

60. (c) The magnitude of the electrode potential of a metal is a measure of its relative tendency to lose or gain electrons. *i.e.*, it is a measure of the relative tendency to undergo oxidation (loss of electrons) or reduction (gain of electrons).



61. (a) On electrolysis of fused ionic hydride ( $LH$ ), hydrogen obtained at anode.

