

Application of electrolysis in industry

Exercise

1. Edi wants to plating nickel key using the silver. Explain the plating process that takes place on the nickel key.

Electrolyte used is _____

	Anode	Cathode										
Electrode												
Particle selected	<div>Click at the correct particle selected in anode</div> <table><tr><td>Ni</td><td>Ag</td><td>Ag⁺</td><td>H⁺</td><td>OH⁻</td></tr></table>	Ni	Ag	Ag ⁺	H ⁺	OH ⁻	<div>Click at the correct particle selected in cathode</div> <table><tr><td>Ni</td><td>Ag</td><td>Ag⁺</td><td>H⁺</td><td>OH⁻</td></tr></table>	Ni	Ag	Ag ⁺	H ⁺	OH ⁻
Ni	Ag	Ag ⁺	H ⁺	OH ⁻								
Ni	Ag	Ag ⁺	H ⁺	OH ⁻								
Explanation	<div>Choose the correct explanation</div> <div>E° value is more positive</div> <div>E° is less positive</div> <div>Electrode used is active electrode</div> <div>Concentration of ion is higher</div>	<div>Choose the correct explanation</div> <div>E° value is more positive</div> <div>E° is less positive</div> <div>Electrode used is active electrode</div> <div>Concentration of ion is higher</div>										
Half equation	<div>Choose the correct half equation</div> <div>Ag → Ag⁺ + e</div> <div>Ag⁺ + e → Ag</div> <div>OH⁻ → 2H₂O + O₂ + 4e</div> <div>2H⁺ + 2e → H₂</div> <div>Ni → Ni²⁺ + 2e</div>	<div>Choose the correct half equation</div> <div>Ag → Ag⁺ + e</div> <div>Ag⁺ + e → Ag</div> <div>OH⁻ → 2H₂O + O₂ + 4e</div> <div>2H⁺ + 2e → H₂</div> <div>Ni → Ni²⁺ + 2e</div>										
product	<div>Choose the correct product</div> <div>silver ion formed</div> <div>silver atom is formed</div> <div>Oxygen gas is released</div> <div>Hydrogen gas is released</div> <div>Nickel ion is formed</div>	<div>Choose the correct product</div> <div>silver ion formed</div> <div>silver atom is formed</div> <div>Oxygen gas is released</div> <div>Hydrogen gas is released</div> <div>Nickel ion is formed</div>										

Observation	Choose the correct observation Electrode become thinner Brown gas is released Electrode become thicker Colourless and odourless gas is released	Choose the correct observation Electrode become thinner Brown gas is released Electrode become thicker Colourless and odourless gas is released
-------------	---	---

2. Ash has impure copper. He wants to purify the metal. Determine the electrolyte and electrode in anode and cathode

Electrolyte used is _____

	Anode	Cathode										
Electrode												
Particle selected	<div>Click at the correct particle selected in anode</div> <table><tr><td>Cu</td><td>Ag</td><td>Cu²⁺</td><td>H⁺</td><td>OH⁻</td></tr></table>	Cu	Ag	Cu ²⁺	H ⁺	OH ⁻	<div>Click at the correct particle selected in cathode</div> <table><tr><td>Cu</td><td>Ag</td><td>Cu²⁺</td><td>H⁺</td><td>OH⁻</td></tr></table>	Cu	Ag	Cu ²⁺	H ⁺	OH ⁻
Cu	Ag	Cu ²⁺	H ⁺	OH ⁻								
Cu	Ag	Cu ²⁺	H ⁺	OH ⁻								
Explanation	<div>Choose the correct explanation</div> <div>E° value is more positive</div> <div>E° is less positive</div> <div>Electrode used is active electrode</div> <div>Concentration of ion is higher</div>	<div>Choose the correct explanation</div> <div>E° value is more positive</div> <div>E° is less positive</div> <div>Electrode used is active electrode</div> <div>Concentration of ion is higher</div>										
Half equation	<div>Choose the correct half equation</div> <div>Cu → Cu²⁺ + e</div> <div>Cu²⁺ + 2e → Cu</div> <div>OH⁻ → 2H₂O + O₂ + 4e</div> <div>2H⁺ + 2e → H₂</div> <div>Ni → Ni²⁺ + 2e</div>	<div>Choose the correct half equation</div> <div>Cu → Cu²⁺ + e</div> <div>Cu²⁺ + 2e → Cu</div> <div>OH⁻ → 2H₂O + O₂ + 4e</div> <div>2H⁺ + 2e → H₂</div> <div>Ni → Ni²⁺ + 2e</div>										

product	Choose the correct product Copper atom is formed Oxygen gas is released Hydrogen gas is released Copper ion is formed	Choose the correct product Copper atom is formed Oxygen gas is released Hydrogen gas is released Copper ion is formed
Observation	Choose the correct observation Electrode become thinner Brown gas is released Electrode become thicker Colourless and odourless gas is released	Choose the correct observation Electrode become thinner Brown gas is released Electrode become thicker Colourless and odourless gas is released

3. Bidin want to extract aluminium from aluminium oxide. Explain you're the extraction process take place

Electrolyte :

	Anode	Cathode
a) Ion presents	Click at the correct ion present in anode <div>Al Al³⁺ O²⁻ O</div>	Click at the correct ion present in anode <div>Al Al³⁺ O²⁻ O</div>
b) Half equation	Choose the correct half equation $\text{Al} \rightarrow \text{Al}^{3+} + \text{e}$ $\text{Al}^{3+} + 3\text{e} \rightarrow \text{Al}$ $\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}$ $2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$ $2\text{O}^{2-} \rightarrow \text{O}_2 + 4\text{e}$	Choose the correct half equation $\text{Al} \rightarrow \text{Al}^{3+} + \text{e}$ $\text{Al}^{3+} + 3\text{e} \rightarrow \text{Al}$ $\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}$ $2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$ $2\text{O}^{2-} \rightarrow \text{O}_2 + 4\text{e}$

c) Product	Silver ion Aluminium metal Oxygen gas	Silver ion Aluminium metal Oxygen gas
d) Type of reaction	Oxidation Reduction	Oxidation Reduction