
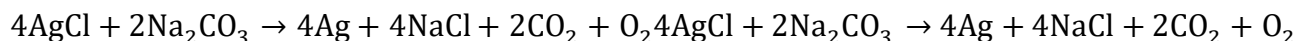


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1. AgCl and Na<sub>2</sub>CO<sub>3</sub> AgCl and Na<sub>2</sub>CO<sub>3</sub> fusion forms Ag(Silver).

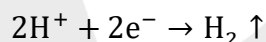
The following reaction is obtained,



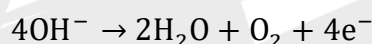
This reaction occurred between 850–900°C.

Hence, silver (Ag) is the by-product of that reaction

2. A solution of sodium sulphate in water is electrolysed using inert electrodes. The products at the cathode and anode are H<sub>2</sub>, O<sub>2</sub> respectively. Hydrogen ions having lower discharge (or higher reduction) potential than sodium ions will be liberated at the cathode.



Hydroxide ions having a lower discharge potential than sulphate ions, will be liberated at anode.



3. Correct option is D)

S<sub>1</sub> = True. In thermite welding, aluminium acts as a reducing agent. Aluminium is used in thermite welding of broken iron parts. The reduction of ferric oxide by aluminium is highly exothermic and therefore, the iron formed will be in the molten state.

S<sub>2</sub> = False. Magnesium is obtained by electrolysis of molten MgCl<sub>2</sub> not aqueous.

S<sub>3</sub> = True. Extraction of Pb is possible by carbon reduction of PbO in smelting.

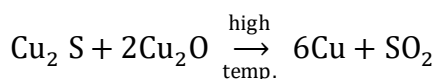
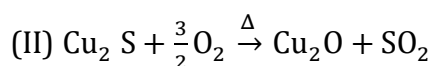
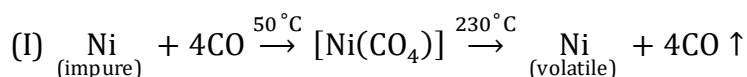
S<sub>4</sub> = False. The bauxite is purified by the Bayer Process


Hence option D TFFT is correct answer.

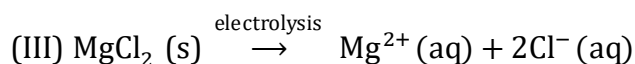
4. Oxides of highly reactive metals can't be reduced by Carbon.

Among the following pairs, the pair which consists of more reactive oxides are CaO<sub>2</sub> & K<sub>2</sub>O

5. The correct option is C (III), (I) and (II)



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At cathode:  $\text{Mg}^{2+} (\text{aq}) + 2\text{e}^{-} \rightarrow \text{Mg}(\text{s})$

At anode:  $2\text{Cl}^{-} (\text{aq}) \rightarrow \text{Cl}_2 (\text{g}) + 2\text{e}^{-}$

6. Nitriding is process of heating steel in presence of  $\text{NH}_3$  and producing hard coating of Iron Nitride on the surface of steel.  
Annealing is process of heating steel to redness and then cooling it very slowly  
Tempering is process of heating quenched steel to a temperature well below redness and then cooling it slowly  
Quenching is process of heating steel to redness and then cooling it suddenly by plunging it into water or oil
7.  $\rightarrow$  Many metals are purified by electrolytic refining method.  
 $\rightarrow$  In this method impure sample is taken as anode as impurity goes into solution and pure copper is taken as cathode, as pure metal from sample deposits on cathode.
8. Correct options are B) , C) and D)  
(B) The oxide ore is reduced by the carbon monoxide according to the reaction :  $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$   
Thus option B is correct and option A is incorrect.  
(C) Major silica impurities are removed as calcium silicate slag by addition of a fluxing agent limestone  $\text{CaO} + \text{SiO}_2 \rightarrow \text{CaSiO}_3$   
Thus option C is correct.  
(D) The silicate slag is used in manufacturing cement.  
Thus option D is correct.
9. Correct option is (A)  
Graphite is a good conductor of current due to  $\text{sp}_2$  hybridisation having mobile pi-electrons while diamond does not have free electrons so it cannot be used as an anode.
10. The conversion Auriferous rock  $\rightarrow$  Au occurs during leaching.  
The conversion Hematite containing siderite and magnetite  $\rightarrow$  Fe occurs during roasting and smelting.  
The conversion Bauxite  $\rightarrow$  Al occurs during leaching and electrolytic reduction.  
The conversion galena  $\rightarrow$  for self reduction only froth floatation is used as partial roasting is done for self reduction.