

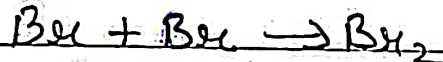
TENDER HEART HIGH SCHOOL, SEC-53B, CHD

CLASS X
CHAPTER 6SUBJECT CHEMISTRY
TEACHER MOHINISHA THAKORElectrolysis

ANSWER- KEY

EXERCISE-6

Ans (a) Electrolysis of molten lead bromide is considered to be a redox reaction because lead ions gain two electrons at cathode and undergo reduction whereas bromide ions lose one electron at anode and undergo oxidation.



(b) The blue colour of copper sulphate is due to the presence of Cu^{2+} ions and when Cu^{2+} ions get discharged at cathode and their concentration in the solution decreases the colour starts to fade.

(c) In the solid state lead bromide is a non-electrolyte because the ions are not free to move. There is a strong electrostatic force of attraction between the lead and bromide ions.

(d) Aluminium oxide (Al_2O_3) is a very stable oxide as aluminium is a reactive metal and has a strong affinity for oxygen. Thus aluminium oxide can be reduced (removal of oxygen) only by electrolysis.

(e) In the electrolysis of water:-

(P.T.O.)

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At Anode



1

4 electrons lost

At Cathode



2

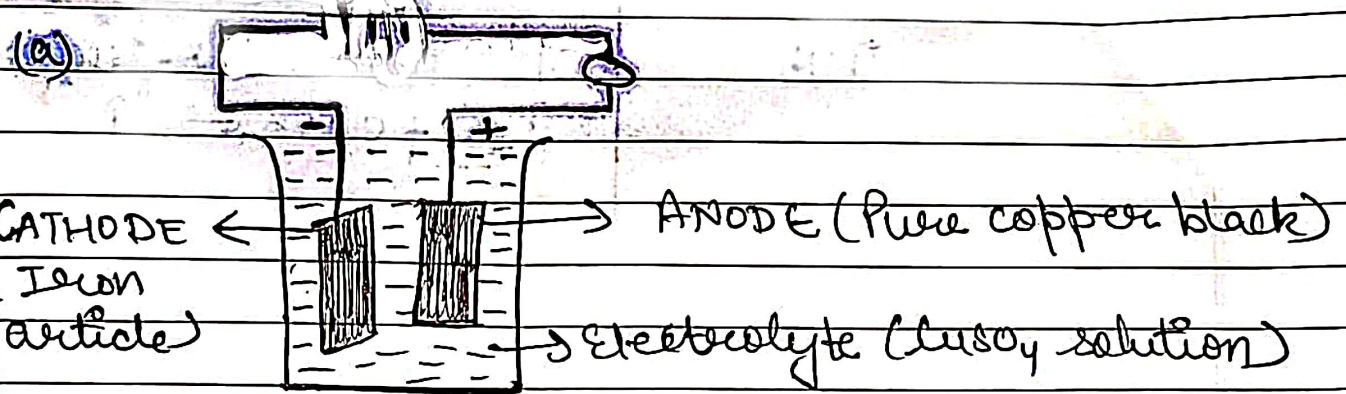
4 electrons gained

- (f) Dil. sulphuric acid is preferred over nitric acid because it is non-volatile acid.
- (g) Ammonia is a polar covalent compound and water is also polar covalent compound. When ammonia is dissolved in water it undergoes ionisation and produces NH_4^+ and OH^- ions.
- (h) A graphite anode is preferred because it is not affected by highly reactive bromine vapours.
- (i) Silver nitrate if used as electrolyte, the deposition of silver will be very fast and hence not very smooth and uniform.
- (j) Carbon tetrachloride is a non-polar covalent compound. It does not ionise and is thus a non-electrolyte.
- (k) If aqueous potassium salt solution is used as an electrolyte then instead of K^+ ions, H^+ ions will get reduced at cathode.

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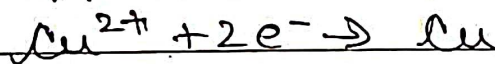
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Ans 3) Electroplating Iron article with copper :-

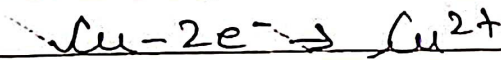


(b) CuSO₄ solution is used as electrolyte, so that Cu²⁺ ions produced will go and get discharged at cathode.

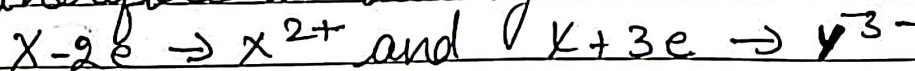
(c) Cu²⁺ ions will get reduced to Cu and will be deposited on the iron article. Thus iron article will be electroplated with copper.



The copper of anode will be oxidised to Cu²⁺ ions, so the copper rod will slowly dissolve and becomes thin.



Ans 4) (a) Metal with valency 2 means it will lose 2 electrons and Y is a non-metal with valency 3, therefore it will gain 3 electrons.



(b) Y is a diatomic gas so it will be Y₂ molecule so it will be :- $3X + Y_2 \rightarrow X_3Y_2$ [$X^{2+}Y^{3-} \rightarrow X_3Y_2$]
(P.T.O.)

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(c) X will be obtained at cathode and Y at the anode.

Ans 5:- In electroplating and electrorefining the anode diminishes (or decreases) in mass.

Ans 6:- (a) only molecules
(b) Ions produced from HX and molecules of HX

(c) cations by loss of electrons and anode by gain of electrons.

d) The ions of the metal which we have to deposit or electroplate on the article.

Ans 7:- Only AgNO_3 solution will turn blue because copper can displace silver from AgNO_3 to form $\text{Cu(NO}_3)_2$.

X (End) X