

**Electrolytes and Electrolysis**

1. (b) Sugar solution does not form ion; hence does not conduct electricity in solution.

2. **Answer:** (d) Completely dissociate into ions at all dilutions

**Explanation:**

Strong electrolytes completely ionize in aqueous solution at any dilution, producing a large number of ions. Hence, they conduct electricity efficiently. Examples include HCl, NaOH, and NaCl

3. (c) Strong electrolytes are almost completely ionised in polar solvent.

4. **Answer:** (d) Gives ions only when dissolved in water

**Explanation:**

Electrolytes produce ions only when dissolved in water or in molten state. In solid form, ions are held tightly in the crystal lattice and cannot move freely, so they do not conduct electricity.

5. **Answer:** (d) The forces of electrostatic attraction are broken down by water

**Explanation:**

Water is a polar solvent. Its molecules surround the ions of an electrolyte and weaken the electrostatic forces between them, leading to dissociation into free ions.

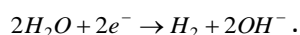
6. **Answer:** (d) The forces of electrostatic attraction are broken down by water



**Explanation:**

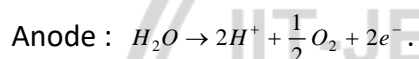
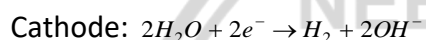
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7. (b) The reduction potential of  $Mg$  is less than that of water ( $E^\circ = -0.83 V$ ). Hence their ions in the aqueous solution cannot be reduced instead water will be reduced



8. (b)  $HCl$  is an electrolyte.

9. (b) Water is reduced at the cathode and oxidized at the anode instead of  $Na^+$  and  $SO_4^{2-}$ .



10. (a) In electrolysis process oxidation occurs at anode and reduction occurs at cathode.

11. (a) Because in it covalent bonding is present.

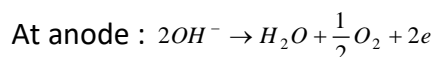
12. (c) According to Faraday's law.

13. (d) Impure metal made anode while pure metal made cathode.

14. (d) In electrolytic cell, cathode acts as source of electrons.

15. (c)  $AgNO_3$  is an electrolyte.

17. (a) At cathode:  $2H^+ + 2e^- \rightarrow H_2$ ,



18. (c) In between dilute  $H_2SO_4$  and platinum electrode  $O_2$  gas evolve at anode.

19. (c) When polar solvent added in to solid electrolyte than it is ionised.





20. (a) In fused  $\text{NaCl}$  chloride ions are oxidized at anode and it is called oxidation.
21. (a)  $w = zit, Q = it$ .
22. (b)  $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_{2(\text{g})}$  at cathode.
23. (b)  $\text{Na}_{+1}^+ + \text{e}^- \rightarrow \text{Na}_0$ , means oxidation number is decreased so the reaction is reduction.
24. (d) Degree of dissociation of weak electrolyte increases on increasing temperature.
25. (b) Since discharge potential of water is greater than that of sodium so water is reduced at cathode instead of  $\text{Na}^+$
- Cathode:  $\text{H}_2\text{O} + \text{e}^- \rightarrow \frac{1}{2}\text{H}_2 + \text{OH}^-$
- Anode:  $\text{Cl}^- \rightarrow \frac{1}{2}\text{Cl}_2 + \text{e}^-$ .

