

## Chemistry - 11th Class Chemistry Short Questions Chapter 10 Preparation

Q1. Differentiate between electrolytic cell and voltaic cell.

**Ans 1:** Electrolytic Cell:

1. The electrochemical cell in which electrical energy is converted into chemical energy is called Electrolytic cell.
2. In this cell, non-spontaneous reaction occurs.
3. Electric current is used to drive the non-spontaneous oxidation reduction reaction.
4. Electrolysis takes place in this cell.

Example: Down's cell, Nelson's cell

**Ans 2:** Voltaic cell:

1. The electrochemical cell in which chemical energy is converted into electrical energy is called Voltaic cell.
2. In this cell, spontaneous reaction occurs.
3. Electric current is produced due to spontaneous reaction.
4. Electric conduction takes place in this cell .

Example: Daniel's cell , Fuel cells.

Q2. A porous plate or a salt bridge is not required in lead storage cell. Give reason?

**Ans 1:** A porous plate or salt bridge is used in those cells where two different electrolytes are used and are required to keep separate. In case of lead storage cell, only dil.  $\text{H}_2\text{SO}_4$  is used as an electrolyte. Hence, no separation is required by porous plate or salt bridge.

Q3. Define the electrochemical series?

**Ans 1:** The elements are arranged in the order of their standard electrode potentials on the hydrogen scale, the resulting list is known as electrochemical series. This list has been prepared by comparison with standard hydrogen electrode (SHE). In this list, elements above SHE have negative reduction potential while below have positive reduction potential .

Q4. Give four rules for assigning of oxidation number?

**Ans 1:**

1. The oxidation number of free elements is zero. For example H, Mg, Na. as charge on the ion.
2. Oxidation number of hydrogen in all its compounds is +1 except metal hydride where it is -1
3. In neutral molecules, the algebraic sum of oxidation number of all the elements is zero.

Q5. Na and K can displace hydrogen from acids but See you cannot. Justify it?

**Ans 1:** Greater the value of standard reduction potential of a metal , lesser is its tendency to lose electrons to form metal ions and so weaker is its tendency to displace  $\text{H}_2$  From acids. For example, metal like Au, Pt, Ag and See you which have sufficiently high positive values of reduction potentials, do not liberate hydrogen from acids. while, metal like Na, Mg and K which are close to the top

of the series and have very low reduction potentials, liberate hydrogen gas, when they react with acids.

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Q6. Zn can displace hydrogen from dilute acid solution but copper cannot. Justify the statement?

**Ans 1:**

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Q7. How anodized aluminum is produced and why it can absorb dyes?

**Ans 1:** Anodized aluminum is prepared by making it an anode in an electrolytic cell containing sulphuric acid or chromic acid, which coats a thin layer of oxide on it. The aluminum oxide layer resist attack by corrosive agents. The freshly anodized aluminum is hydrated and can absorb dyes.

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Q8. Define electrolytic cell. Give example?

**Ans 1:** Electrolytic cell: A cell in which electric current is used to carry out a non-spontaneous reaction is called electrolytic cell.  
Example:

- Down's cell
  - Nelson cell
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Q9. Give some advantages of fuel cells?

**Ans 1:**

1. These cell run continuously as long as reactants are available.
  2. These are light, portable and source of electricity.
  3. These are very efficient. They convert about 75% of fuels energy into electricity.
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Q10. How relative chemical reactivity of metals is studied with the help of electrochemical series.

**Ans 1:** The value of the reduction potential of a metal or a non metal tells us the tendency to lose electrons and act a reducing agent. It also gives the information about the tendency of a specie to gain electrons and act as oxidizing agent. Greater the value of standard reduction potential of a given specie, greater is its tendency to accept electrons to undergo reduction and hence to act as oxidizing agent.

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