

ELECTROCHEMISTRY
MULTIPLE CHOICE QUESTIONS

Select and write the most appropriate answer from the given alternatives for each subquestion:

1. An electrolyte is a substance which :
 - a) conducts electricity
 - b) decomposes on heating
 - c) is acidic in nature
 - d) when dissolved in water, dissociates into ions
2. Conductivity of aqueous solution of an electrolyte depends on:
 - a) molecular mass of the electrolyte
 - b) boiling point of solvent
 - c) degree of ionisation
 - d) volume of the solvent
3. Strong electrolytes are those which :
 - a) dissolve readily in water
 - b) conducts electricity
 - c) dissociate into ions even at high concentration
 - d) dissociate into ions at high dilution
4. The electrochemical cell stops working after some time because :
 - a) electrode potential of both the electrodes becomes zero
 - b) electrode potential of both the electrodes becomes equal
 - c) one of the electrodes is eaten away
 - d) the cell reaction gets reversed
5. In electrolysis oxidation takes place at :
 - a) both the electrodes
 - b) cathode
 - c) anode
 - d) in the solution
6. A solution of Cu(II) sulphate is reacted with KCl and KI. In which case will the Cu^{2+} be reduced to Cu^+ :
 - a) In both the cases
 - b) When reacted with KCl
 - c) When reacted with KI
 - d) In both the cases but in presence of H^+
7. Which is not true for a standard hydrogen electrode ?
 - a) The hydrogen ion concentration is 1 M
 - b) Temperature is 25°C
 - c) Pressure of hydrogen is 1 atmosphere
 - d) It contains a metallic conductor which does not absorb hydrogen

8. The half-cell reaction is the one that :
- takes place at one electrode
 - consumes half a unit of electricity
 - involves half a mole of electrolyte
 - goes half way to completion
9. In an electrochemical cell, anode and cathode are :
- positively and negatively charged ions
 - positively and negatively charged electrodes
 - negatively and positively charged electrodes
 - negatively and negatively charged ions
10. More electronegative elements have :
- negative reduction potential
 - tendency to lose electrons
 - positive reduction potential
 - positive oxidation potential
11. The strong oxidising agent has :
- high value of reduction potential
 - high value of oxidation potential
 - low value of reduction potential
 - high tendency to lose electrons
12. The passage of electricity in the Daniell cell when Zn and Cu electrodes are connected is from :
- Cu to Zn in the cell
 - Cu to Zn outside the cell
 - Zn to Cu outside the cell
 - Zn to Cu in the cell
13. When a lead storage battery is charged :
- PbO₂ dissolves
 - the lead electrode becomes coated with lead sulphate
 - sulphate acid is regenerated
 - the amount of acid decreases
14. An example of a simple fuel cell is :
- lead storage battery
 - H₂ – O₂ cell
 - Daniell cell
 - Lechlanche cell
15. The number of coulombs required for the deposition of 107.87 g of silver is :
- 48250
 - 10000
 - 96500
 - 19300
16. In the electrochemical reaction,
- $$2\text{Fe}^{3+} + \text{Zn} \longrightarrow \text{Zn}^{2+} + 2\text{Fe}^{2+}$$
- increasing the concentration of Fe²⁺ :
- increases the cell emf
 - increases the current flow
 - decreases the cell emf
 - alters the pH of the solution

17. In a galvanic cell, the electrons flow from :
- a) anode to cathode through the solution
 - b) cathode to anode through the solution
 - c) anode to cathode through the external circuit
 - d) cathode to anode through the external circuit
18. The highest electrical conductivity of the following aqueous solutions is of :
- a) 0.1 *M* acetic acid
 - b) 0.1 *M* chloroacetic acid
 - c) 0.1 *M* fluoroacetic acid
 - d) 0.1 *M* difluoroacetic acid
19. Two solutions have the ratio of their concentrations 0.4 and ratio of their conductivities 0.216. The ratio of their molar conductivities will be
- a) 0.54
 - b) 11.574
 - c) 0.0864
 - d) 1.852
20. On diluting the solution of an electrolyte
- a) both \wedge and k increase
 - b) both \wedge and k decrease
 - c) \wedge increase and k decrease
 - d) \wedge decrease and k increase
21. Which of the following is not correct ?
- a) Gibbs energy is an extensive property
 - b) Electrode potential or cell potential is an intensive property
 - c) Electrical work = - ΔG
 - d) If half reaction is multiplied by a numerical factor, the corresponding E° value is also multiplied by the same factor.