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**Max Time : 1 hr** **Class = 12th Chemistry Test**  **Max Marks : 25**

**ELECTROCHEMISTRY**

1. Multiple choice questions : [ 1 X 4 = 4 ]
2. The standard electrode potential for Sn4+ /Sn2+ couple is + 0.15 V and that for the Cr3+/Cr couple is – 0.74 V. The two couple in their standard state are connected to make cell. The cell potential will be:

|  |  |  |  |
| --- | --- | --- | --- |
| a) + 1.19 V | b) 0.89 V | c) + 0.18 V | d) + 1.83 V |

1. Using the data given below and find out the strongest reducing agent.

= 1.33 V = 1.36 V = 1.51 V , = - 0.74 V

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cl – | b) Cr | c) Cr3+ | d) Mn2+ |

1. Using data given above, Find out the option for the order of reducing power is correct.

|  |  |
| --- | --- |
| a) Cr3+ < Cl – < Mn2+ < Cr | b) Mn2+ < Cl – < Cr3+ < Cr |
| c) Cr3+ < Cl – < Cr2 < | d) Mn2+ < Cr3+ < Cl – < Cr |

1. Using data given above, find out the most stable oxidized species.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cr3+ | b) | c) Cr2 | d) Mn2+ |

1. What is Primary cell? Give an example. [ 1 ]
2. Write the name of the electrode used in (i) Fuel cell (ii) Mercury cell [ 1 ]
3. What is cathodic protection? [ 1 ]
4. Which of the following have maximum molar conductivity. [ 2 ]
5. 0.08 M solution and its specific conductivity is 2 x 10 – 2 – 1 cm – 1.
6. 0.1 M solution and its resistivity is 50 cm.
7. Define Limiting Molar conductivity. [ 2 ]
8. Write 3 factors affecting Electrolytic conductance. [ 2 ]
9. At 291 K, saturated solution of BaSO4 was found to have a specific conductivity of 3.648 x 10– 6 S cm– 1, that of water used being 1.25 x 10– 6 S cm– 1. Ionic conductances of Ba2+ and ions are 110 and 136.6 S cm2/mol respectively. Calculate the solubility of BaSO4 at 291 K. (At mass of Ba = 137). [ 3 ]
10. Calculate the standard electrode potential of the Ni2+/Ni electrode if the cell potential of the cell

Ni | Ni2+ (0.01 M) || Cu2+ (0.1 M) | Cu is 0.59 V. Given : = 0.34 volt [ 3 ]

1. Calculate the equilibrium constant for the reaction at 298 K [ 3 ]

4 Br –  + O2 + 4 H+ 2 Br2 + 2 H2O Given that : = 0.16 V

1. Calculate the cell emf at 25˚C for the cell : Mg (s) | Mg2+ (0.01 M) || Sn2+ (0.1 M) | Sn (s).

= 2.34 volt , = 0.136 volt

Calculate the maximum work that can be accomplished by the operation of this cell. [ 3 ]