

國立高雄師範大學 102 學年度學士班轉學生招生考試試題

系所別：化學系三年級

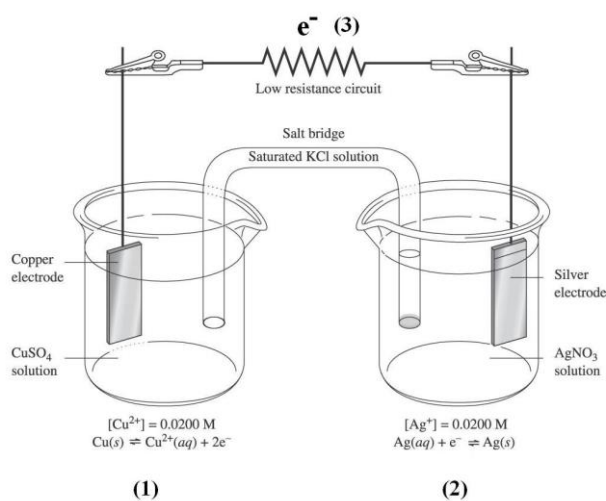
科 目：分析化學

※注意：1.不必抄題，作答時請將試題題號及答案依照順序寫在答案卷上，於本試題上作答者，不予計分。

2.限用藍色或黑色之鋼筆、原子筆作答，以鉛筆或其他顏色作答者不予計分。

1. The following results were obtained in the replicate determination of the lead content of a blood sample: 0.752, 0.756, 0.752, 0.751, and 0.760 ppm Pb. Calculate the (a) mean; (b) standard deviation; (c) variance. (15%)
2. Calculate the *molar solubility* of $\text{Ba}(\text{IO}_3)_2$ in a solution that is 0.0200 M in $\text{Ba}(\text{NO}_3)_2$. (The solubility-product constant for $\text{Ba}(\text{IO}_3)_2$ is 1.57×10^{-9}) (10%)
3. Write the *charge-balance equations* for the solution of (a) 0.20 M in H_3AsO_4 . (b) saturated with BaC_2O_4 . (10%)
4. Write *cathode* or *anode* on (1), (2), (5), and (6). Give electron moving direction (\leftarrow or \rightarrow) on (3) and (4). (15%)

A galvanic cell diagram is as show:

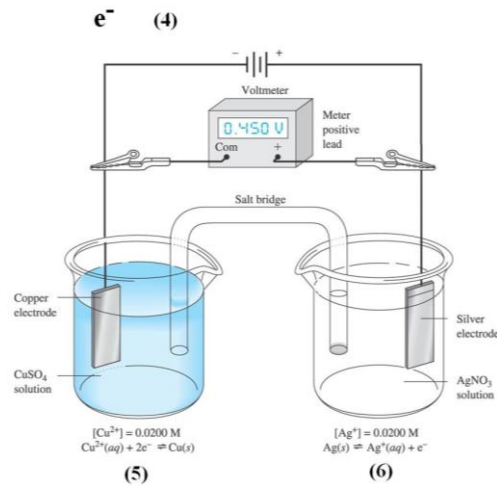


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An electrolytic cell diagram is as show:



5. What is the molarity of K^+ in a solution that contains 189.9 ppm of $K_3Fe(CN)_6$ (329.3 g/mol) ?
(10%)
6. Calculate the ionic strength of (a) a 0.15 M solution of $FeSO_4$ and (b) a solution containing 0.30 M $FeCl_3$ and 0.40 M $FeCl_2$ (10%)
7. Calculate the solubility of $Ba(IO_3)_2$ in a solution prepared by mixing 200 mL of 0.0100 M $Ba(NO_3)_2$ with 100 mL of 0.100 M $NaIO_3$. (10%)
8. Calculate the P_{Ag} after for 20.00 mL of 0.06 M $NaCl$ with 0.03 M $AgNO_3$ (A) 10 mL (B) 50 mL (for $AgCl$, $K_{sp} = 1.82 \times 10^{-10}$). The reaction is $Ag^+(aq) + Cl^-(aq) \rightleftharpoons AgCl(s)$ (10%)
9. Calculate the cell potential for $Ag | AgCl (sat'd), HCl (0.02 M) | H_2 (0.6 atm), Pt$ (10%)
 $2 H^+ + 2e^- \rightleftharpoons H_2(g) \quad E^0 = 0.000 V$
 $AgCl (s) + e^- \rightleftharpoons Ag_{(s)} + Cl^- \quad E^0 = 0.222 V$