

## 淡江大學九十一年度日間部轉學生招生考試試題

系別：化學系三年級

科目：分析化學

准帶項目請打「○」否則打「×」
計算機
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本試題共 / 頁

1. Define: Detection limit (10%)
2. Define: Relative error (10%)
3. Calculate the molar concentration of HNO<sub>3</sub> (63.0 g/mol) in a solution that has a specific gravity of 1.42 and is 70% HNO<sub>3</sub> (w/w) (10%)
4. Derive an equation for the equivalence point potential in the titration of Sn<sup>2+</sup> with MnO<sub>4</sub><sup>-</sup>. What will be the potential when the pH of the solution is kept at 7.00?  
 The half-reactions are: Sn<sup>4+</sup> + 2e<sup>-</sup> = Sn<sup>2+</sup> (E<sup>0</sup> = 0.154V)  
 MnO<sub>4</sub><sup>-</sup> + 5e<sup>-</sup> + 8H<sup>+</sup> = Mn<sup>2+</sup> + 4H<sub>2</sub>O (E<sup>0</sup> = 1.51V) (20%)
5. Define: Jones reductor. (10%)
6. Compare GC with HPLC. (10%)
7. Calculate the pH of a 25.00 mL mixture that is 0.1200 M in hydrochloric acid and 0.0800 M in the weak acid HA (K<sub>a</sub> = 1.00 X 10<sup>-4</sup>) during its titration with 0.1000 M KOH. Derive data for additions of the following mL of base (1) 0.00 and (2) 5.00. (20%)
8. Describe how you would prepare 2.0 L of an approximately 0.010 M solution of KMnO<sub>4</sub> (158.03 g/mol) (10%)