

**臺北市立教育大學**  
**九十五學年度研究所碩士班入學考試試題**

所 別：自然科學系碩士班(自然科學組化學類)

科 目：分析化學 (可攜帶計算機)

考試時間：90 分鐘【13:30 – 15:00】

總 分：100 分

注意：不必抄題，作答時請將試題題號及答案依照順序寫在答卷上；限用毛筆、藍色或黑色筆作答，使用其他顏色或鉛筆作答者，所考科目以零分計算。(於本試題紙上作答者，不予計分。)

一.解釋名詞: (40%)

- 1.Null hypothesis    2.Detection limit    3.F — test    4.Activity
- 5.Buffer capacity    6.Internal standard    7.Johnson noise
- 8.van Deemter equation    9.Hollow cathode lamp
10. Quantum efficiency

二. What volume of 2.00 M NaOH must be added to 300.0 mL of 1.00 M glycolic acid( $\text{HOCH}_2\text{CO}_2\text{H}$ ) to produce a buffer solution having a pH of 4.00 ? (  $\text{H}=1, \text{C}=12, \text{O}=16$  ,  $K_{a(\text{glycolic acid})} = 1.47 \times 10^{-4}$  ) (10%)

三. A solution contains 0.01 mol  $\text{Cl}^-$  ion and 0.001 mol  $\text{CrO}_4^{2-}$  ion per liters.

$\text{Ag}^+$  ion is gradually added to this solution in the form of  $\text{AgNO}_3$ , which will be precipitated first,  $\text{AgCl}$  or  $\text{Ag}_2\text{CrO}_4$ ? (12%)

四. Calculate the equilibrium concentration of  $\text{Ni}^{2+}$  in a solution with an analytical  $\text{NiY}_2^-$  concentration of 0.0150M at a pH of 3.0 ? (14%)

五. Pd reacts with Thio-Michler's ketone, forming a colored 1:4 complexes. A 0.2ppm Pd sample gave an absorbance of 0.390 at 520nm using a 1.00-cm cell, Calculate the molar absorptivity ( ) for this reaction? (12%)

六. Explain differences between plus polarography , differential-plus polarography, and AC. Polarography? (12%)