

# 國立嘉義大學九十二學年度轉學生招生考試試題

科目：分析化學

(請將答案寫在答案卷上)

一、解釋名詞：(每題 5 分，共 30 分)

1. Precision
2. Coprecipitation
3. Releasing agent
4. Detection limit
5. Alkaline error
6. Fluorescence

二、問答題：(30 分)

1. Explain how ion-selective electrodes (ISE) work? (8 分)
2. Identify factors that cause chemical deviations to Beer's law and explain briefly. (10 分)
3. Explain the three factors that contribute to band broadening in a chromatogram and indicate how does flow rate affect these three factors. (12 分)

三、計算題：(每題 10 分，共 40 分)

1. A 0.1246g of primary standard  $\text{Na}_2\text{C}_2\text{O}_4$  (FW=134.00) in 1M  $\text{H}_2\text{SO}_4$  required 32.27mL of a  $\text{KMnO}_4$  solution to reach the end point. Calculate the molarity of the  $\text{KMnO}_4$  solution.
2. Preparing a 250-mL 1.0M of pH 4.80 of buffer solution by using solid sodium acetate (FW=82.04) and 1M HCl.
3. Serum containing  $\text{Na}^+$  gave a signal of 3.97 mV. Then 5.00 mL of 2.00M NaCl were added to 95.0 mL of serum. This spiked serum gave a signal of 8.16 mV. Find the original concentration of  $\text{Na}^+$  in the serum.
4. The following data were obtained by liquid chromatography on a 25-cm column ( $V_m=1.42\text{mL}$ ,  $V_s=0.170\text{mL}$ ).

| Compound   | $t_r$ , min | $w_{1/2}$ , min |
|------------|-------------|-----------------|
| Unretained | 2.84        | —               |
| A          | 8.93        | 0.71            |
| B          | 10.22       | 0.87            |

- (A) Estimate the partition coefficient ( $K=C_s/C_m$ ) for compound A.
- (B) The resolution.