

國立高雄師範大學 107 學年度學士班轉學生招生考試試題

系所別：化學系三年級

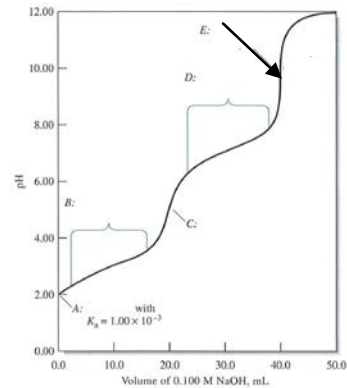
科 目：分析化學

※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. Please write out what the compositions are at the points of regions A, B, C, D and E, on titration of 20.00 mL of 0.1000 M H_2A with 0.1000 M NaOH curve? (10%)

(使用 $H_2A, NaHA, Na_2A, NaOH$ 等成分來表示)



2. Calculate the equilibrium molar concentrations of the solute species in an aqueous solution that contains 685 mg of trichloroacetic acid, Cl_3CCOOH (163.4 g/mol), in 10.0 mL (the acid is 45% ionized in water). (10%)

3. Write out chemical equations and equilibrium-constant expressions for the stepwise formation of $Cd(SCN)_3^-$? (10%)

4. Describe how you might prepare approximately 600.0 mL of a pH 4.7 buffer solution from 2.0 M acetic acid (HOAc) and sodium acetate (NaOAc)? ($CH_3COOH, K_a = 1.75 \times 10^{-5} M$; $M_w = 82$ g/mol) (10%)

5. (a) Please write out equations that define α_0 for the acid H_3A . (b) As the solution at pH 5, calculate the α_0 for H_3A . (10%) ($K_{a1} = 7.11 \times 10^{-3}$, $K_{a2} = 6.32 \times 10^{-8}$, $K_{a3} = 4.5 \times 10^{-13}$)

6. Name three types of systematic errors. (10%)

(背面有題 續翻背面)

系所別：化學系三年級

科 目：分析化學

7. The following results were obtained in the replicate determination of the copper content of a water sample: 9.5, 8.5, 9.1, 9.3, 9.1 ppm. Please calculate (a) mean (b) median (c) range (d) standard deviation. (10%)
8. Please explain the following terms: (20%)
- (a) amphiprotic species
 - (b) zwitterion
 - (c) buffer capacity
 - (d) colloidal suspension
 - (e) titration error
9. Calculate the potential for the cell : (10%)

