

淡江大學 108 學年度日間部轉學生招生考試試題

系別：水環系環境工程組二年級

科目：化 學

4-1

考試日期：7月24日(星期三) 第1節

本試題共 5 大題， 1 頁

- Name the following compounds in English. (20 pts)
(a) NaCl (b) CsF (c) K_2CO_3 (d) $Mg(OH)_2$ (e) O_2
- (a) Explain the *penetration effect* in detail. (10 pts)
(b) Draw the exact orbital shape of 4s and describe the numbers of nodal plane in 4s orbital. (10 pts)
- Calculate the enthalpy (ΔH) for the reaction $N_{2(g)} + 2O_{2(g)} \rightarrow 2NO_{2(g)}$ by using the following two reactions: (20 pts)
$$N_{2(g)} + O_{2(g)} \longrightarrow 2NO_{(g)} \quad \Delta H = 180 \text{ kJ}$$
$$2NO_{(g)} + O_{2(g)} \longrightarrow 2NO_{2(g)} \quad \Delta H = -120 \text{ kJ}$$
- Explain the following phrases in detail. (20 pts)
(a) orbital (b) Lewis acid and base (c) electronegativity (d) activation energy
(e) ionization energy
- CH_3COOH is a weak acid ($K_a = 1.76 \times 10^{-5}$) when dissolved in water. If a 50 mL sample of 0.1 M CH_3COOH is titrated with 0.1 M NaOH, calculate the pH of the solution. (20 pts)
(a) After 8.0 mL of 0.1 M NaOH has been added.
(b) At the equivalence point of the titration.