

淡江大學八十七學年度日間部轉學生入學考試試題

系列：化學系三年級

科目：普通化學

本試題共 | 頁

A. 時事題 (20分)

1. 何謂“溫室效應”?
2. 何謂“聖嬰現象”?

B. Writing the names of the following compounds or the formula from the names. (15 pts)

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|--------------------------------------|---------------------|------------------------|
| 1. $\text{CH}_3\text{CH}_2\text{OH}$ | 2. PbCrO_4 | 3. Titanium (IV) Oxide |
| 4. Tetraphosphorus hexoxide | 5. Sulfuric acid | |

C. Explanation (15 pts) “解釋下列各名詞”

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|--------------------|----------------------------|------------|
| 1. Buffer solution | 2. Catalyst | 3. Isotope |
| 4. Ideal gas | 5. Lechatelier's principle | |

D. Predicting molecular geometries of the following molecules by using VSEPR method. (10 pts)

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|-------------------|------------------|------------------|-------------------|------------------|
| 1. XeF_4 | 2. SF_6 | 3. SO_2 | 4. PCl_5 | 5. NH_3 |
|-------------------|------------------|------------------|-------------------|------------------|

E. What is the density of oxygen in grams per liter at 47°C and 0.821 atm ? ($R = 0.0821 \text{ l}\cdot\text{atm}/\text{K}\cdot\text{mol}$) (10 pts)

F. What is the molality (m) of a solution containing 6.0 g of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) dissolved in 25.0 g of water. (10 pts) (Glucose m.w. = 180 amu)

G. Calculate the concentration of hydrogen ion (H^+) and hydroxide ion (OH^-) at 25°C in 0.01 M Ca(OH)_2 . (10 pts)

H. A liter of a solution saturated at 25°C with calcium oxalate, CaC_2O_4 , is evaporated to dryness giving a 0.0061 g residue of CaC_2O_4 . Calculate the solubility product constant (K_{sp}) for this salt at 25°C . (10 pts) (CaC_2O_4 m.w. = 128 amu)