

系別：化學學系三年級

科目：普通化學

准帶項目請打「○」否則打「×」	
×	簡單型計算機

節次：7月14日第3節
本試題共2頁

本試題雙面印製

第一部分：選擇題（單選，每題5分，共20分）

- Which of the following sets of elements are all in the same group in the periodic table?
a. Fe, Ru, Os b. Sn, As, S c. Rh, Pd, Ag d. Se, Te, Pr
- Which of the following elements is a non-metal element?
a. At b. W c. Y d. In
- Which of the following melting points is incorrect (unreasonable)?
a. HF: -102°C b. HCl: -85°C c. HBr: -67°C d. HI: -51°C
- Which of the following molecules is polar?
a. CF_4 b. CO_2 c. PF_5 d. CO

第二部分：填充題（每個空格3分，共30分）

- The bond angles for PCl_5 are _____.
- The number of valence electrons for CO_2 is _____.
- Give the names of the following elements:
a. Ne: _____ b. N: _____ c. K: _____
- Give the number of protons and neutrons in the nucleus of $^{65}_{29}\text{Cu}$:
number of protons: _____ number of neutrons: _____
- Place the species below in order of shortest to longest carbon-oxygen bond.
 $\text{CO}, \text{CO}_2, \text{CO}_3^{2-}$ _____ < _____ < _____

第三部分：問答題（共50分）

- Compare the bond angles for CH_4 , H_2O , and NH_3 . Explain. (10分)
- Write the Lewis structure that obeys the octet rule for SO_4^{2-} . (3分)
Assign the formal charge for the central sulfur atom. (2分)

◀ 注意背面尚有試題 ▶

淡江大學九十三年學年度轉學生招生考試試題 ³⁰⁻²

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3. Write the expected electron configurations for each of the following atoms: Ag, Cl. (10分)
4. a. Give orbital drawings for all possible interactions between p orbitals. Label your drawings. (5分)
b. Describe and draw the π interaction between two d orbitals. (5分)
5. Describe the types of forces that maintain the tertiary structures of a protein. (15分)