

淡江大學九十一年度日間部轉學生招生考試試題

系別：化學系二年級

科目：普通化學

准帶項目請打「○」否則打「×」
計算機
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本試題共 1 頁

應按題目順序作答、共計五題、每題二十分

- Draw the Lewis Structure with resonance structures for Selenium Trioxide, SeO_3 . Indicate the value for the formal charge on each atom.
 - Draw the Geometrical Structure for the compound SI_5^- .
- Using the following bond dissociation energies calculate ΔH for the combustion of 2.0 moles of ethane. Be sure to write the balanced equation, and show all your work.
 $D(\text{C-H}) = 414 \text{ kJ/mol}$
 $D(\text{C-C}) = 347 \text{ kJ/mol}$
 $D(\text{O=O}) = 498 \text{ kJ/mol}$
 $D(\text{C=O}) = 799 \text{ kJ/mol}$
 $D(\text{O-H}) = 464 \text{ kJ/mol}$
 - Predict the ΔH for the combustion of 2.0 moles of ethanol will be more or less than the ΔH for the combustion of 2.0 moles of ethane.
- Name the type of hybrid valence orbitals and draw an orbital diagram for the hybrid orbitals for all the center atom in the following Lewis Structure of the acetone and ClO_4^- .
 - Draw the molecular orbital energy level diagram of CO molecule.
- Using the acetic acid and sodium acetate to prepare a buffer solution of pH 4.8. The acidity of acetic acid, K_a , is 1.8×10^{-5} .
 - Write the equilibrium chemical reaction of ethanol with $\text{K}_2\text{Cr}_2\text{O}_7$ in acidic solution.
- Identify the changes in processes indicated in the following phase diagram.
 - Define and explain the points indicated by a circle in the diagram

