

淡江大學 103 學年度碩士班招生考試試題

系別：化學學系

科目：普通化學

考試日期：3月2日(星期日) 第2節

本試題共 5 大題， 1 頁

1. (20 pts) In which of the following diatomic molecules would the bond strength be expected to weaken as an electron is removed?

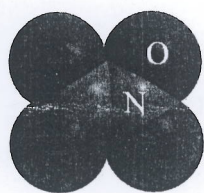
- (a) H_2 (b) B_2 (c) C_2^{2-} (d) OF

2. (20 pts) For N_2 , answer the following questions.

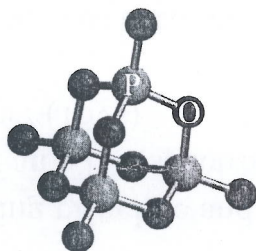
- (a) Draw the molecular orbital energy level diagram. Label HOMO, LUMO, and HOMO/LUMO gap.
 (b) When N_2 is in the excited state, one HOMO electron is pumped into LUMO. What is the bond order of excited N_2 ?

3. (15 pts) Give the empirical formula for each of the compounds represented below.

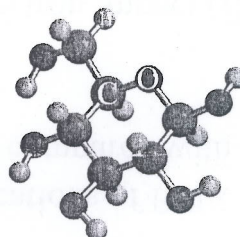
(a)



(b)



(c)



4. (30 pts) Name compounds (a), (b), (c) and (d). Write formulas for (e) and (f).

- (a) $KMnO_4$ (b) Li_3N (c) CsF (d) $NaHCO_3$ (e) aluminum selenide (f) sodium peroxide

5. (15 pts) Estimate the dimensions (length, width, thickness; in Å) of a benzene molecule.