淡江大學 103 學年度日間部轉學生招生考試試題

系別：化學學系二年級　　科目：普通化學

考試日期：7 月 19 日(星期六) 第 3 節　　本試題共 五 大題， 壹 頁

本試題共五大題，每題 20 分

1. How can both n-type and p-type semiconductors be produced from pure silicon, respectively? Explain how n-type and p-type semiconductors increase electrical conductivity over that of pure silicon?

2. At elevated temperatures, $NaClO_3$ decomposes to produce sodium chloride and oxygen gas. A 0.8765 g sample of impure $NaClO_3$ was heated until the production of oxygen gas ceased. The O_2 gas collected over water occupied 57.2 mL at a temperature of 22℃ and a pressure of 734 torr. Calculate the mass percent of $NaClO_3$ in the original sample. (Na = 22.99, Cl = 35.45, O = 16.00. At 22℃ the vapor pressure of water is 19.8 torr)

3. When the supply of oxygen is limited, iron metal reacts with oxygen to produce a mixture of FeO and Fe_2O_3. In a certain experiment, 40.00 g iron metal was reacted with 22.40 g oxygen. After the experiment, the iron was totally consumed, and 6.48 g O_2 gas remained. Calculate the mounts of FeO and Fe_2O_3 formed in this experiment. (Fe = 55.85)

4. Draw all the structural and geometrical (cis-trans) isomers of C_3H_5Cl.

5. Write the formula for each of the following compounds:
   (a) sodium peroxide (b) ammonia (c) sodium hydrogen carbonate (d) sodium hypochlorite
   (e) potassium bromate