

# 大葉大學九十一學年度轉學招生考試試題紙

系 別	日\ 第二部	年級	考 試 科 目 ( 中 文 名 稱 )	考試日期	節次	備註
食品工程學系	日	二	普通化學	7月23日	四	共乙頁

註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

1. Give the formulas for each of the following compounds: (18%)
  - (1) potassium hydroxide
  - (2) nitric acid
  - (3) calcium chloride
  - (4) sodium carbonate
  - (5) ammonium acetate
  - (6) iron(II) nitrate
2. How many grams of NaCl (58.5 g/mol) in 2500.0 mL of a 0.20 M solution? (10%)
3. A piece of iron into an aqueous solution of blue  $\text{Cu}^{2+}$  ions, the spontaneous redox reaction will occur. An aqueous solution of  $\text{Fe}^{2+}$  ions is red-brown in color. (12%)
 
$$\text{Fe} + \text{Cu}^{2+} \rightarrow \text{Fe}^{2+} + \text{Cu}$$
  - (1) What is oxidized?
  - (2) What is reduced?
  - (3) What is the oxidizing agent?
  - (4) What is the reducing agent?
4. Which atom is larger, lithium (Li) or sodium (Na)? Explain your answer. (10%)
5. Suppose 12.0 g of carbon (C) react with 70.0 g of sulfur (S) to give 76.0 g of the compound carbon disulfide ( $\text{CS}_2$ ). In the process, all the carbon gets used up, but some elemental sulfur is left over. (15%)
  - (1) For the law of conservation of matter to be obeyed, how much sulfur is unused?
  - (2) What is the percent C in  $\text{CS}_2$ ?
  - (3) What is the percent S in  $\text{CS}_2$ ?
6. Balance the following chemical equations. (20%)
  - (1)  $\text{Fe}_2\text{O}_3 + \text{C} \rightarrow \text{Fe} + \text{CO}_2$
  - (2)  $\text{Al}_2\text{Cl}_6 + \text{H}_2\text{O} \rightarrow \text{Al}(\text{OH})_3 + \text{HCl}$
  - (3)  $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
  - (4)  $\text{HCl} + \text{Na}_2\text{CO}_3 \rightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$
7. Assign oxidation states to all the atoms in the following molecules. (15%)
  - (1)  $\text{H}_2\text{S}$
  - (2)  $\text{MgSO}_4$
  - (3)  $\text{S}_2\text{O}_3^{2-}$
  - (4)  $\text{MnO}_4^-$
  - (5)  $\text{HNO}_3$