

大葉大學 95 學年度轉學招生考試試題紙

系	組	別	日\ 第二部	年級	考試科目 (中文名稱)	考試日期	節次	備註 頁
生物產業科技學系			A	二	普通化學	8月7日	四	共三頁 可攜帶計算機 P2-1

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） 13:30~14:50

(一) 選擇題：(66%)

- How many significant figures should there be in the answer when you divide 4.1 by 7.464?  
a. 7      b. 4      c. 3      d. 2
- Which of the following is a physical change?  
a. burning gasoline      b. cooking an egg      c. decomposing meat  
d. evaporating water
- The symbol for manganese is  
a. Mg      b. Mn      c. Ma      d. Mo
- The number of neutrons in one atom of  $^{206}_{82}\text{Hg}$  is  
a. 82      b. 206      c. 124      d. 288
- How many electrons are present in a fluorine, F, atom?  
a. 9      b. 10      c. 11      d. 18
- The correct name for an aqueous solution of HCl is  
a. chloric acid      b. hydrochloric acid      c. hypochloric acid  
d. hypochlorous acid
- When an acid reacts with a base, which product always forms?  
a. hydrogen      b. carbon dioxide      c. water  
d. hydrogen and carbon dioxide
- A reaction that involves a transfer of electrons is called a(n) \_\_\_\_\_ reaction.  
a. precipitation      b. acid-base      c. oxidation-reduction  
d. double-displacement
- Which gas has the lowest mass per mole?  
a. nitrogen      b. oxygen      c. fluorine      d. hydrogen
- The empirical formula for the compound having the formula  $\text{H}_2\text{C}_2\text{O}_4$  is  
a. COH      b.  $\text{COH}_2$       c.  $\text{C}_2\text{H}_2$       d.  $\text{CO}_2\text{H}$
- Consider the following reaction:  $2\text{A} + \text{B} \rightarrow 3\text{C} + \text{D}$   
3.0 mol A and 2.0 mol B react to form 4.0 mol C. What is the percent yield of this reaction?  
a. 50%      b. 67%      c. 75%      d. 89%
- A given set of f orbitals consists of \_\_\_\_\_ orbital(s).  
a. 1      b. 3      c. 5      d. 7
- What element has the electron configuration  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$ ?  
a. Rb      b. Ca      c. Sc      d. K
- Which of these is *not* an ionic compound?  
a.  $\text{K}_2\text{CO}_3$       b. HCl      c. NaSCN      d.  $\text{NH}_4\text{I}$
- Determine the pressure exerted by 1.80 mol of gas in a 2.92 L container at  $32^\circ\text{C}$ .  
a. 1.62 atm      b. 8.57 atm      c. 15.4 atm      d. 22.4 atm

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生	科	系	日	二	普 化	8月7日	四	P2-2

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16. What volume will 28.0 g of  $N_2$  occupy at STP?  
 a. 5.60 L      b. 11.2 L      c. 22.4 L      d. 44.8 L
17. The specific heat capacity of liquid water is 4.18 J/g °C. Calculate the quantity of energy required to heat 10.0 g of water from 26.5°C to 83.7°C.  
 a. 837 J      b. 572 J      c. 239 J      d.  $2.39 \times 10^3$  J
18. Which of the following should have the lowest boiling point?  
 a.  $CH_4$       b.  $C_2H_6$       c.  $C_3H_8$       d.  $C_4H_{10}$
19. A chemist needs 225 mL of 2.4 M HCl. What volume of 12 M HCl must be dissolved in water to form this solution?  
 a. 3.4 mL      b. 7.2 mL      c. 21 mL      d. 45 mL
20. You mix 100.0 mL of a 0.100 M NaOH solution and 150.0 mL of a 0.100 M HCl solution. Determine the concentration of  $H^+$  in the final mixture after the reaction is complete.  
 a. 0.150 M      b. 0.100 M      c. 0.0600 M      d. 0.0200 M
21. Consider the reaction  $HNO_2(aq) + H_2O(l) \rightarrow H_3O^+(aq) + NO_2^-(aq)$ . Which species is the conjugate base?  
 a.  $HNO_2(aq)$       b.  $H_2O(l)$       c.  $H_3O^+(aq)$       d.  $NO_2^-(aq)$
22. A solution where  $[H^+] = 10^{-13} M$  is \_\_\_\_\_.  
 a. basic      b. neutral      c. acidic      d. strongly acidic

(二) 填充題 (14%)

1. Convert:  $27^\circ C =$  \_\_\_\_\_ K.
2. Classify each of the following as an element (A), a compound (B), a homogeneous mixture (C), or a heterogeneous mixture (D).  
 a. table salt \_\_\_\_\_      b. chlorine gas \_\_\_\_\_  
 c. sand in water \_\_\_\_\_      d. petroleum \_\_\_\_\_  
 e. caffeine \_\_\_\_\_
3. The formula for barium nitrate is \_\_\_\_\_

(三) 計算題 (20%)

1. Balance the equation       $NaBH_4 + BF_3 \rightarrow NaBF_4 + B_2H_6$
2. Draw the Lewis structure for  $HCCL_3$
3. Write the equilibrium expression for the reaction       $3O_2(g) \rightleftharpoons 2O_3(g)$
4. For the reaction       $2S(s) + 3O_2(g) \rightarrow 2SO_3(g)$   
 if 6.3 g of S is reacted with 10.0 g of  $O_2$ , show by calculation which one will be the limiting reactant.