

# 銘傳大學 101 學年度轉學生招生考試

## 生物科系學系

### 二年級第二節

#### 「普通化學」試題

(第 1 頁共 2 頁) (限用答案本作答)

可使用計算機  不可使用計算機

考生可使用計算機，常用的元素原子量如下

C: 12.01, H: 1.008, N: 14.01, O: 16.00, S: 32.07, Na: 23, Ag: 107.9, Zn: 65.4

#### A、配合題 (請從表格中找出正確答案)(20%)

1. hydrogen chloride
2. carbon dioxide.
3. chloric acid
4. methane
5. sodium hydroxide
6. zinc iodide
7. hydrocyanic acid
8. carbonic acid
9. potassium dichromate
10. ammonium sulfate

a	CO <sub>2</sub>	j	NH <sub>4</sub> SO <sub>4</sub>	s	C <sub>2</sub> H <sub>6</sub>
b	HClO <sub>4</sub>	k	H <sub>2</sub> SO <sub>4</sub>	t	KOH
c	ZnCl <sub>2</sub>	l	NaOH	u	K <sub>2</sub> CrO <sub>4</sub>
d	H <sub>2</sub> CN	m	HClO <sub>3</sub>	v	(NH <sub>4</sub> ) <sub>2</sub> S
e	CO	n	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	w	HCN
f	HCl	o	HCO <sub>3</sub>	x	ZnI
g	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	p	HClO <sub>2</sub>	y	ZnI <sub>2</sub>
h	H <sub>2</sub> CO <sub>3</sub>	q	SO <sub>2</sub>	z	HBr
i	CH <sub>4</sub>	r	C <sub>2</sub> H <sub>4</sub>		

本試題係兩面印刷  
Exam Printed on 2 sides.

#### B、非選擇題 (80%)

1. (a) Calculate the density of mercury if 100 g occupies a volume of 7.36 cm<sup>3</sup>.  
(b) Calculate the volume of 65.0 g of liquid methanol (wood alcohol) if its density is 0.791 g/ml.  
(c) What is the mass in grams of a cube of gold (density = 19.32 g/cm<sup>3</sup>) if the length of the cube is 2.00 cm? (6%)
2. A gas at 25°C fills a container whose volume is 1.05\*10<sup>3</sup> cm<sup>3</sup>. The container plus gas has a mass of 837.6 g. The container, when emptied of all gas, has a mass of 836.2 g. What is the density of the gas at 25°C? (6%)
3. Determine the oxidation number of sulfur in (a) H<sub>2</sub>S, (b) S<sub>8</sub>, (c) SCl<sub>2</sub>, (d) Na<sub>2</sub>SO<sub>3</sub>, (e) SO<sub>4</sub><sup>2-</sup>. (10%)
4. How many milliliters of 3.0 M H<sub>2</sub>SO<sub>4</sub> are needed to make 450 ml of 0.10 M H<sub>2</sub>SO<sub>4</sub>? (6%)

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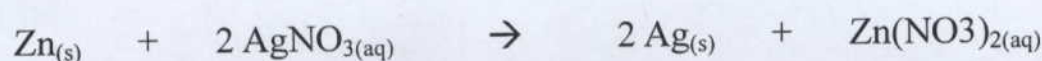
5. A weather forecaster predicts the temperature will reach 31°C. What is this temperature (a) in K, (b) in °F? (6%)

6. Complete the table by filling in the formula for the ionic compound formed by each pair of cations and anions, as shown for the first pair. (15%)

Ion	K <sup>+</sup>	NH <sub>4</sub> <sup>+</sup>	Mg <sup>2+</sup>	Fe <sup>3+</sup>
Cl <sup>-</sup>	KCl	(d)	(h)	(l)
OH <sup>-</sup>	(a)	(e)	(i)	(m)
CO <sub>3</sub> <sup>2-</sup>	(b)	(f)	(j)	(n)
PO <sub>4</sub> <sup>3-</sup>	(c)	(g)	(k)	(o)

7. Calculate the molarity of a solution made by dissolving 23.4 g of sodium sulfate (Na<sub>2</sub>SO<sub>4</sub>) in enough water to form 125 ml of solution. (6%)

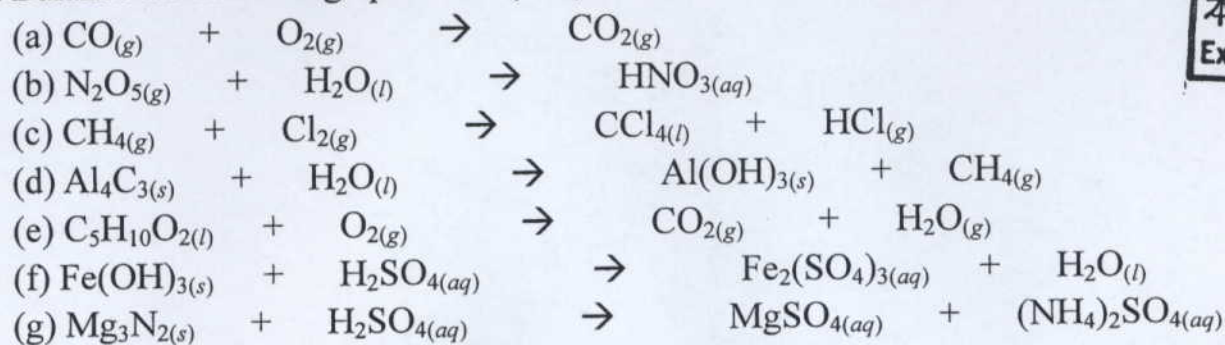
8. When a 2.00 g strip of zinc metal is placed in an aqueous solution containing 2.50 g of silver nitrate, the reaction is



(a) Which reactant is limiting? (b) How many grams of Ag form? (c) How many grams of Zn(NO<sub>3</sub>)<sub>2</sub> form? (d) How many grams of the excess reactant are left at the end of the reaction? (12%)

9. Ascorbic acid (vitamin C) contains 40.92% C, 4.58% H, and 54.50% O by mass. What is the empirical formula of ascorbic acid? (6%)

10. Balance the following equations: (7%)



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試題完  
End of exam