

大葉大學 96 學年度轉學招生考試試題紙

學系	部別： 日間部/第二部/ 進修學士班/四技	年級	考試科目 (中文名稱)	考試日期	節次	備註
分子生物科技學系	大學日間部	二	普通化學	7月31日	四	13:30 ~ 14:50 (共二頁)

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）。

P 2-1

1. Define the following terms:

配分：第1~2題，每題各10分

- a. science
- b. chemistry

第3~18題，每題各5分

2. Classify each of the following as a physical (P) or a chemical (C) change.

- | | | |
|-------|----|---------------------------|
| _____ | a. | cooking an egg |
| _____ | b. | boiling water |
| _____ | c. | ironing a shirt |
| _____ | d. | burning gasoline |
| _____ | e. | decomposing water |
| _____ | f. | evaporating alcohol |
| _____ | g. | sanding a table top |
| _____ | h. | grinding grain |
| _____ | i. | fermenting fruit juice |
| _____ | j. | dissolving sugar in water |

3. How many milliliters are in 0.020 L?

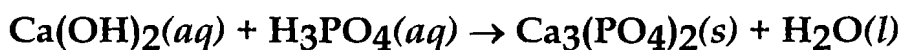
4. How many protons, electrons, and neutrons, respectively, does ^{16}O have?

- | | | |
|-------------|--------------|-------------|
| a. 8, 18, 8 | b. 8, 8, 8 | c. 8, 10, 8 |
| d. 8, 14, 8 | e. 8, 18, 16 | |

5. Write the correct formula for sulfuric acid.

6. Sodium metal reacts with water to produce aqueous sodium hydroxide and hydrogen gas. Write the balanced equation for this reaction.

7. When the following equation is balanced, what is the coefficient for H_2O ?



8. Because atoms are so _____, the standard units of mass are not useful in measurements.

- | | | |
|-------------|-------------------------|-----------|
| a. unstable | b. scattered | c. varied |
| d. small | e. electrically charged | |

9. Refer to the following equation: $4\text{NH}_3(\text{g}) + 7\text{O}_2(\text{g}) \rightarrow 4\text{NO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{g})$

How many moles of ammonia will be required to produce 10.0 mol of water?

- | | | |
|-------------|------------------|-------------|
| a. 4.00 mol | b. 10.0 mol | c. 6.67 mol |
| d. 5.00 mol | e. none of these | |

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P2-2

10. The electron configuration for the oxygen atom is

- a. $1s^2 2p^6$ b. $[\text{He}] 2s^6$ c. $[\text{Ne}] 2s^2 2p^4$
 d. $1s^2 2s^2 2p^4$ e. none of these

11. Complete the table by giving the predicted formulas of the compounds formed between the elements listed.

	Br	S
Na		
Mg		
Al		

12. A 15.0 g sample of a hydrocarbon is placed in a balloon at 1.00 atm and 25°C and the volume of the balloon is 12.2 L. The hydrocarbon is 79.89% carbon and 20.11% hydrogen by mass. Determine the molecular formula of the hydrocarbon.

13. Calculate the quantity of energy required to change 3.00 mol of liquid water to steam at 100°C. The molar heat of vaporization of water is 40.6 kJ/mol.

14. Approximately 38 g of NaCl can be dissolved in 100 g of water at 25°C. A solution prepared by adding 35 g of NaCl to 100 g of water at 25°C is unsaturated.

- a. True
 b. False

15. According to the Bronsted-Lowry definition, a base is

- a. a substance that increases the hydroxide ion concentration in water
 b. a substance that can accept a proton from an acid
 c. a substance that can donate an electron pair to the formation of a covalent bond
 d. a substance that increases the anion formed by the autoionization of the solvent
 e. none of these

16. Chemists believe that chemical reactions occur because the molecules involved in the reaction _____.

- a. spontaneously break apart then recombine
 b. are always unstable
 c. exist only below a certain maximum temperature
 d. collide with each other with enough energy to break chemical bonds
 e. are moving so fast that the chance of interaction is very small

17. _____ is a loss of electrons.

- a. Reduction b. Neutralization c. Oxidation
 d. Galvanization e. None of these

18. A particular radioactive element has a half-life of 2.00 weeks. What percent of the original sample is left after 28.0 days?