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
生物資源學系	日	二	普通化學	8月7日	4	可攜計算機

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 共2頁 P.1

單選題，每題2.5分

1. Which of the following is a binary compound?

A. O_2 B. HCN C. H_2SO_4 D. H_2S

2. Titanium(IV) oxide has the formula

A. Ti_4O B. TiO_4 C. Ti(IV)O D. TiO_2

3. Which of the following is named incorrectly?

A. $FeSO_4$; iron(II) sulfate B. K_3P; potassium phosphide

C. $Fe(OH)_2$; iron(III) hydroxide D. All are correct.

4. Potassium chlorate has the formula

A. KCl B. KClO C. $KClO_2$ D. $KClO_3$

5. Which of the following is an element?

A. iron B. wood C. water D. blood

6. Express 1870000 in scientific notation.

A. 5.49×10^{-8} B. 1.87×10^{-6} C. 1.87×10^{6} D. 187×10^{6}

7. The measurement 4.3×10^{3} g also could be written as

A. 4.3 g B. 4.3 mg C. 4.3 pg D. 4.3 kg

8. What is the most abundant element on the earth (including the crust, oceans, and atmosphere)?

A. silicon B. oxygen C. Hydrogen D. carbon

9. Which of the following elements is an alkaline earth metal?

A. Ca B. Cu C. Fe D. Na

10. Which atomic particle determines the chemical behavior of an atom?

A. proton B. electron C. neutron D. nucleus

11. Convert 62°F to kelvins.

A. 290 K B. 340 K C. 303 K D. -260 K

12. Convert 692 m to decimeters.

A. 69200 dm B. 6.92 dm C. 69.2 dm D. 6920 dm

13. The amount of energy needed to heat 2.00 g of carbon from 50.0°C to 80.0°C is 42.6 J. The specific heat capacity of this sample of carbon is

A. 2556 J/g °C B. 0.710 J/g °C C. 639 J/g °C D. 0.355 J/g °C

14. The symbol for the element mercury is

A. Hg B. Mn C. Mg D. Ag

15. An atom with 15 protons and 16 neutrons is an atom of

A. P B. Ga C. S D. Pd

16. Water is an example of

A. a homogeneous mixture B. a heterogeneous mixture C. a compound D. an element

17. How many electrons are present in a bromine atom with a mass number of 87?

A. 35 B. 87 C. 122 D. 80

Use the following choices to describe the molecular structure of each of the following molecules or ions.

A. linear B. trigonal planar C. tetrahedral D. pyramidal

18. CH_4

19. PF_3

20. Determine the normality of a base if 93.0 mL of 1.5 *M* HCl is required to neutralize 52.0 mL of it.

A. 1.3 *N* B. 6.4 *N* C. 5.5 *N* D. 2.7 *N*

21. If you mix 40.0 mL of a 0.200 *M* solution of K_2CrO_4 is reacted with 40.0 mL of a 0.200 *M* solution of $AgNO_3$, what mass of solid forms? Cr, 52; Ag, 107.9

A. 0.896 g B. 1.33 g C. 1.79 g D. 2.65 g

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生物資源暨漁業系	日	二	普通化學	8月7日	4	可攜帶計算機

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共2頁 P2-2

You have 3.00 L of a 3.00 *M* solution of NaCl*(aq)* called solution A. You also have 2.00 L of a 2.00 *M* solution of $AgNO_3$*(aq)* called solution B. You mix these solutions together, making solution C.

Calculate the concentrations (in *M*) of the following ions in solution C.

22. Na^+

A. 0 *M* B. 0.800 *M* C. 1.50 *M* D. 1.80 *M*

23. Cl^-

A. 0 *M* B. 0.800 *M* C. 1.00 *M* D. 1.50 *M*

24. Ag^+

A. 0 *M* B. 0.800 *M* C. 1.00 *M* D. 1.50 *M*

25. NO_3^-

A. 0 *M* B. 0.800 *M* C. 1.00 *M* D. 1.50 *M*

26. What is the limiting reactant when 15.0 mL of 0.150 M lead(II) nitrate solution is reacted with 20.0 mL of 0.200 M sodium iodide solution?

A. $PbNO_3$ B. $Pb(NO_3)_2$ C. NaI D. PbI_2

27. A vessel with an internal volume of 10.0 L contains 2.80 g of nitrogen gas, 0.403 g of hydrogen gas, and 79.9 g of argon gas. At 25°C, what is the pressure (in atm) inside the vessel? Ar, 39.95

A. 0.471 atm B. 6.43 atm C. 3.20 atm D. 5.62 atm

28. Hydrogen peroxide decomposes to form water and oxygen gas according to the following equation:

$2H_2O_2(aq) \rightarrow + 2H_2O(l) + O_2(g)$

Suppose 100.0 g of hydrogen peroxide decomposes and all of the oxygen gas is collected in a balloon at 1.00 atm and 25°C. Determine the volume of the balloon.

A. 22.4 L B. 24.5 L C. 35.9 L D. 71.9 L

29. All the following are clues that a chemical reaction has taken place *except*

A. a color change B. a solid forms C. the reactant is smaller D. bubbles form

30. Which color of visible light has the least amount of energy per photon?

A. violet B. blue C. yellow D. red

31. Which electron configuration indicates a transitional element?

A. $1s^22s^22p^63s^13p^6$ B. $1s^22s^22p^63s^23p^64s^23d^3$ C. $1s^22s^22p^5$ D. $1s^22s^22p^63s^23p^64s^23d^{10}4p^2$

32. Consider the following reaction:

$2A + B \rightarrow 3C + D$

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%

33. A certain compound is found to have the percent composition (by mass) of 85.63% C and 14.37% H. The molar mass of the compound was found to be 42.0 g/mol. Calculate the empirical and the molecular formulas.

A. C_2H_3 and C_4H_6 B. CH and C_3H_3 C. CH_2 and C_3H_6 D. CH_3 and C_2H_6

34. Consider separate 100.0-g samples of each of the following: NH_3, N_2O, HCN, and HNO_3. Which of the samples has the least mass of nitrogen?

A. NH_3 B. N_2O C. HCN D. HNO_3

35. The most common factors that cause chemical reactions to occur are all the following *except*

A. formation of a solid B. formation of water C. transfer of electrons D. a decrease in temperature

36. A reaction that involves a transfer of electrons is called a(n) _____ reaction.

A. precipitation B. acid-base C. oxidation-reduction D. double-displacement

37. The net ionic reaction for the reaction between aqueous lead nitrate and aqueous potassium iodide is

A. $Pb(NO_3)_2(aq) + KI(aq) \rightarrow PbI_2(s) + KNO_3(aq)$

B. $Pb^{2+}(aq) + NO_3^-(aq) + K^+(aq) + I^-(aq) \rightarrow Pb^{2+}(aq) + I^-(aq) + K^+(aq) + NO_3^-(aq)$

C. $Pb^{2+}(aq) + 2NO_3^-(aq) + 2K^+(aq) + I^-(aq) \rightarrow PbI_2(s) + 2K^+(aq) + 2NO_3^-(aq)$

D. $Pb^{2+}(aq) + 2I^-(aq) \rightarrow PbI_2(s)$

38. The equation $2Ag_2O(s) \rightarrow 4Ag(s) + O_2(g)$ is a(n) _____ reaction.

A. oxidation-reduction B. decomposition C. combustion D. two of these

39. Which of the following atoms has the highest ionization energy?

A. Al B. Si C. P D. As

40. How many significant figures are in the number 3.400?

A. 1 B. 2 C. 3 D. 4