

Chem 110, First Exam

Time : 90 min

2011 - 1st term

**Model (A)**

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| --- | --- |
| Name:  Number:  Section: | Useful information: |

With the best wishes

***General Chemistry Team work***

**Directions:**  for each of the following question, choose the letter that best answers the question and place it on your answer sheet

[1] Which of the following is metalloid

1. the 4th element in the 2nd period
2. **the 15th element in the 4th period**
3. the 6th element in the 3th period
4. the last element in the 6th period

[2] What is the number of oxygen atoms in 0.5 mol of P4O10

1. **3.01×1024**
2. 5×1023
3. 2
4. 4×1023

[3] Analysis of an unknown compound gave the following data C, 47.3%, H, 10.6%, S, 42.1%. the molar mass is 76.2 g/mol. What is the molecular formula?

* 1. C4H7S
  2. C3H7S
  3. **C3H8S**
  4. C4H8S

[4] Which molecule from the following has the largest mass?

1. HF
2. **HCl**
3. H2S
4. H2O

[5] Which of the following prefixes is not correct?

1. **Kilo- k 10-3**
2. micro- µ 10-6
3. nano- n 10-9
4. deci- d 10-1

[6] When balanced the equation, the coefficient of **a** is:

C2H12O5 + **a** O2 → **b** CO2 + **c** H2O

1. 6
2. 5
3. **3**
4. 7

[7] Which of the following is ionic compound

1. **MgCl2**
2. SiCl4
3. PCl3
4. SCl2

[8] Calculate the percent of nitrogen in Ca(NO3)2

1. **17.10%**
2. 19 %
3. 18.02 %
4. 16 %

[9 ] Candela (cd) is the SI base unit of

1. time
2. length
3. **luminous intensity**
4. electrical current

[10] At what temperature does the numerical reading on a Celsius thermometer (0C) equal that on a Fahrenheit thermometer (0F)?

1. 0 °C
2. **–40 °C**
3. 100 °C
4. –32 °C

[11] Express 5500 nm as picometers.

1. 5.5 × 10-7pm
2. 55.0 pm
3. 550 pm
4. **5.5 × 106 pm**

[12] A piece of iron (Fe) metal weighing 194.3 g is placed in a graduated cylinder containing 242.0 mL of water. The volume of water now reads 260.5 mL. From these data calculate the density of iron.

1. **10.5 g/cm3**
2. 1.25 g/cm3
3. 0.746 g/cm3
4. 21.0 g/cm3

[13] The SI prefixes *giga* and *micro* represent, respectively:

1. 10-9 and 10-6
2. 10-9 and 10-3
3. 103 and 10-3
4. **109 and 10-6**

[14] What temperature is 77 K when converted to degrees Celsius?

1. -296 0C
2. 105 0C
3. **-196 0C**
4. 110 0C

[15] How many grams of CS2 are there in 2.55 mol of CS2?

1. 621 g
2. 219.455 g
3. 2.61 g
4. **194.157g**

[16] Determine the number of moles of silver (Ag ) atoms that present in 274.3 g of Ag.

1. 5.432 mol
2. 4.891 mol
3. **2.542 mol**
4. 7.02 × 10-23 mol

[17] The Stock system name for Mn2O7 is

1. dimanganese heptaoxide.
2. **manganese(VII) oxide**
3. magnesium oxide
4. manganese(II) oxide.

[18] NH4+ is an example of which of the following?

1. a monatomic cation
2. a monatomic anion
3. **a polyatomic cation**
4. a polyatomic anion

[19] There are two isotopes of boron, differing with respect to

1. number of electrons
2. **mass number**
3. number of protons
4. atomic number

[20] The complete symbol  for gallium (Ga) with 39 neutrons and

31 protons is

1. 
2. 
3. ****
4. 

[21] The species that has the same number of electrons as is



[22] Vanadium (23V) element is:

1. a metal
2. found in groups B
3. found in a period 4
4. **all the above**.

[23] Which is the formula for the following compound: dinitrogen pentoxide

1. NO2
2. **N2O5**
3. N2O7
4. N5O2

[24] Calculate the percent yield of iron (Fe) if 950 g of Fe3O4 reacted with 130 g of Carbon and the actual yield of Fe was 533 g.

Fe3O4(s) + 2C(s) rx 2CO2(g) + 3Fe(s)

1. 64.3%
2. 57.3%
3. 95.0%
4. **77.5%**

[25] What volume, in mL, of a 0.250 M solution is required to provide 0.0200 mol of NaOH?

1. **80 ml**
2. 8 ml
3. 0.8 ml
4. 800 ml

[26] Which of the following is an empirical formula?

1. C12H22O10
2. **H2SO4**
3. Hg2Cl2
4. S8

[27] A 100 ml sample of 16.5 M HF is diluted to a final volume of 250 ml. What is the molarity of the final solution?

1. 6.3 M
2. 6.0 M
3. **6.6 M**
4. 5.7 M

[28] How many moles of LiClO3 are there in 153 ml of a 1.76 M solution?

1. **0.269 mol**
2. 0.045 mol
3. 0.341 mol
4. 0.407 mol

[29 ] What is the mass in grams of silicon Si that can react with 31.5g of chlorine to produce SiCl4?

Si(*s*) + 2Cl2(*g*) rx SiCl4(*l*)

1. **6.209 g**
2. 66 g
3. 5.32 g
4. 53.26 g

[30] Calculate the molarity of 2.00 g of Na2CO3 in 1000 ml of solution.?

1. 188 M
2. 0.189 M
3. 1.0889 M
4. **0.0189 M**