

Chem 110, First Exam

Time : 90 min

2011 - 1st term

**Model (D)**

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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 metal

1. Si
2. S
3. Se
4. **Sr**

[2] What is the number of moles of oxygen atoms in 2 mol of SO2

1. 20
2. 5
3. **4**
4. 30

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

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

[4] 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

[5] What is the mass, in grams, of three atoms of Ca?

1. **1.99 × 10-22 g**
2. 40.08 g
3. 1 amu
4. 6.022 × 1023 g

[6] Which of the following compound is ionic

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

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

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

[8] Which of the following prefixes means 1/1000?

1. kilo
2. deci
3. centi
4. **milli**

[9] mole (mol) is the SI base unit of

1. mass
2. **amount of substance**
3. length
4. electrical current

[10] A piece of silver (Ag) 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 silver.

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

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

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

[12] 2.5 micrometers (µm) equals to

* 1. 2.5 × 10-6 m
  2. **2.5 × 10-8 m**
  3. 25.0 × 109 m
  4. 2.5 × 10-4 m

[13] What temperature is 88 K when converted to degree Celsius

1. -296 0C
2. 105 0C
3. **-185 0C**
4. 196 0C

[14] The SI prefixes *giga* and *pico* represent, respectively: 

* 1. 10-9 and 10-6.
  2. 106 and 10-3.
  3. 103 and 10-3.
  4. **109 and 10-12.**

[15] The Stock system name for Cr2O3 is 

* 1. **chromium(III) oxide.**
  2. dichromium trioxide.
  3. chromium(VI) oxide.
  4. chromium(II) oxide.

[16] There are two isotopes of lithium, differing with respect to

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

[17] How many electrons, neutrons, and protons are there in ?

1. **94 e, 150 n, 94 p**
2. 94 e, 150 n, 150 p
3. 150 e, 94 n, 94 p
4. 244 e, 150 n, 94 p

[18] A 100 ml sample of 16.5 M HF is diluted to a final volume of 350 ml. What is the molarity of the final solution?

1. 6.3 M
2. 6.0 M
3. 3.2 M
4. **4.7 M**

[19] What is the mass in grams of Silicon (Si) that react with 31.5 g of Chlorine to produce SiCl4?

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

1. 5.32 g
2. 66 g
3. **6.209 g**
4. 53.20 g

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

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

[21] The following species: , , and  all have the same number of

* 1. protons
  2. **electrons**
  3. neutrons
  4. Isotopes

[22] Oxygen (8O) element is:

* 1. a nonmetal
  2. found in groups A
  3. found in a period 2
  4. **all the above**

[23] Name the following ions respectively: Cr3+ , Cl- , NO2-

1. krypton(III) , carbon , nitrate
2. chromium(III) , chlorine , nitride
3. **chromium(III) , chloride , nitrite**
4. chromium , chloride , nitrate

[24] Write the formula for the following compound: tetraphosphorus decoxide

1. **P4O10**
2. P3O8
3. P10O4
4. P2O5

[25] What is the coefficient of H2O when the following equation is balanced with the smallest numbers?

\_\_\_ Al4C3 + \_\_\_ H2O → \_\_\_ Al(OH)3 + 3 CH4

1. 3
2. 4
3. 6
4. **12**

[26] How many grams of CS2 in 1.55 mol of CS2?

1. 11.82 g
2. 621.02 g
3. 261 g
4. **118.02 g**

[27] Calculate the molarity of 2.00 g of NaOH in 200 ml of solution.?

1. 520 M
2. **0.250 M**
3. 5.20 M
4. 0.520 M

[28] Consider the reaction:

4NH3(g) + 5O2(g) → 4NO(g) + 6H2O(g).

If 150. g of ammonia and 150. g of oxygen gas react, what is the percent yield of nitric oxide (NO)? ( The actual yield of nitric oxide (NO) is 87 g)

1. 33%
2. 100%
3. 49%
4. **77%**

[29] How many moles of LiClO3 are there in 250 ml of a 1.76 M solution?

1. 0.045 mol
2. **0.440 mol**
3. 0.341 mol
4. 0.407 mol

[ 30] Determine the number of moles of silver (Ag ) atoms that present in 427.3 g of Ag.

1. 5.432 mol
2. 4.891 mol
3. **3.960 mol**
4. 7.02 × 10-23 mol