

Exam Tips and Final Review

Ions

We committed a number of ion names and formulas to memory – the anions possess either *-ide* (mostly atomic anions, such as chloride, Cl^-) or *-ate* (molecular anions, such as SO_4^{2-} , sulfate) suffixes. There are also many ‘in between’ molecular anions containing fewer, or occasionally more, oxygen atoms than the *-ate* ions. For example (from p 142):

<u>Ion formula</u>	<u>Name or ion</u>
Cl^-	<i>chloride</i>
ClO^-	<i>Hypochlorite</i>
ClO_2^-	<i>Chlorite</i>
ClO_3^-	<i>Chlorate</i>
ClO_4^-	<i>Perchlorate</i>



The above table is worth memorizing, as there is likely to be one or two questions on the final regarding the ‘in between’ molecular anions of oxygen and chlorine.

Example: Lithium chlorite has the formula:

- | | | | |
|----|------------------|----|------------------|
| a. | LiClO | d. | LiClO_4 |
| b. | LiClO_3 | e. | LiCl |
| c. | LiClO_2 | | |

Solubility

A solubility chart will NOT be provided for final, although you will have access to a periodic table. This is not a problem, however, as there are only two basic facts to remember:

Chlorides are mostly soluble - AgCl(s) is an important exception

Sulfates are mostly soluble – $\text{BaSO}_4(\text{s})$ is an important exception

Use the above information to answer solubility questions on the final

Final Exam Review

Information

Your ACS standardized final exam is a *comprehensive*, 70 question multiple choice (a – d) test. Questions are graded as either correct or incorrect. No points are subtracted for wrong guesses. There are two versions of the test, so your neighbors will have a different version of the test.

I normalize your final exam score out of 70 to a score out of 200. This score out of 200 is included in your final course total.

Tips



A great way to ensure a good grade on your 101 and/or 102 final is to practice ACS style questions*. To help you with this, a pair of ACS study guides has been put on reserve in the library. Additionally, if you are going to take the MCAT or PCAT, the ACS guide is makes for an excellent resource for these tests' respective chemistry sections. If you wish to purchase a copy (\$12 ea.) log on to:

http://www3.uwm.edu/dept/chemexams/guides/details_guides.cfm?ID=162

*Ask me to tell you the 'BB' story

Due to the number of questions set and the time allowed, most of the multiple choice questions you will meet on the final may be considered to be 'lite' versions of my midterm and quiz questions. The following tips will help you record a better score on your final:

1. The test is *cumulative*, so review everything we have covered since the beginning for the course.
2. Review *all the topics*, but concentrate on topics you have had *difficulty* with. Since the questions are not 'super hard', this will increase your number of correct answers. Do not fall in to the trap of studying what you are good at (you'll get those questions right regardless, most likely), so preferentially study what you are 'bad' at.

3. Try to answer the questions *in order* when using a scantron sheet. It is better to guess a wrong answer (and then come back to it) than risk systematically filling out ovals 'a line out'.
4. *Work out the answers on the scratch paper provided*, then check the possible answers provided. This will cut down on 'red herring' type errors (see below)
5. Watch out for obvious 'red herrings', as illustrated by the following example. MOST questions DO NOT have a red herring, but a reasonable fraction do:

Example: CO is the formula for:

- | | | | |
|----|-----------------|----|---------------------|
| a. | copper | c. | cobalt |
| b. | carbon monoxide | d. | Monocarbon monoxide |

Sample Final Exam Questions

1. In all neutral atoms, there are equal numbers of:

- | | | | |
|----|-----------------------|----|-------------------------|
| a. | electrons and protons | c. | electrons and neutrons |
| b. | protons and neutrons | d. | electrons and positrons |

2. Which pair of particles has the same number of electrons:

- | | | | |
|----|-------------------|----|----------------------|
| a. | F^- , Mg^{2+} | c. | P^{3-} , Al^{3+} |
| b. | Ne, Ar | d. | Br^- , Se |

3. What is the mass percent of oxygen in $Ca(NO_3)_2$?

- | | | | |
|----|--------|----|--------|
| a. | 29.3 % | c. | 58.5 % |
| b. | 47.1 % | d. | 94.1% |

4. A 24.0 g sample of carbon contains how many atoms:

- a. 6.02×10^{23} c. 3.01×10^{23}
b. 1.20×10^{24} d. 2.04×10^{24}

5. When 1.187 g of a metallic oxide is reduced with excess hydrogen, 1.054 g of the metal is produced. What is the metallic oxide?

- a. Ag_2O c. K_2O
b. Cu_2O d. Tl_2O

6. A single molecule of a certain compound has a mass of 3.4×10^{-22} g. Which value comes closest to the mass of a mole of this compound?

- a. 50 g c. 150 g
b. 100 g d. 200 g

7. The electronic configuration for the Ca atom is:

- a. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$ c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
b. $1s^2 2s^2 2p^6 3s^2$ d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^2$

8. Two moles of any gas will occupy what volume at STP?

- a. 22.4 L c. 4.48 L
b. 11.2 L d. 44.8 L

Answers:

1. a. 5. b.
2. a. 6. d.
3. c. 7. c.
4. b. 8. d.

Post-Final Wrap Up

General chemistry final exams are graded immediately after they have been completed by the students. The final exam scores (out of 200), as well as overall course scores and letter grades, will be available from 10:00 am on Thursday of exam week. **Students can check their scores by sending Dr. Mills an e-mail request at any time before noon on Thursday of exam week.** In order to ensure confidentiality, students requesting such feedback must include the following code word(s) within their e-mail requests:

So Close, Yet so Far?

Unfortunately, it is sometimes the case that students find themselves just a few points below the C/D (55%) cut-off line after the completion of all course materials. In order for such students to achieve a passing 'C' grades, an optional 25 pt. extra credit assignment may be completed. ***Students may only complete this assignment if they are in good academic standing (no more than one missed quiz, exam or lab) and contact Dr. Mills, via e-mail with a grade request, no later than noon on Thursday of exam week. Such students' final scores must have fallen no more than 25 points below the C/D cut-off in order for them to be eligible to take the assignment.***

Dr. Mills will supply qualifying students with a copy of the extra credit assignment, as an e-mail attachment, via return e-mail. **The hard deadline for completing this assignment is 10:00 am on Friday of exam week – no exceptions.**