A Very Brief Random Musings—April 30, 2009

1. There is an exam 3 next week with the usual details to follow. One big issue: Technically the make-up exam 3 shouldn't occur during dead days after the last day of class. I try to argue it with the Registrar but they are never pleased. So here I the compromise: Examination should not occur during dead days after the last day of class and can occur only under the most extreme of circumstances. So I can offer the make-up on Sunday night, May 9, only to students with a verified conflict. So you are expected to take it Thursday night May 6 unless you provide evidence, not just that a class is scheduled, but that it is actually meeting that night.

2. At the bottom you will find the 30 question types for next Thursday as well as a repaired 60 question final exam list. The final exam questions types were missing question type 25—I have now added a "famous battery" question but otherwise the questions are the same as the list provided last week.

3. Get those extra credits in—there are plenty of scholarly lectures going on right now but they tend to wind down as the semester draws to a close. Please make it a point to earn back the last 2% of your course grade, basically four missed questions made right by earning those 21 points (630 reduced to 609, etc.)

4. I will have a review this Sunday evening at 6 pm in Welch 2.224. This is probably the most important review I give because, in an effort to make sure you can be successful on this third exam, with so much open-ended material, I tend to be really generous with my hints and recommendations for study. Just saying.

5. Travis has something important to say about grading:

"As you may know, the last update to Quest introduced a bug that affected some students grades on quiz 5. The bug has been fixed and we believe we have addressed all affected grades. But short of checking each by hand, there is no way for me to ascertain this. To avoid any grade issues as the semester concludes, it would be best if each student checked each and every one of his/her grades and verified that each was correct. All grade issues should be sent to me by email with the following format: The Subject should read "Regrade Request" The body could contain the student's full name, eid, unique number, assignment name (e.g. Quiz 3, Make up exam 2), version number and a clear concise summary of the problem. Concerns about the fairness of correctness of a problem should be avoided or taken up with the professors. Concerns about whether the scantron was read correctly should also be avoided - I have had literally hundreds of request such as these in the last two years and not once has it turned out that the scantron was actually misread. Exceptions include: two consecutive blank answers, which usually mean the student bubbled two responses on 1 line and I will sometimes remit credit for this on a case by case basis; multiple consecutive incorrect answers which usually mean the student got off in his/her numbering and I will sometimes remit credit for this as well. If a student has already submitted a regrade request by email to me and has not had the problem resolved, he/she should email me again as described above to ensure a response.

6. I will have a massive random musings for the class next Thursday to explain everything about the upcoming exams, finals, grading. Also I will give you a chance to indicate to me whether there is anything I need to know about grades or nonacademic stuff on a form you will return.

7. Poetry Corner. I believe that by the time I pass on to the other side, I will have enough poetry written about my course to publish a couple volumes worth. And if everyone who ever took this course bought a copy, we're talking New York Times Best Seller. I guess I should feel honored except that the poetry has titles like "Pronounced Dead".

Pronounced Dead as of May 13th 2008

As the death of finals creeps over me
I sit and wonder how this can be
Why did I not try a LITTLE harder to exempt
Study a LITTLE bit more, the pain would have been temp.
But now, I must suffer through this chemistry smog
It's hurting my brain; I need a catalytic converter to clear the fog
And I'm regretting all of those stupid decisions
Because now I have no choice but to learn about molecular collisions
And rates, and methods of reactions galore
Good thing Ochem isn't as hardcore
What keeps me going is after this test I will be free once again
To live my life, go out and have some fun with my friends!
I'll say goodbye; RIP general chemistry 302….
Until the MCAT where I will meet the ghost of you.
--Anonymous

7. Question types for Exam 3 the last day of class are found below:

Question Types for Kinetics
1. assigning rate expressions
2. calculating reaction rates
3. units of rate constants
4. method of initial rates
5. integrated rate law calculation
6. integrated rate law calculation (half life)
7. extracting information from straight line plots
8. kinetic theory—collision
9 kinetic theory—transition state
10. Arrhenius equation
11. combined Arrhenius calculation
12. reaction mechanisms
13. reaction mechanisms
14. E_a and energy profiles
15. famous catalysts

Descriptive Chemistry
16. properties and reactivity of alkali metals
17. properties and reactivity of alkali earths
18. properties and reactivity of the B family
19. properties and reactivity of the N family
20. properties and reactivity of the C family
21 properties and reactivity of the O family
22. properties and reactivity of the halogen family
23. famous named manufacturing processes
24. identifying famous gemstones

Organic Molecules
25. hydrocarbon isomers
26. naming organic molecules
27. naming organic molecules
28. organic polymer chemistry
29 biomolecule structure
30. biomolecule structure

Final Exam Questions

Physical Equilbria
1. Theory: temperature and physical equilibria
2. Theory: dissolving gases, liquids, solids
3. Theory: dissolving gases, liquids, solids
4. Ranking: miscibility of liquids
5. Problem: phase diagram navigation
6. Calculation: ΔH for heating across phases
7. Calculation: vapor pressure in binary system
8. Calculation: Clausius Clapeyron
9. Ranking: Van't Hoff and solution conc.
10. Calculation: colligative property

Chemical Equilibria
11. Setting up K from equilibrium expression
12. Calculation: equilibrium concentrations from K
13. Problem: Reaction direction from Q and K
14. Problem: LeChatelier and reaction direction

Water Chemistry
15. Temperature dependence of K_w
16. Ranking A/B strength from K values
17. Approximations of A/B equations
18. Simple A/B calculation (strong, weak, buffer)
19. Simple A/B calculation (strong, weak, buffer)
20. Identifying buffers (after neutralization)
21. Buffer neutralization calculation
22. Identifying features of a titration curve
23. Titration strong A/B with strong A/B
24. Titration weak A/B with strong A/B
25. Estimating solubility from K_{sp} values
26. Calculating molar solubility from K_{sp}
27. Common ion calculation, K_{sp}
28. Equilibrium expressions for a polyprotic acid
29. Amphiprotic polyprotic acid calculations
30. Mass and charge balance
31. Equilibria Calculations: dilute solutions

Electrochemistry
32. relating E, ΔG and K
33. balancing redox equations
34. ranking oxidizing and reducing agents
35. stoichiometry calculation from current
36. interpreting electrochemical cell diagrams
37. cell convention: electrolysis versus voltaic
38. understanding standard reduction potentials
39. calculating cell potentials (not Nernst)
40. calculating cell potentials (Nernst)
41. famous batteries

Kinetics
42. assigning rate expressions
43. calculating reaction rates
44. units of rate constants
45. method of initial rates
46. integrated rate law calculation
47. extracting information from straight line plots
48. kinetic theory
49. Arrhenius equation theory
50. combined Arrhenius calculation
51. reaction mechanisms
52. E_a and energy profiles
53. famous catalysts

Descriptive Chemistry
54. properties and reactivity of main group elements
55. properties and reactivity of main group elements
56. properties and reactivity of main group elements
57. famous names chemical manufacturing processes
58. naming organic molecules
59. organic polymer chemistry
60 biomolecule structures