

Keys to Passing the AP Chemistry Exam

Multiple Choice (Beginning with the 1996 Exam, no calculators may be used on this section of the AP Chemistry Exam.)

1. Examine each question for a maximum of thirty seconds (on the average, some will take less time allowing more time for others).
2. Quickly determine the subject of the question.
3. By the end of the thirty seconds either:
 - a. Mark the correct answer.
 - b. Mark a "Y" next to the questions that you know how to work but need more time.
 - c. Mark a "N" next to the questions that you don't have any idea how to work.
4. Force yourself to move through twenty questions each ten minutes and the full seventy-five questions in forty minutes.
5. Now make a second pass concentrating on the "Y" questions **only**. Do not spend any time on the "N" questions. If you don't know the correct answer see if some key piece of knowledge will allow you eliminate two or three of the choices. Complete this pass in forty minutes.
6. Now make your third pass. Focus **only** on the "N" questions. Attempt to eliminate at least two choices. If you can, then make an intelligent guess. If not, leave it blank. Any correct choices on this pass are bonus points. You have only ten minutes, so make it count!
7. Before time expires, count the number that you have answered. You should answer at least sixty (60) questions.

Part A (Question 1)

1. Read **all** of the question before doing any work. Items later in the problem may provide keys to earlier sections.
2. Part A is **always** equilibrium. Determine which type (Gaseous equilibrium, acid/base, buffer, or precipitation). Look for key words and clues.
 - a. **Acid/Base:** Look for the words **acid or base, K_a or K_b , $[H^+]$, $[OH^-]$, or $[H_3O^+]$** . Any of these indicate an acid/base problem.
 - b. **Buffer:** Look for the word **buffer**. Also, check for a **weak acid and its conjugate base**.
 - c. **Precipitation:** Look for **K_{sp}** or the word **solubility**.
 - d. **Gas Equilibrium:** Look for **(g)** on most of the reactants and products.
3. After determining the type of reaction, write a reaction if one is not provided. Use the general forms given below:
Acid $HA + H_2O \rightleftharpoons H_3O^+ \text{ or } HA \rightleftharpoons H^+ + A^-$
Base $A^- + H_2O \rightleftharpoons HA + OH^-$
Precipitation $MA(s) \rightleftharpoons M^+(aq) + A^-(aq)$
4. Write an equilibrium constant expression. Leave out solids and liquids.
5. Solve the problem. **THINK!** Put in all of the given quantities in the equilibrium constant expression and solve for the unknown allowing the units to direct the problem.

Part A (Questions 2 and 3)

1. Read **both** problems all the way through **before** doing any work.
2. Determine which type of problem each is.
3. Select the problem you know the most about and solve it. Remember that if you cannot solve an earlier part you may still get some credit for a later section by showing how you could use the earlier answer in succeeding parts of the problem.

Part B (Question 4)

1. Write the reactant in symbol form for all eight reactions showing each reactant in net ionic form as follows:
Strong Acids, bases, and soluble salts written as **ions**.
Weak acids, bases, and insoluble salts written as **molecules**.
2. Classify the reactions as:
 - (A) Acid/Base - Look for H or OH or salts which could act as a weak acid or base.
 - (P) Precipitation - Look for insoluble salts which could form as products according to the solubility rules.
 - (R) Redox - If it is not acid/base or precipitation, it is probably oxidation-reduction. Check for elements which could change oxidation states. Pay particular attention to the common oxidizing agents (**NO₃⁻, MnO₄⁻, Cr₂O₇²⁻, H₂O₂**) and reducing agents (**Cl⁻, Br⁻, I⁻ and elemental metals**).
 - (O) Other - Anything else which doesn't fit above (usually either organic or complexation).
4. Eliminate the three about which you know the least and try to predict the products of the other five. Remember you score one point for getting the reactants in the correct form and two points for each product. At least get all of the reactants correct and possibly two or three products.

Part B (Questions 5-8)

1. Be as specific as possible in your answer. Look for clues in the question as to what is really important.
2. Answer the question. State exactly what you are asked not what you would like to answer.
3. Do not simply restate the question.
4. Remember that you will be getting partial credit. Answer any part about which you have any knowledge.
5. You must answer questions #5 and # 6. Read **all of the other two problems** before deciding which one of the two you will choose to answer.