Revised April 2013

Comments on CB PE Multiple Choice (03/08)

- **Hard Questions**

Of the 75 multiple-choice questions on the MC AP test, there will be a *few* that are either at the periphery of your knowledge, subtly disguised, or perhaps just really difficult. These used to be (prior to 2011) the ones that you left blank **BUT now there is no penalty for wrong answers, so you should have ZERO blanks – you must guess on all questions that you cannot answer.** The following questions from the CBPE test are in that, 'hard question' category.

Question	Explanation/ Comment	Answer
23	Water molecules surround ions when they hydrate them as the ions go into solution. In this case, the geometry that the hydrated ions take, happens to be more ordered than before the formation of the solution. Unusual; there IS a diagram of ions being hydrated in TOPIC 8, but this is still a difficult question.	**C**
30	You should know that these molecules have polar bonds but are symmetrical (tetrahedral) leading to no overall dipole. This means that they have LDF's as the major IMF. You should also know that LDF's increase with number of electrons, surface area and size, which makes C look like a possible answer. Indeed, C is a decent answer, but it is not the BEST answer. The REASON that LDF's increase with size, is that the electrons clouds get bigger, and with that increase in size the electrons are less tightly held and can be polarized (moved around) more. This leads to more LDF's, and more surface for LDF's to operate on. Tricky, since C is very tempting (and correct), but not the BEST answer.	**D**

Revised April 2013

- **Question Analysis**

TOPIC	Question Numbers	# of questions	Comments
1 Matter & Measurement		0	
2 Atoms, Ions & Nomenclature	18, 32, 40	3	
3 Electronic Configuration	8, 9	2	
4 Stoichiometry	19, 24, 27, 33, 44, 48, 56, 65	8	
5 Aqueous Solution	12*, 13*, 45, 64	4	
6 Gases	29, 31, 41, 46, 63, 72	6	
7 Periodicity	10, 39, 52, 68, 70	5	
8 Bonding	5, 6, 7, 25*, 30, 34, 51, 53, 59, 71, 73*, 75	12	
9 Thermochemistry	22, 43, 57	3	
10 Transition Metal Basics	4, 11, 14*	3	
11 Organic Basics	28	1	
12 Equation Writing	26	1	
13 Equilibrium	16, 17, 21, 23, 36, 58, 66	7	
14 Acids & Bases	15, 20, 35, 55	4	
15 Kinetics	47, 62, 69	3	
16 Electrochemistry	37, 38, 54	3	
17 Colligative Properties	42, 74*	2	
Miscellaneous (peripheral knowledge)	1, 2, 3, 49, 50, 60, 61, 67	8	49, 50, 60, 61, 67 Lab Procedure 1, 2, 3 General Knowledge
		75	

12* could also be considered topic 12
13* could also be considered topic 12
14* could also be considered topic 12
25* could also be considered topic 9
73* could also be considered topic 11
74* could also be considered topic 4

Revised April 2013

- **Scoring Analysis**

***THIS MULTIPLE-CHOICE TEST HAS NO DATA ASSOCIATED WITH IT SINCE IT HAS NOT BEEN USED AS A FORMAL EXAM. THEREFORE, I HAVE ASSOCIATED DATA FROM 2002 WITH IT. (I believe that the 2002 Multiple-Choice and the Practice Multiple-Choice are of similar difficulty so the boundaries below represent a good "working model").**

The grade boundaries below are based upon calculating a multiple-choice score by awarding one point for each correct answer, and subtracting 0.25 points for each wrong answer. Questions omitted (blanks) are ignored and do not contribute anything to your overall multiple-choice score. Prior to 2011, the advice was to leave blank any question that you were clueless about, blank; 'clueless' meaning it was not even possible for you to eliminate a single answer choice.

THIS WAS THE FORMAT USED IN THE 2002 EXAM, But from 2011 onwards, there is no penalty for an incorrect answer, i.e., you should ALWAYS guess and you will have ZERO blanks

Since these grade boundaries are calculated using the old format, and we currently have no data for the new format, here is how you should treat your 75 answers to give you an idea of where you currently stand in terms of an AP score.

1. Award one point for each correct answer.

2. Look at all of the questions that you got wrong, and assign them to one of two categories, EITHER

a. A question that under the old format you would have left blank, i.e. a question that you were totally clueless about and could not eliminate even ONE answer. (There should be VERY few of these, and in recent years EVEN UNDER THE OLD FORMAT, many Westminster AP chemistry students have had closer to ZERO 'blanks'), OR

b. A question that you could eliminate at least one answer, i.e. one that you WOULD have guessed at on the old format.

3. For each question in category 2b., subtract 0.25 points from the total in #1. Do nothing with the questions in category 2a.

Then, in the first column of the chart below, find the range in which your total multiple-choice score falls. The %'s on that line indicate the proportion of candidates with your multiple-choice score that ultimately achieved the final AP score shown in the vertical column. The shaded boxes show the two most likely AP scores within any range. It's worth noting that your position within a range is important. For example, if you are at the top of a range you are much more likely to have ultimately achieved the higher AP scores.

The numbers in parenthesis underneath each percentage indicate the approximate multiple-choice score range that may most closely correspond to that percentage and that AP score. It is important to note that this is not a scientific mathematical analysis, rather a guesstimate! In addition, it is important to understand that there is no guarantee that a particular multiple-choice score relates to a particular AP score.

2002* Multiple-choice score related to final AP score using the old format of penalizing wrong answers

*I assume that all multiple-choice scores above 72.00 resulted in candidates ultimately scoring a 5!

	1	***2***	***3***	***4***	***5***
61.00-72.00* (48 possible scores in the range)	**0.0%**	**0.0%**	**0.1% (61.00)**	**0.7% (61.25)**	**99.2% (61.50-72.00*)**
49.00-60.75 (51 possible scores in the range)	**0.0%**	**0.1% (49.00)**	**0.8% (49.25)**	**27.4% (49.50-52.75)**	**71.7% (53.00-60.75)**
37.00-48.75 (51 possible scores in the range)	**0.0%**	**0.5% (37.00)**	**28.8% (37.25-40.75)**	**64.4% (41.00-48.00)**	**6.2% (48.25-48.75)**
25.00-36.75 (51 possible scores in the range)	**1.0% (25.00)**	**24.7% (25.25-27.75)**	**68.3% (28.00-36.00)**	**6.0% (36.25-36.75)**	**0.0%**
13.00-24.75 (51 possible scores in the range)	**39.7% (13.00-17.75)**	**52.4% (18.00-23.75)**	**8.0% (24.00-24.75)**	**0.0%**	**0.0%**
0.00-12.75 (55 possible scores in this range)	**98.0% (0.00-12.50)**	**2.0% (12.75)**	**0.0%**	**0.0%**	**0.0%**