

Revised April 2013

Comments on 1989 Multiple Choice

NOTE: On the MCQ's in 1989 calculators WERE allowed In 2013 calculators are NOT allowed on the MCQ's

- **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 on the 1984 test are in that, 'hard question' category.

Question	Explanation/Comment	Answer
14	Benzene is an organic compound, formula C ₆ H ₆ . It has 6 carbon atoms joined together in a ring and its structure can be represented with alternate single (C-C) and double (C=C) bonds. However, it is found that these bonds are actually all the same length (between that of a single and a double) due to resonance You should be able to eliminate A, C & E easily. Then the trick is realizing that resonance has the effect of making "single" and "multiple" bonds in the same compound equal in length. TOPIC 8.	D
28	Heat of solution is the heat change when a solid is dissolved in water. It is the sum of the endothermic energy required to break the ionic lattice, and the exothermic energy released when the ions are hydrated Hard. TOPIC 8.	D
64	Color occurs in transition metal compounds due to the movement of electrons in the d sub-shell. When there is an incomplete d sub-shell this movement (and therefore color) can occur. Typical examples where no color is found in the salt are Zn ²⁺ (d ¹⁰), Cu ⁺ (d ¹⁰) and Sc ³⁺ (d ⁰). In these salts there can be no movement of electrons (since there is either an empty or a full d sub-shell) and therefore no color Fully discussed in TOPIC 10.	E
75	When electro-refining metals (removing impurities using electricity) make the impure metal the anode and a pure piece of the metal the cathode. In the electrolysis process, cations (Cu ²⁺) from the impure sample undergo reduction at the cathode where they build up to form the pure metal. Very hard. TOPIC 16.	D

Revised April 2013



- Question Analysis

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

5* could also be considered TOPIC 10

Revised April 2013



• Scoring Analysis

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 1989 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.

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.

1989 Multiple-choice score related to final AP score

Out of 75	1	2	3	4	5
46.25-75.00 (106 possible scores in the range)	0.0%	0.0%	0.8% (46.25)	20.8% (46.50-51.75)	78.4% (52.00-75.00)
36.25-46.00 (40 possible scores in the range)	0.0%	0.1% (36.25)	25.0% (36.50-38.75)	62.8% (39.00-45.25)	12.0% (45.50-46.00)
23.25-36.00 (52 possible scores in the range)	0.1% (23.25)	18.7% (23.50-25.75)	69.4% (26.00-34.75)	11.7% (35.00-35.75)	0.1% (36.00)
12.25-23.00 (44 possible scores in the range)	15.0% (12.25-13.75)	69.7% (14.00-20.50)	15.2% (20.75-23.00)	0.0%	0.0%
0.00-12.00 (49 possible scores in the range)	85.5% (0.00-8.75)	14.4% (9.00-11.75)	0.1% (12.00)	0.0%	0.0%