

# FOR TEACHERS ONLY

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

## PS-CH PHYSICAL SETTING/CHEMISTRY

Tuesday, August 16, 2005 — 12:30 to 3:30 p.m., only

### SCORING KEY AND RATING GUIDE

**Directions to the Teacher:**

Refer to the directions on page 3 before rating student papers.

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Visit the site <http://www.emsc.nysed.gov/osa/> and select the link "Latest Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and at least one more time before the final scores for the examination are recorded.

**Part A and Part B-1**

Allow 1 credit for each correct response.

Part A			Part B-1	
1 . . . . . <b>2</b> . . . . .	11 . . . . . <b>1</b> . . . . .	21 . . . . . <b>4</b> . . . . .	31 . . . . . <b>4</b> . . . . .	41 . . . . . <b>3</b> . . . . .
2 . . . . . <b>2</b> . . . . .	12 . . . . . <b>2</b> . . . . .	22 . . . . . <b>1</b> . . . . .	32 . . . . . <b>4</b> . . . . .	42 . . . . . <b>4</b> . . . . .
3 . . . . . <b>4</b> . . . . .	13 . . . . . <b>4</b> . . . . .	23 . . . . . <b>1</b> . . . . .	33 . . . . . <b>1</b> . . . . .	43 . . . . . <b>4</b> . . . . .
4 . . . . . <b>2</b> . . . . .	14 . . . . . <b>3</b> . . . . .	24 . . . . . <b>4</b> . . . . .	34 . . . . . <b>3</b> . . . . .	44 . . . . . <b>2</b> . . . . .
5 . . . . . <b>4</b> . . . . .	15 . . . . . <b>2</b> . . . . .	25 . . . . . <b>4</b> . . . . .	35 . . . . . <b>4</b> . . . . .	45 . . . . . <b>4</b> . . . . .
6 . . . . . <b>1</b> . . . . .	16 . . . . . <b>1</b> . . . . .	26 . . . . . <b>3</b> . . . . .	36 . . . . . <b>2</b> . . . . .	46 . . . . . <b>4</b> . . . . .
7 . . . . . <b>4</b> . . . . .	17 . . . . . <b>3</b> . . . . .	27 . . . . . <b>3</b> . . . . .	37 . . . . . <b>3</b> . . . . .	47 . . . . . <b>2</b> . . . . .
8 . . . . . <b>2</b> . . . . .	18 . . . . . <b>3</b> . . . . .	28 . . . . . <b>4</b> . . . . .	38 . . . . . <b>4</b> . . . . .	48 . . . . . <b>2</b> . . . . .
9 . . . . . <b>1</b> . . . . .	19 . . . . . <b>2</b> . . . . .	29 . . . . . <b>1</b> . . . . .	39 . . . . . <b>1</b> . . . . .	49 . . . . . <b>1</b> . . . . .
10 . . . . . <b>3</b> . . . . .	20 . . . . . <b>1</b> . . . . .	30 . . . . . <b>3</b> . . . . .	40 . . . . . <b>1</b> . . . . .	50 . . . . . <b>4</b> . . . . .



**Directions to the Teacher**

Follow the procedures below for scoring student answer papers for the Physical Setting/Chemistry examination. Additional information about scoring is provided in the publication *Information Booklet for Scoring Regents Examinations in the Sciences*.

Use only *red* ink or *red* pencil in rating Regents papers. Do *not* correct the student's work by making insertions or changes of any kind.

On the detachable answer sheet for Part A and Part B–1, indicate by means of a checkmark each incorrect or omitted answer. In the box provided at the end of each part, record the number of questions the student answered correctly for that part.

At least two science teachers must participate in the scoring of each student's responses to the Part B–2 and Part C open-ended questions. Each of these teachers should be responsible for scoring a selected number of the open-ended questions on each answer paper. No one teacher is to score all the open-ended questions on a student's answer paper.

Students' responses must be scored strictly according to the Scoring Key and Rating Guide. For open-ended questions, credit may be allowed for responses other than those given in the rating guide if the response is a scientifically accurate answer to the question and demonstrates adequate knowledge as indicated by the examples in the rating guide. Complete sentences are *not* required. Phrases, diagrams, and symbols may be used. In the student's answer booklet, record the number of credits earned for each answer in the box printed to the right of the answer lines or spaces for that question.

Fractional credit is *not* allowed. Only whole-number credit may be given to a response. Units need not be given when the wording of the questions allows such omissions.

Raters should enter the scores earned for Part A, Part B–1, Part B–2, and Part C on the appropriate lines in the box printed on the answer booklet and then should add these four scores and enter the total in the box labeled "Total Written Test Score." Then, the student's raw score should be converted to a scaled score by using the conversion chart that will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Tuesday, August 16, 2005. The student's scaled score should be entered in the labeled box on the student's answer booklet. The scaled score is the student's final examination score.

All student answer papers that receive a scaled score of 60 through 64 **must** be scored a second time. For the second scoring, a different committee of teachers may score the student's paper or the original committee may score the paper, except that no teacher may score the same open-ended questions that he/she scored in the first rating of the paper. The school principal is responsible for assuring that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

Because scaled scores corresponding to raw scores in the conversion chart may change from one examination to another, it is crucial that for each administration, the conversion chart provided for that administration be used to determine the student's final score.

**Part B–2**

**Allow a total of 17 credits for this part. The student must answer all questions in this part.**

- 51** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to:

$$6(12.0) + 12(1.0) + 6(16.0)$$

$$6(12) + 12(1) + 6(16)$$

- 52** [1] Allow 1 credit for CH<sub>2</sub>O. The order of the elements can vary.

- 53** [1] Allow 1 credit for +80 kJ or 80 kJ.

- 54** [1] Allow 1 credit for +100 kJ or 100 kJ.

- 55** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

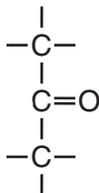
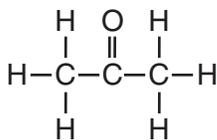
A catalyst provides an alternate reaction pathway that has a lower activation energy than an uncatalyzed reaction.

A catalyst speeds up the reaction.

lower activation energy

- 56** [1] Allow 1 credit.

**Examples of 1-Credit Responses**

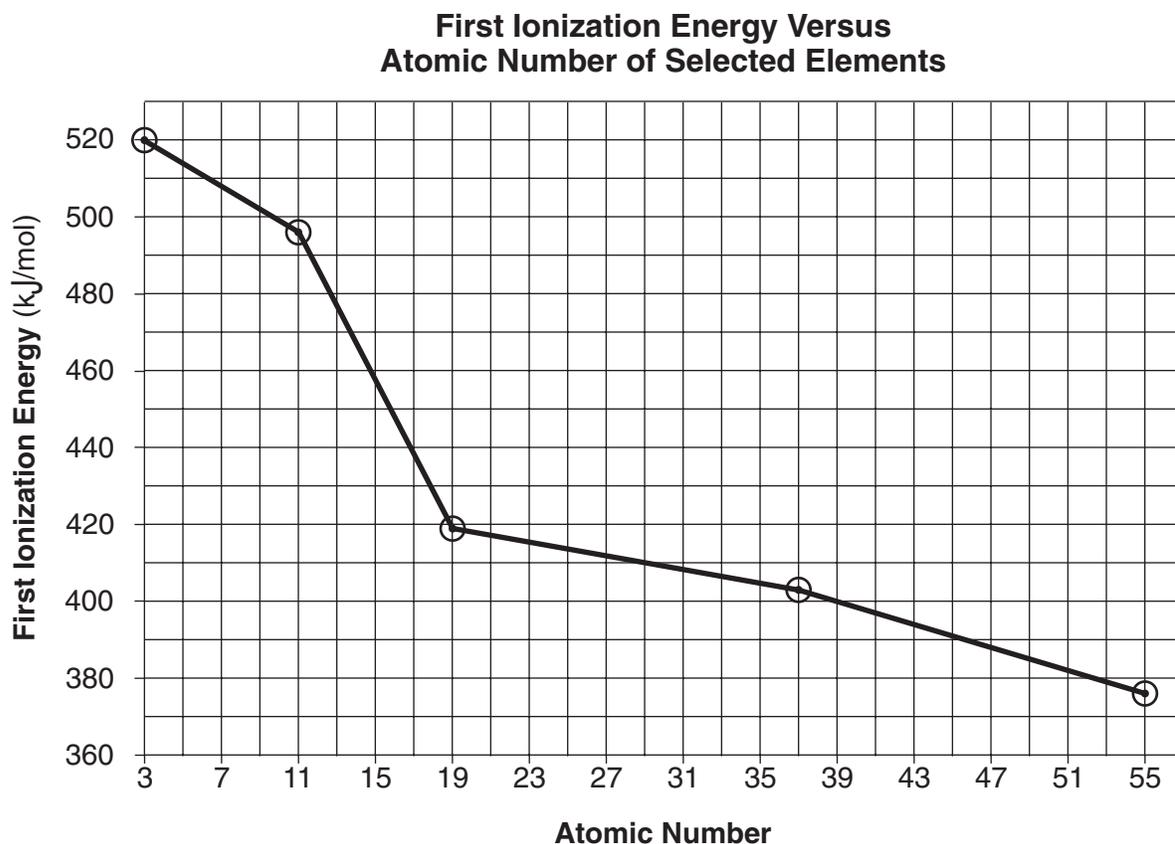




- 64** [1] Allow 1 credit for marking an appropriate linear scale. An appropriate scale is one that allows a trend to be seen.
- 65** [1] Allow 1 credit for plotting all the points correctly ( $\pm 0.3$  grid space). Plotted points do *not* need to be circled or connected.

**64 and 65**

**Example of a 2-Credit Graph for Questions 64 and 65**



- 66** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- As atomic number increases, first ionization energy decreases.
  - Ionization energy decreases.
- 67** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- As atomic radius increases, valence electrons are more easily removed.
  - The force of attraction between the nucleus and the valence electrons decreases down the group.
  - cesium has more shells, easier to remove electrons

**Part C**

**Allow a total of 18 credits for this part. The student must answer all questions in this part.**

- 68 [1] Allow 1 credit for  $\underline{2}$   $\text{NaN}_3(\text{s}) \rightarrow \underline{2}$   $\text{Na}(\text{s}) + \underline{3}$   $\text{N}_2(\text{g})$ .
- 69 [1] Allow 1 credit. Significant figures do *not* need to be shown. Acceptable responses include, but are not limited to:  
0.800 mol
- 70 [1] Allow 1 credit. Significant figures do *not* need to be shown. Acceptable responses include, but are not limited to:  
62.5 g
- 71 [1] Allow 1 credit. Acceptable responses include, but are not limited to:  
conducts heat  
high melting point  
It is malleable.
- 72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:  
The aqueous solution has mobile ions.  
Charged particles can move in water.
- 73 [1] Allow 1 credit for +2 or 2 or two.
- 74 [1] Allow 1 credit. Acceptable responses include, but are not limited to:  
negative electrode  
cathode  
one on the right

- 75** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Electrolytic cells require energy.

The battery forces the nonspontaneous reaction to occur.

- 76** [1] Allow 1 credit. Acceptable responses include, but are not limited to:



- 77** [1] Allow 1 credit for 18.21 mL.

- 78** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to:

$$M_A = \frac{(3.00 \text{ M})(18.21 \text{ mL})}{25.00 \text{ mL}}$$

$$M_A(25) = (3)(18.21)$$

*or*

Allow 1 credit for a numerical setup consistent with the student's response to question 77.

- 79** [1] Allow 1 credit for 3 or three.

- 80** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Stream A has more hydronium ions.

Stream B has a lower concentration.

A is higher.

100 times higher

- 81** [1] Allow 1 credit for yellow.

- 82** [1] Allow 1 credit. Also allow credit for a correctly written chemical formula of an acceptable compound. Acceptable responses include, but are not limited to:

sodium hydroxide

lime

$\text{NH}_3$

any base

- 83** [1] Allow 1 credit for  $^{14}_7\text{N}$ .

- 84** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The half-life of N-16 is too short.

decays too fast

Too little N-16 remains in the sample.

- 85** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to:

17 190 y

3(5730) y



**The *Chart for Determining the Final Examination Score for the August 2005 Regents Examination in Physical Setting/Chemistry* will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Tuesday, August 16, 2005. Conversion charts provided for previous administrations of the Regents Examination in Physical Setting/Chemistry must NOT be used to determine students' final scores for this administration.**

## Map to Core Curriculum

<b>August 2005 Physical Setting/ Chemistry</b>			
<b>Question Numbers</b>			
Key Ideas	Part A	Part B	Part C
<b>Standard 1</b>			
Math Key Idea 1		41,58,64,65	70,78,79
Math Key Idea 2			
Math Key Idea 3		31,36,41	
Sci. Inq. Key Idea 1		61	
Sci. Inq. Key Idea 2			
Sci. Inq. Key Idea 3		50,58	73,74,82,84
Eng. Des. Key Idea 1			
<b>Standard 2</b>			
Key Idea 1			
Key Idea 2			
<b>Standard 6</b>			
Key Idea 1			
Key Idea 2			
Key Idea 3			80
Key Idea 4			
Key Idea 5		58	
<b>Standard 7</b>			
Key Idea 1			
Key Idea 2			
<b>Standard 4 Process Skills</b>			
Key Idea 3		32,33,34,35,37, 38,39,40,41,43, 45,46,47,48,49, 51,52,56,59,60, 61,62,66,67	68,69,71,72,75, 76,77,78,81
Key Idea 4		44,53,54,55,57	83,85
Key Idea 5		42,57,58,63	
<b>Standard 4</b>			
Key Idea 3	1,2,3,4,5,6,7,8, 9,10,12,17,18, 19,20,21,22,23, 24,25,26,27,28, 30	31,32,33,34,35, 36,37,38,39,40, 41,43,45,46,47, 48,49,50,51,52, 56,59,60,61,62, 64,65,66,67	68,69,70,71,72, 73,74,75,76,77, 78,79,80,81,82
Key Idea 4	16,29	44,53,54,55,57	83,84,85
Key Idea 5	7,11,13,14,15	42,58,63	72
<b>Reference Tables</b>			
2002 Edition	1,2,4,6,7,8,9, 19,20,28	31,32,33,34,35, 36,39,42,43,44, 47,48,49,50,51, 56,57,58,59,60, 61,62,63	73,76,78,81,82, 83,84,85