FOR TEACHERS ONLY

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

PS–CH PHYSICAL SETTING/CHEMISTRY

Thursday, August 16, 2007 — 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. Check this web site http://www.emsc.nysed.gov/osa/ and select the link "Examination Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents examination period.

Part A and Part B–1
Allow 1 credit for each correct response.

Part A

1	2	11	4	21	1
2	1	12	2	22	1
3	2	13	4	23	2
4	3	14	2	24	2
5	3	15	3	25	2
6	4	16	3	26	1
7	3	17	3	27	1
8	3	18	2	28	2
9	1	19	3	29	3
10	1	20	4	30	4

Part B–1

31	3	41	1
32	3	42	3
33	1	43	2
34	1	44	2
35	3	45	4
36	3	46	4
37	2	47	2
38	1	48	2
39	4	49	4
40	4	50	3

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 check mark 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 Thursday, August 16, 2007. 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 16 credits for this part. The student must answer all questions in this part.

51 [1] Allow 1 credit for +2.

52 [1] Allow 1 credit for an excited state configuration indicating a total of 13 electrons that has no more than 2 electrons in shell 1 and no more than 8 electrons in shell 2. Acceptable responses include, but are not limited to:

2-7-4

1-8-4

2-6-2-3

Note: Do *not* allow credit for the configuration 2-8-3.

53 [1] Allow 1 credit for blue.

54 [1] Allow 1 credit for 15 *or* fifteen.

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

$(27.98)(0.9222) + (28.98)(0.0469) + (29.97)(0.0309)$

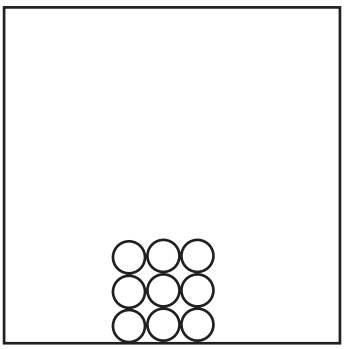
$$\frac{(27.98)(92.22) + (28.98)(4.69) + (29.97)(3.09)}{100}$$

56 [1] Allow 1 credit for 6.5%. Significant figures do *not* need to be shown.

57 [1] Allow 1 credit for 120.°C ± 2°C.

58 [1] Allow 1 credit.

Example of a 1-credit response:



59 [1] Allow 1 credit for 3.0 min ± 0.2 min. Significant figures do *not* need to be shown.

60 [1] Allow 1 credit for 30. kJ ± 3 kJ. Significant figures do *not* need to be shown.

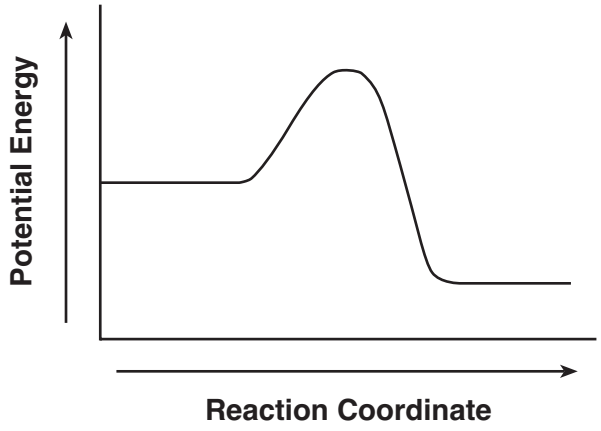
61 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Heat term is on the right side of the equation.

The 571.6 kJ is a product.

62 [1] Allow 1 credit.

Example of a 1-credit response:



63 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

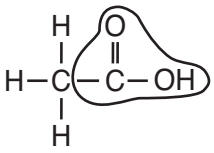
A liquid is formed from gases.

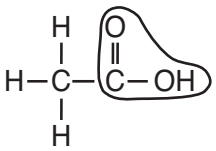
A compound is formed from its elements.

The number of gas particles in the system decreases.

64 [1] Allow 1 credit.

Examples of a 1-credit response:





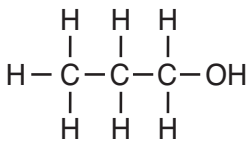
65 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

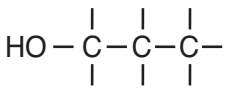
ethanoic acid

acetic acid

66 [1] Allow 1 credit.

Examples of a 1-credit response:



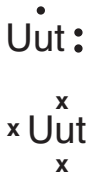


Part C

Allow a total of 19 credits for this part. The student must answer all questions in this part.

67 [1] Allow 1 credit. Positions of the three dots can vary.

Examples of a 1-credit response:



68 [1] Allow 1 credit for +113.

69 [1] Allow 1 credit for any element in Group 13. Acceptable responses include, but are not limited to:

Tl

boron

70 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

synthesis

redox

oxidation

71 [1] Allow 1 credit for 160. g/mol. Significant figures do *not* need to be shown.

72 [1] Allow 1 credit for iron(III) oxide.

73 [1] Allow 1 credit for 3 *or* three.

74 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$$\% \ H_2O = \frac{0.76\ g}{2.13\ g} \times 100$$

$$\frac{0.76}{2.13} \times 100$$

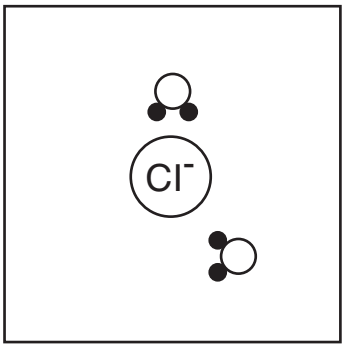
75 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Until the sample reaches a constant mass, the student cannot be sure that all the water has been removed.

to make sure all of the water is heated out of the sample

76 [1] Allow 1 credit. Acceptable responses must show *at least two* water molecules with *at least one* hydrogen atom of each water molecule facing toward the chloride ion.

Example of a 1-credit response:



77 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The concentration of $OCl^-(aq)$ increases because there will be a greater number of effective collisions between the $Cl_2(g)$ and the $OH^-(aq)$.

more collisions between $Cl_2(g)$ and $OH^-(aq)$

78 [1] Allow 1 credit for OH^- *or* hydroxide ion.

79 [2] Allow a maximum of 2 credits, allocated as follows:

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

$$\text{molarity} = \frac{\text{moles of solute}}{\text{liters of solution}} = \frac{0.500 \text{ mol NaOH}}{0.400 \text{ L solution}}$$

$$\frac{0.5}{0.4}$$

- Allow 1 credit for 1.25 M *or* for a response consistent with the student's numerical setup. Significant figures do *not* need to be shown.

Note: Do *not* allow credit for a numerical setup and calculated result that are not related to the concept assessed by the question.

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

$NaOH(aq) + HNO_3(aq) \rightarrow NaNO_3(aq) + H_2O(\ell)$

$NaOH(aq) + HNO_3(aq) \rightarrow HOH + NaNO_3$

81 [1] Allow 1 credit for 22 920 y. Significant figures do *not* need to be shown.

82 [1] Allow 1 credit for $^{14}_{7}N$.

83 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Silver nitrate produces more ions than silver chloride in water.

$AgNO_3$ readily dissolves in H_2O; AgCl dissolves only slightly in H_2O.

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

The battery provides the electrical energy necessary for the reaction to occur.

Regents Examination in Physical Setting/Chemistry

August 2007

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scaled Scores)

The *Chart for Determining the Final Examination Score for the August 2007 Regents Examination in Physical Setting/Chemistry* will be posted on the Department's web site http://www.emsc.nysed.gov/osa/ on Thursday, August 16, 2007. 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.

Submitting Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to www.emsc.nysed.gov/osa/exameval.
2. Select the test title.
3. Complete the required demographic fields.
4. Complete each evaluation question and provide comments in the space provided.
5. Click the SUBMIT button at the bottom of the page to submit the completed form.

Map to Core Curriculum

August 2007 Physical Setting/Chemistry			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		37, 40, 56	73, 74, 79, 81
Math Key Idea 2			
Math Key Idea 3		31, 37, 40, 51, 60	71, 79, 81
Science Inquiry Key Idea 1		41, 46	83, 84
Science Inquiry Key Idea 2		45	
Science Inquiry Key Idea 3		37, 44, 47, 63, 64, 65	68, 69, 72, 75, 78, 80, 83
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Standard 6			
Key Idea 1		61	
Key Idea 2			76
Key Idea 3		48	
Key Idea 4			
Key Idea 5		62	
Standard 7			
Key Idea 1			
Key Idea 2			
Standard 4 Process Skills			
Key Idea 3		32, 33, 34, 35, 36, 38, 39, 42, 43, 44, 45, 46, 47, 49, 52, 53, 54, 55, 58, 63, 66	67, 70, 71, 77, 79, 80
Key Idea 4		57, 59, 60, 61, 62	82
Key Idea 5		41	
Standard 4			
Key Idea 3	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 15, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 29, 30	32, 33, 34, 35, 37, 38, 39, 42, 43, 44, 45, 46, 47, 48, 51, 52, 53, 54, 55, 56, 58, 63, 64, 65, 66	67, 68, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 83, 84
Key Idea 4	28	40, 50, 57, 59, 60, 61, 62	81, 82
Key Idea 5	6, 12, 13, 14, 16, 21	31, 36, 41, 49, 50	76
Reference Tables			
2002 Edition	4, 5, 7, 11, 12, 16, 22, 23, 25, 26, 27, 28, 30	31, 33, 34, 39, 40, 47, 52, 53, 54, 64, 65, 66	67, 68, 69, 71, 72, 78, 79, 80, 82, 83