

FOR TEACHERS ONLY

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

PS-CH

PHYSICAL SETTING/CHEMISTRY

Wednesday, June 23, 2004 — 9:15 a.m. to 12:15 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 4	12 4	23 1	34 1	43 2
2 3	13 3	24 4	35 3	44 1
3 1	14 1	25 1	36 2	45 4
4 3	15 2	26 1	37 4	46 4
5 2	16 3	27 2	38 1	47 4
6 3	17 4	28 2	39 1	48 2
7 2	18 4	29 1	40 2	49 2
8 2	19 3	30 2	41 2	50 1
9 4	20 3	31 1	42 3	
10 3	21 1	32 1		
11 3	22 3	33 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 Administering and 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 Wednesday, June 23, 2004. 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 in the scoring key for that administration be used to determine the student's final score. The chart in this scoring key is usable only for this administration of the examination.

Part B–2

Allow a total of 14 credits for this part. The student must answer all questions in this part.

- 51** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- decomposition
 - analysis
 - redox
 - endothermic
 - electrolysis
- 52** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- 4 H and 2 O on both sides
 - 4 H = 4 H and 2 O = 2 O
 - same number of each element on both sides
- 53** [1] Allow 1 credit for **4**.
- 54** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- $\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$
 - $2 \text{Ag}^+ + 2\text{e}^- \rightarrow 2 \text{Ag}$
- 55** [1] Allow 1 credit for Cu(s) + **2** AgNO₃(aq) → Cu(NO₃)₂(aq) + **2** Ag(s).
Allow credit even if the coefficient “1” is written in front of Cu(s) and Cu(NO₃)₂(aq).
- 56** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- colorless to pink
 - no color to red

- 57** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to, these examples:

$$\frac{(0.30 \text{ M})(42.2 \text{ mL})}{60.0 \text{ mL}}$$

$$(x)(60) = (.3)(42.2)$$

- 58** [1] Allow 1 credit for **2**.

- 59** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Each isotope has a different number of neutrons.

different number of neutrons

Ne-22 has two more neutrons than Ne-20 and one more neutron than Ne-21.

- 60** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to, these examples:

$$(0.909)(19.99) + (0.003)(20.99) + (0.088)(21.99)$$

$$(90.9\%)(19.99) + (0.3\%)(20.99) + (8.8\%)(21.99)$$

$$\frac{(90.9)(19.99) + (0.3)(20.99) + (8.8)(21.99)}{100}$$

- 61** [1] Allow 1 credit for **20**.

- 62** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

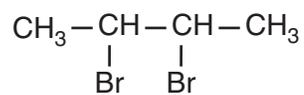
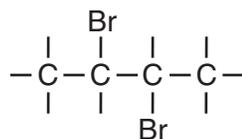
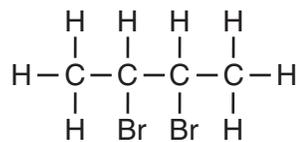
They have the same number of valence electrons.

form 1^+ ions

are located in same group

both alkali metals

- 63 [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:



- 64 [1] Allow 1 credit for ${}_{+1}^0\text{e}$ or ${}_{+1}^0\beta$ or β^+ or **positron**.

Part C

Allow a total of 21 credits for this part. The student must answer all questions in this part.

- 65** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to, these examples:

$$8.40 \text{ g} \times \frac{1 \text{ mole}}{58.3 \text{ g}} =$$

$$\frac{8.4}{58.3}$$

- 66** [1] Allow 1 credit for **0.025**.

- 67** [1] Allow 1 credit for **NaHCO₃**.

- 68** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Naphthalene has weak intermolecular forces.

They are weak.

- 69** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Naphthalene is nonpolar; water is polar.

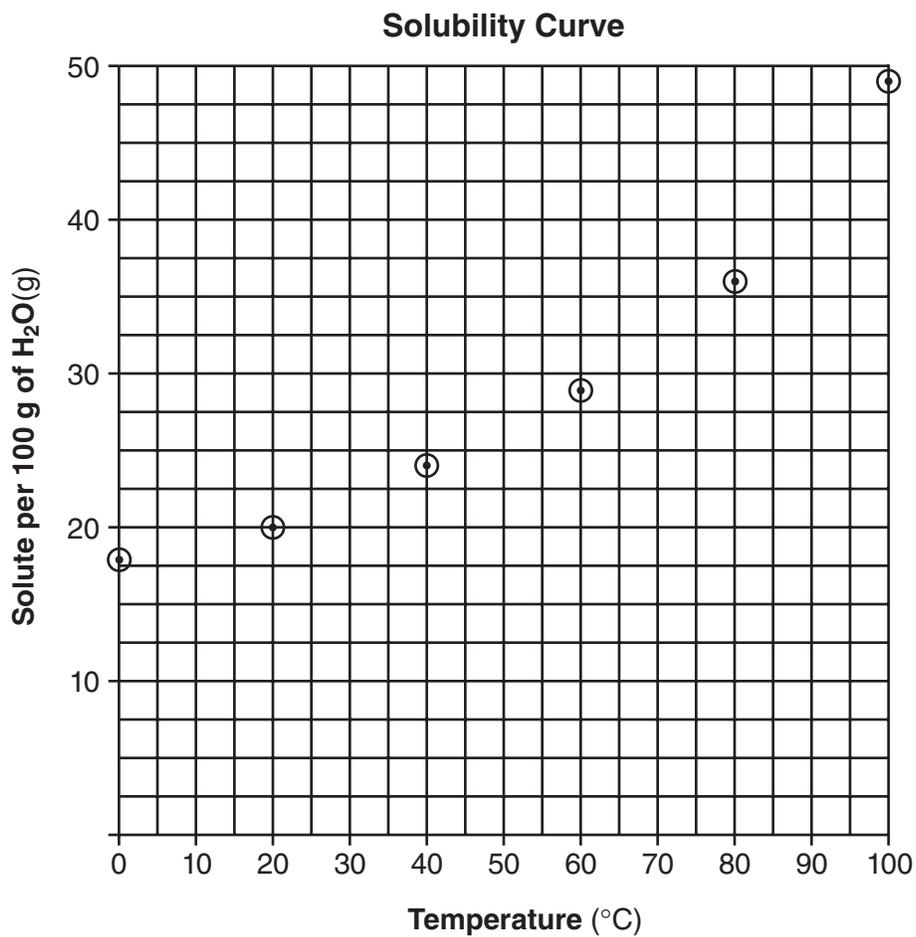
Nonpolar won't dissolve in polar.

Like dissolves like.

- 70** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:



71 and 72 An example of a correct response is shown below.



- 71** [1] Allow 1 credit for marking an appropriate scale. An appropriate scale is one that allows a trend to be seen.
- 72** [1] Allow 1 credit for plotting all the points correctly (± 0.3 grid space). Plotted points do *not* need to be circled or connected.
- 73** [1] Allow 1 credit for **9**.
- 74** [1] Allow 1 credit for a response in the range of 6–8.

- 75** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Particles move slower.

The molecules will slow down as the temperature decreases.

The average kinetic energy of the particles decreases.

decreases

- 76** [1] Allow 1 credit for a correct numerical setup. Acceptable responses include, but are not limited to, these examples:

$$\frac{(100.8 \text{ kPa})(52.5 \text{ L})}{(295 \text{ K})} = \frac{(45.6 \text{ kPa})(X)}{(252 \text{ K})}$$

$$52.5 \times \frac{252}{295} \times \frac{100.8}{45.6}$$

- 77** [1] Allow 1 credit for **-21**.

- 78** [1] Allow 1 credit for **.45** or **0.45**. Significant figures do *not* need to be shown.

- 79** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Removing CO₂ disrupts equilibrium and thus the system must shift to create more CO₂ from the H₂CO₃ in order to restore equilibrium.

Equilibrium shifts to the right.

H₂CO₃ decreases to remove the stress of changing the CO₂.

- 80** [1] Allow 1 credit for **+4** or **4**.

- 81** [1] Allow 1 credit for a correct response. Brackets do *not* need to be shown. Acceptable responses include, but are not limited to, this example:



- 82 [1] Allow 1 credit for **SnF₂**.
- 83 [1] Allow 1 credit for **1.43**. Significant figures do *not* need to be shown.
- 84 [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

The water has a fluoride level of 1.43 ppm, which is below the maximum contaminant level for fluoride, so it is safe to drink.

F⁻ below 4 ppm, safe, below max level

Safe: 1.43 ppm < 4 ppm

or

Allow 1 credit for a response consistent with the student's answer to question 83.

- 85 [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Perform tests under ventilation (fume) hood.

Avoid spills.

no open-toed shoes

The *Chart for Determining the Final Examination Score for the June 2004 Regents Examination in Physical Setting/Chemistry* will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Wednesday, June 23, 2004. 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

June 2004 Physical Setting/ Chemistry			
Question Numbers			
Key Ideas	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		58	71,72,77,78
Math Key Idea 2			
Math Key Idea 3			
Sci. Inq. Key Idea 1		52,62	
Sci. Inq. Key Idea 2			85
Sci. Inq. Key Idea 3		41,49,61	67,74,80,82
Eng. Des. Key Idea 1			
Standard 2			
Key Idea 1		41,49	
Key Idea 2			
Standard 6			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Key Idea 4			
Key Idea 5			
Standard 7			
Key Idea 1			84
Key Idea 2			
Standard 4 Process Skills			
Key Idea 3		34,35,36,37,38, 42,43,44,45,46, 47,48,50,51,53, 54,55,56,57,59, 60,63	65,66,69,70,73, 74,75,76,79,83
Key Idea 4		40,49,64	
Key Idea 5		39,41	68,81
Standard 4			
Key Idea 3	1,2,3,4,5,6,7,8, 14,16,18,19,20, 21,22,23,24,25, 26,27,28,29,30, 31,33	34,35,36,37,38, 42,43,44,45,46, 47,48,50,51,52, 53,54,55,56,57, 58,59,60,61,62, 63	65,66,67,69,70, 71,72,73,74,75, 76,78,79,80,82, 83,84,85
Key Idea 4	15	40,49,64	77
Key Idea 5	9,10,11,12,13, 17,32	34,39,41	68,81
Reference Tables			
2002 Edition	2,4,5,8,10,11, 13,23,24,25,26, 31	34,35,37,39,41, 48,49,50,54,56, 57	67,74,76,77,78, 80,81,82,83