

FOR TEACHERS ONLY

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

PHYSICAL SETTING/CHEMISTRY

Tuesday, June 25, 2019 — 9:15 a.m. to 12:15 p.m., only

RATING GUIDE

Directions to the Teacher:

Refer to the directions on page 2 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 at: <http://www.p12.nysed.gov/assessment/> and select the link "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.

Directions to the Teacher

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

At least two science teachers must participate in the scoring of the Part B–2 and Part C open-ended questions on a student’s paper. 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 more than approximately one-half of the open-ended questions on a student’s answer paper. Teachers may not score their own students’ answer papers.

Students’ responses must be scored strictly according to the 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. Do not attempt to correct the student’s work by making insertions or changes of any kind. On the student’s separate answer sheet, for each question, record the number of credits earned and the teacher’s assigned rater/scorer letter.

Fractional credit is *not* allowed. Only whole-number credit may be given for a response. If the student gives more than one answer to a question, only the first answer should be rated. Units need not be given when the wording of the questions allows such omissions.

For hand scoring, raters should enter the scores earned in the appropriate boxes printed on the separate answer sheet. Next, the rater should add these scores and enter the total in the box labeled “Total Raw Score.” Then the student’s raw score should be converted to a scale score by using the conversion chart that will be posted on the Department’s web site at: <http://www.p12.nysed.gov/assessment/> on Tuesday, June 25, 2019. The student’s scale score should be entered in the box labeled “Scale Score” on the student’s answer sheet. The scale score is the student’s final examination score.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

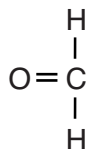
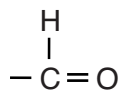
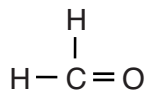
Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student’s final score.

Part B-2

Allow a total of 15 credits for this part. The student must answer all questions in this part.

51 [1] Allow 1 credit.

Examples of 1-credit responses:



52 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The single proton in each nucleus has a charge of +1. The single electron in each atom has a charge of -1. The net charge is 0.

Each atom has one proton and one electron.

Each atom has an equal number of protons and electrons.

The total charge of the subatomic particles is zero.

53 [1] Allow 1 credit for 20. u *or* for any value from 19.999 u to 20.03 u, inclusive.

54 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

β^-

${}^0_{-1}\beta$

${}^0_{-1}e$

beta

beta decay

beta particle

55 [1] Allow 1 credit for 296 K.

56 [1] Allow 1 credit for any value from 4.0 g to 6.0 g, inclusive.

57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Boiling point: decreases
Freezing point: increases

Boiling point: becomes lower
Freezing point: becomes higher

58 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Temperature: increase
Pressure: decrease

Temperature: higher
Pressure: lower

Temperature: any temperature above 296 K
Pressure: any pressure lower than 101.3 kPa

59 [1] Allow 1 credit for 151 mL *or* any value from 151 mL to 151.4 mL, inclusive.

60 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The frequency and force of collisions would both decrease.

There would be fewer collisions, and the collisions would not be as hard.

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

The mass stays the same.

Mass remains constant.

62 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Both atoms have 27 protons, but Co-59 atoms each have 32 neutrons and Co-60 atoms each have 33 neutrons.

same number of protons, different number of neutrons

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

The gamma radiation has more penetrating power than the beta emission.

The β^- is less penetrating than γ .

Gamma emissions have greater penetrating power.

64 [1] Allow 1 credit. Acceptable responses include, but are not limited to:



Ni-60

nickel-60



65 [1] Allow 1 credit for 15.813 y. Significant figures do *not* need to be shown.

Part C

Allow a total of 20 credits for this part. The student must answer all questions in this part.

66 [1] Allow 1 credit for potassium chlorate.

67 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$$\frac{0.80 \text{ g}}{32 \text{ g/mol}}$$

$$\frac{0.80}{32}$$

$$.8\text{g} \times \frac{1 \text{ mol}}{32 \text{ g}}$$

$$\frac{1 \text{ mol}}{32 \text{ g}} = \frac{x \text{ mol}}{0.80 \text{ g}}$$

68 [1] Allow 1 credit for 1.27 g.

69 [1] Allow 1 credit for 2 $\text{KClO}_3(\text{s}) \rightarrow$ 2 $\text{KCl}(\text{s}) +$ 3 $\text{O}_2(\text{g})$.

70 [1] Allow 1 credit for 3 *or* three.

71 [1] Allow 1 credit. Acceptable responses include, but are not limited to:



Note: Do *not* allow credit for Ca *or* calcium.

72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$$\frac{0.0033 \text{ g}}{500. \text{ g}} \times 1\,000\,000$$

$$\frac{0.0033(10^6)}{500}$$

$$\frac{3300}{500}$$

$$\frac{0.0033}{500} = \frac{x}{10^6}$$

73 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The Mg^{2+} ion has a smaller radius than an Mg atom.

The Mg atom is larger.

74 [1] Allow 1 credit for C *or* carbon.

75 [1] Allow 1 credit for $\text{C}_2\text{H}_4\text{O}$. The order of the elements may vary.

76 [1] Allow 1 credit for ester *or* esters.

77 [1] Allow 1 credit for 2 *or* two *or* 1 pair.

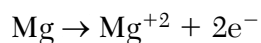
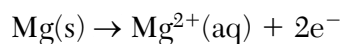
78 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The salt bridge allows ions to migrate between the half-cells.

The salt bridge prevents polarization of the half-cells.

maintains electrical neutrality of the solutions

79 [1] Allow 1 credit. Acceptable responses include, but are not limited to:



Note: Do *not* allow credit for e without the (−) sign.

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

Electrical energy is required for electrolytic reactions, while voltaic cell reactions produce electricity.

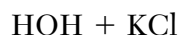
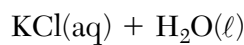
Voltaic cells produce electrical energy, and electrolytic cells use electrical energy.

Electrolysis reactions require an external source of electricity.

81 [1] Allow 1 credit for 3 *or* three.

82 [1] Allow 1 credit for blue.

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



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

$$\frac{(0.010 \text{ M})(15.0 \text{ mL})}{7.5 \text{ mL}}$$

$$(0.010 \text{ M})(15.0 \text{ mL}) = M_{\text{B}} (7.5 \text{ mL})$$

$$\frac{(0.01)(15)}{7.5}$$

85 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The 1.0 M solution has a greater concentration of mobile ions than the 0.010 M solution.

The 0.010 M solution has fewer mobile ions.

The 1.0 M solution has more aqueous ions.

Regents Examination in Physical Setting/Chemistry

June 2019

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

The *Chart for Determining the Final Examination Score for the June 2019 Regents Examination in Physical Setting/Chemistry* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Tuesday, June 25, 2019. 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.**

Online Submission of 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 <http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm>.
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

June 2019 Physical Setting/Chemistry			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		55	67, 70, 72, 77, 84
Math Key Idea 2		56	69
Math Key Idea 3		33, 37, 41, 48, 53, 59, 65	66, 68, 75, 81, 83
Science Inquiry Key Idea 1		40, 52, 57, 58, 60, 61, 62, 63, 64	66, 71, 73, 74, 78, 80, 82, 85
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3		31, 42, 45, 48, 49, 50, 54, 56, 57, 58, 60	66, 67, 69, 73, 75, 77, 79, 83, 85
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1			78
Key Idea 2		33, 40, 51	76
Key Idea 3			81
Key Idea 4		43, 44	
Key Idea 5			
Standard 7			
Key Idea 1			
Key Idea 2			
Standard 4 Process Skills			
Key Idea 3		31, 32, 34, 35, 36, 40, 43, 44, 45, 46, 47, 51, 53, 55, 56, 59, 62	67, 69, 72, 75, 79, 80, 82, 83, 84, 85
Key Idea 4		41, 64, 65	
Key idea 5		38, 39	
Standard 4			
Key Idea 3	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 13, 14, 15, 16, 19, 20, 22, 23, 24, 25, 26, 27	31, 32, 33, 34, 35, 36, 37, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 61, 62, 63	66, 67, 68, 69, 70, 71, 72, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85
Key Idea 4	17, 18, 21, 28, 30	41, 54, 64, 65	
Key Idea 5	7, 12, 29	38, 39	73, 77
Reference Tables			
2011 Edition	2, 3, 8, 10, 13, 18, 25, 27	32, 34, 35, 36, 37, 38, 40, 41, 45, 46, 51, 52, 53, 54, 55, 56, 59, 60, 62, 63, 64, 65	66, 67, 71, 72, 74, 76, 77, 82, 83, 84