FOR TEACHERS ONLY

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

PHYSICAL SETTING/CHEMISTRY

Wednesday, June 24, 2026 — 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 website during the rating period. Check this website at: https://www.nysed.gov/state-assessment/high-school-regents-examinations 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 website at: https://www.nysed.gov/state-assessment/high-school-regents-examinations on the day of the examination. 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. Acceptable responses include, but are not limited to:

Atoms of the elements in Group 2 all have 2 valence electrons.

The atoms in Group 2 all have the same number of valence electrons.

The atoms in Group 2 have outermost shells with 2 electrons.

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

The electronegativities generally decrease from Be through Ra.

The electronegativities decrease.

decreases

53 [1] Allow 1 credit for 82.

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

metallic bonding

metallic

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

The 1.0-kg block of copper has less thermal energy than the 3.0-kg block when both are at 25°C.

The 3.0-kg block has three times more thermal energy.

less in 1 kg Cu

56 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$$8.96 \text{ g/cm}^3 = \frac{14.20 \text{ g}}{x}$$

$$\frac{14.2}{8.96}$$

$$\frac{8.96 \text{ g}}{1 \text{ cm}^3} = \frac{14.2 \text{ g}}{x \text{ cm}^3}$$

$$14.20 \text{ g} \times \frac{1 \text{ cm}^3}{8.96 \text{ g}}$$

57 [1] Allow 1 credit for 7.0% *or* any value from 7% to 7.0313%, inclusive.

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

The number of electrons lost by beryllium is equal to the number of electrons gained by flourine.

The same number of electrons is lost and gained.

equal

same

59 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$Be \rightarrow Be^{2+} + 2e^-$

$Be \rightarrow 2e^- + Be^{+2}$

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

60 [1] Allow 1 credit for household ammonia *or* NH_3 (aq) *or* ammonia *or* NH_3.

61 [1] Allow 1 credit for blue.

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

The hydronium ion concentration in lemon juice is one thousand times greater than the hydronium ion concentration in black coffee.

The $H^+(aq)$ concentration in black coffee is 1000 times less.

The hydronium ion concentration in lemon juice is greater.

less concentrated in coffee

higher concentration in juice

63 [1] Allow 1 credit for 7.646 d. Significant figures to *not* need to be shown.

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

alpha decay

alpha particle

alpha

α

$^{4}_{2}He$

$^{4}_{2}\alpha$

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

$^{210}_{84}Po$

^{210}Po

polonium–210

Po–210

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. Acceptable responses include, but are not limited to:

The number of protons in an atom of europium is equal to the number of electrons in a europium atom. Each proton has a charge of positive one. Each electron has a charge of negative one.

The number of positive protons and the number of negative electrons is the same.

The protons equal the electrons.

There are 63 protons and 63 electrons in an atom of europium.

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

In a europium atom, the mass of a proton is much greater than the mass of an electron.

An electron has less mass than a proton.

The proton is more massive.

68 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

An atom of Eu–151 and an atom of Eu–153 each have 63 protons, but they have a different number of neutrons.

Both atoms have 63 protons, but an atom of Eu–151 has 88 neutrons and an atom of Eu–153 has 90 neutrons.

Both have the same number of protons, but Eu–153 has two more neutrons.

same number of protons, different number of neutrons

69 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$(150.92\text{ u})(0.4781) + (152.92\text{ u})(0.5219)$

$$\frac{(150.92)(47.81) + (152.92)(52.19)}{100}$$

$47.81\%(150.92) + 52.19\%(152.92)$

Note: Do *not* allow credit for a numerical setup using mass numbers rather than isotopic masses.

70 [1] Allow 1 credit for 57% *or* any value from 57% to 57.2%, inclusive.

71 [1] Allow credit for __2__ $NaHCO_3(s)$ + heat → _____ $Na_2CO_3(s)$ + _____ $H_2O(g)$ + _____ $CO_2(g)$.

Allow credit even if the coefficient "1" is written in front of $Na_2CO_3(s)$, $H_2O(g)$, and/or $CO_2(g)$.

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

There are 3 substances produced from 1 substance.

The reaction is decomposition because one compound reacts to become three different compounds.

One compound breaks down into simpler compounds.

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

ionic and covalent

polar covalent and ionic

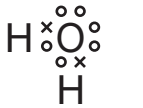
74 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

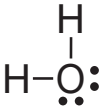
The calcium atom has a larger radius than a Ca^{2+} ion.

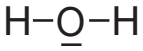
The calcium ion is smaller.

75 [1] Allow 1 credit.

Examples of 1-credit responses:







Note: Do *not* allow credit for •—•, •—•, *or* —• for a bond, because each • represents one electron and each — represents two electrons.

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

Enhanced brine is an aqueous solution.

Enhanced brine contains more than one compound.

The % of salts in brine varies.

The percent of salts can vary.

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

The dissolved salt ions are smaller than the openings in the paper filter.

The ions are small enough to pass through.

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

The freezing point is lower because there is a higher concentration of dissolved ions in the sample with a mass of 0.92 g of $MgCl_2$ in the solution.

The $MgCl_2$ (aq) that has 0.11 gram in 50. mL of solution has a lower concentration of ions.

There are more ions dissolved in the solution containing 0.92 gram of $MgCl_2$.

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

$$\frac{0.23\text{ g}}{1000.\text{ g}} \times 1\,000\,000$$

$$\frac{.23}{1000} \times 10^6$$

$$\frac{230\,000}{1000}$$

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

The rate of the forward reaction is equal to the rate of the reverse reaction.

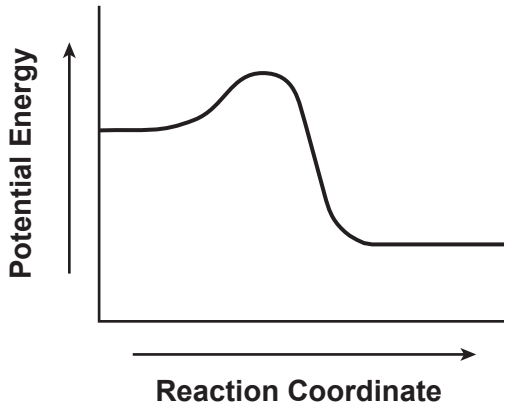
The reaction rates are the same.

equal

same

81 [1] Allow 1 credit for showing that the PE of the products is lower than the PE of the reactants.

Example of a 1-credit response:



82 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The sample of liquid oxygen has less entropy than the sample of oxygen gas.

The sample of $O_2(g)$ has higher entropy.

greater in $O_2(g)$

lower in $O_2(\ell)$

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

The structure of isoprene contains at least one multiple C=C bond.

Each molecule of isoprene contains two double carbon-carbon bonds.

There is a multiple C to C bond in isoprene.

There is a double bond between two carbon atoms.

84 [1] Allow 1 credit for C_nH_{2n-2}.

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

The molecular formulas for the two compounds are the same, but the structural formulas are different.

Both molecules have the same number of C atoms and the same number of H atoms, but have a different arrangement of atoms.

Both compounds are C_5H_8, but have different structures.

Both compounds are C_5H_8, but one has two double bonds between carbons, and the other compound has a triple bond between two carbons.

The *Chart for Determining the Final Examination Score for the June 2026 Regents Examination in Physical Setting/Chemistry* will be posted on the Department's website at: https://www.nysed.gov/state-assessment/high-school-regents-examinations no later than on the day of the examination. 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 https://www.nysed.gov/state-assessment/teacher-feedback-state-assessments.
2. Click Regents Examinations.
3. Complete the required demographic fields.
4. Select the test title from the Regents Examination dropdown list.
5. Complete each evaluation question and provide comments in the space provided.
6. Click the SUBMIT button at the bottom of the page to submit the completed form.

Map to Core Curriculum

June 2026 Physical Setting/Chemistry			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		56	69, 79
Math Key Idea 2			71
Math Key Idea 3		33, 34, 38, 40, 41, 48, 53, 57, 59, 63, 65	70
Science Inquiry Key Idea 1		31, 36, 37, 39, 42, 45, 47, 49, 50, 51, 52, 55, 57, 58, 60, 61, 62, 64	66, 67, 68, 72, 73, 74, 76, 77, 78, 82, 83
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3		32, 33, 34, 36, 37, 39, 43, 44, 45, 46, 49, 50, 51, 52, 54, 59, 60, 61, 64, 65	71, 75, 80, 83, 84, 85
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1			
Key Idea 2			75, 81
Key Idea 3		60, 62	
Key Idea 4			
Key Idea 5			
Standard 7			
Key Idea 1			
Key Idea 2			
Standard 4 Process Skills			
Key Idea 3		34, 35, 36, 39, 40, 42, 45, 46, 48, 52, 53, 59, 61, 64	69, 71, 72, 77, 79, 80, 82
Key Idea 4		41, 55, 63, 65	81
Key idea 5		37	75
Standard 4			
Key Idea 3	1, 2, 3, 4, 9, 11, 12, 13, 14, 15, 18, 20, 21, 22, 23, 24, 25, 26	31, 32, 33, 34, 35, 36, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 56, 57, 58, 59, 60, 61, 62, 64	66, 67, 68, 69, 70, 71, 72, 76, 77, 78, 79, 80, 82, 83, 85
Key Idea 4	10, 16, 17, 19, 30	41, 50, 55, 63, 65	81
Key Idea 5	5, 6, 7, 8, 27, 28, 29	37, 38, 54	73, 74, 75, 84
Reference Tables			
2011 Edition	2, 4, 7, 8, 14, 17, 22, 23, 26	31, 33, 34, 36, 37, 38, 40, 41, 43, 44, 45, 48, 49, 50, 51, 52, 53, 54, 56, 57, 59, 60, 61, 62, 63, 64, 65	66, 67, 68, 70, 74, 75, 79, 84