FOR TEACHERS ONLY

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

PHYSICAL SETTING/CHEMISTRY

Tuesday, June 24, 2025 — 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: 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 web site at: https://www.nysed.gov/state-assessment/high-school-regents-examinations on Tuesday, June 24, 2025. 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:

Hg_2^{2+}	mercury(I) ion	mercury(I)
Pb^{2+}	lead(II) ion	lead(II)
Ag^+	silver ion	silver

Note: Do *not* allow credit for Hg, Hg_2, Pb, *or* Ag.

52 [1] Allow 1 credit for 5 *or* five.

53 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

The mass of a proton is more than the mass of an electron.

The mass of an electron is less than the mass of a proton.

greater for a proton

54 [1] Allow 1 credit for M and Q.

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

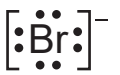
A potassium ion has a smaller radius than a potassium atom.

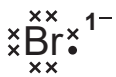
The ion is smaller than the atom.

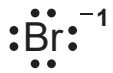
The K atom is larger.

56 [1] Allow 1 credit for Ar *or* argon.

57 [1] Allow 1 credit. The position of the electrons may vary.







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

metallic bonding

metallic

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

The bonds in a molecule of H_2S are covalent because valence electrons are shared between the atoms.

Valence electrons are shared in the bonds.

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

An H_2S molecule is polar because it has an asymmetrical distribution of charge.

The center of positive charge and the center of negative charge do not coincide.

The charge distribution is uneven.

61 [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 at equilibrium.

Both reactions occur at the same rate.

equal rates

same

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

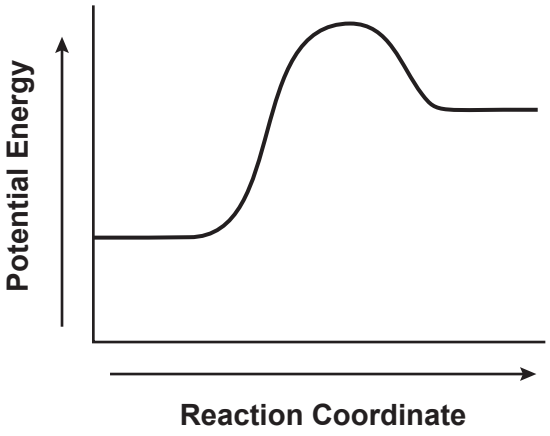
Increasing the concentration of hydrogen gas will favor the forward reaction and decrease the concentration of iodine gas.

Increasing H_2 gas will decrease I_2 gas.

The concentration of iodine will decrease.

63 [1] Allow 1 credit for showing that the PE of the products is higher than the PE of the reactants.

Example of a 1-credit response:



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

$^{218}_{84}Po$

^{218}Po

Po-218

polonium-218

65 [1] Allow 1 credit for 7.646 d. 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 nonmetal *or* nonmetals.

67 [1] Allow 1 credit for 34.

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

As the atomic number of phosphorus, sulfur, and chlorine increases, the atomic radius decreases.

The atomic radius of these elements decreases.

decreases

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

chlorine

Cl_2

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

28.0855 g/mol + (2 x 15.9994 g/mol)

28 + 2(16)

32 + 28

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

carbon monoxide

carbon(II) oxide

72 [1] Allow 1 credit for 12 mol.

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

melting

fusion

solid to liquid

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

The average kinetic energy of the water molecules increases during interval CD.

During interval CD, the average kinetic energy becomes greater.

increases

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

271 000 J

271 200 J

2.71×10^5 J

76 [1] Allow 1 credit for C_nH_{2n+2}.

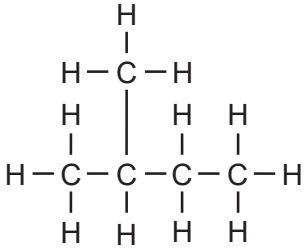
77 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

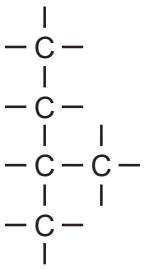
The boiling point of dimethylpropane is lower than the boiling point of pentane because dimethylpropane has weaker intermolecular forces.

Pentane has a higher boiling point because it has stronger intermolecular attractions.

78 [1] Allow 1 credit.

Examples of a 1-credit response:





Note: Do *not* allow credit if only some of the H atoms bonded to C atoms are shown.

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

chemical potential energy

chemical

potential

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

from the magnesium electrode to the zinc electrode

from Mg(s) to Zn(s)

from magnesium to zinc

from anode to cathode

from right to left

81 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

$Zn^{2+}(aq) + 2e^- \rightarrow Zn(s)$

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

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

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

hydronium ion	H_3O^+
hydronium	H^+
hydrogen ion	$H_3O^+(aq)$
hydrogen	$H^+(aq)$

Note: Do *not* allow credit for H *or* H_2.

83 [1] Allow 1 credit for 0.30 M *or* .3 M.

84 [1] Allow 1 credit for blue.

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

The aqueous solution of NaOH has ions that are able to move throughout the solution.

The $Na^+(aq)$ and $OH^-(aq)$ move freely.

The solution has mobile ions.

The ions in the NaOH solution are aqueous.

The *Chart for Determining the Final Examination Score for the June 2025 Regents Examination in Physical Setting/Chemistry* will be posted on the Department's web site at: https://www.nysed.gov/state-assessment/high-school-regents-examinations on Tuesday, June 24, 2025. 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 2025 Physical Setting/Chemistry			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		60	70
Math Key Idea 2		37, 50	74, 81
Math Key Idea 3		34, 35, 38, 43, 64, 65	67, 71, 72, 75, 83
Science Inquiry Key Idea 1		33, 36, 38, 39, 40, 43, 45, 46, 48, 49, 51, 53, 54, 55, 56, 58, 59, 60, 61, 63	66, 69, 73, 74, 79, 80, 82, 84, 85
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3		31, 33, 36, 37, 40, 41, 42, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 61, 62, 63, 64, 65	71, 72, 74, 75, 77, 81, 84
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1			
Key Idea 2		57	
Key Idea 3			
Key Idea 4			
Key Idea 5		63	
Standard 7			
Key Idea 1			
Key Idea 2			
Standard 4 Process Skills			
Key Idea 3		32, 33, 34, 35, 38, 40, 44, 47, 48, 61, 62	68, 70, 72, 76, 78, 80, 81, 83, 84
Key Idea 4		63, 64, 65	75
Key idea 5		57	77
Standard 4			
Key Idea 3	1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 14, 15, 16, 17, 18, 20, 21, 22, 24, 25, 26, 27	31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 47, 48, 49, 51, 52, 53, 54, 61, 62	66, 67, 68, 69, 70, 71, 72, 76, 78, 79, 80, 81, 82, 83, 84, 85
Key Idea 4	13, 19, 28, 30	46, 50, 63, 64, 65	73, 74, 75
Key Idea 5	10, 11, 23, 29	45, 55, 56, 57, 58, 59, 60	77
Reference Tables			
2011 Edition	4, 5, 6, 7, 11, 12, 16, 18, 19, 21, 22, 23, 26, 28	31, 32, 33, 34, 35, 38, 40, 41, 43, 44, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 63, 64, 65	66, 67, 68, 69, 70, 71, 75, 76, 78, 82, 83, 84