FOR TEACHERS ONLY

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

LE

LIVING ENVIRONMENT

Tuesday, June 16, 2015 — 1:15 to 4:15 p.m., only

SCORING KEY AND 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.

Multiple Choice for Parts A, B–1, B–2, and D
Allow 1 credit for each correct response.

Part A

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

Part B–1

31 ..... **4**	35 ..... **1**	39 ..... **1**	43 ..... **4** .....
32 ..... **2**	36 ..... **1**	40 ..... **4**	
33 ..... **3**	37 ..... **1**	41 ..... **4**	
34 ..... **2**	38 ..... **2**	42 ..... **3**	

Part B–2

47 ..... **3**	49 ..... **1**	50 ..... **2** .....

Part D

73 ..... **3**	75 ..... **4**	81 ..... **4** .....
74 ..... **2**	76 ..... **3**	82 ..... **1** .....

Directions to the Teacher

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

Do not attempt to correct the student's work by making insertions or changes of any kind. If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Allow 1 credit for each correct response.

At least two science teachers must participate in the scoring of the Part B–2, Part C, and Part D 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 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. 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 16, 2015. 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.

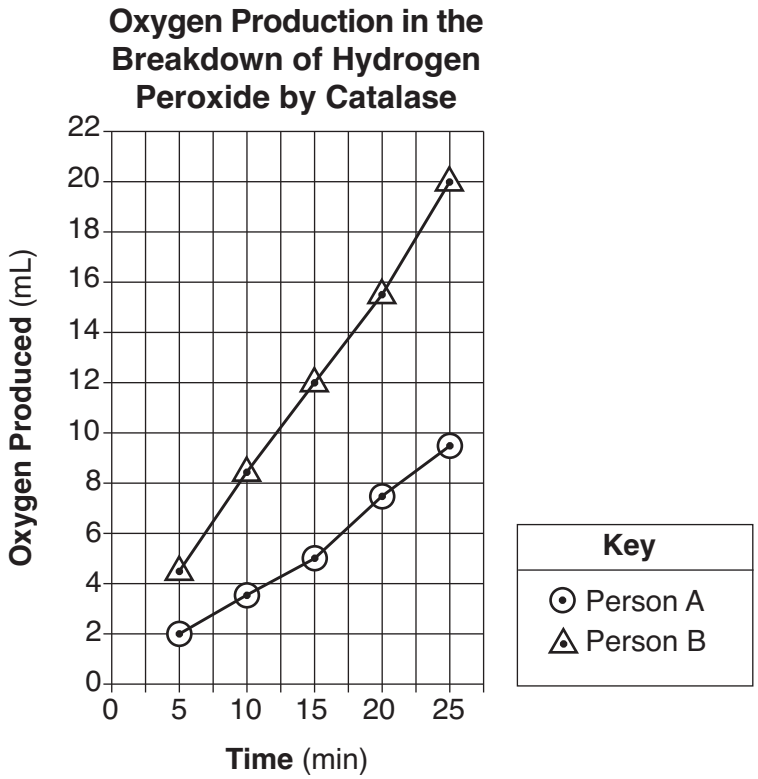
Part B–2

44 [1] Allow 1 credit for marking an appropriate scale, without any breaks in the data, on each labeled axis.

45 [1] Allow 1 credit for correctly plotting the data for person *A*, connecting the points and surrounding each point with a small circle.

46 [1] Allow 1 credit for correctly plotting the data for person *B*, connecting the points, and surrounding each point with a small triangle.

Example of a 3-credit graph for questions 44 and 46:



Note: Allow credit only if circles and triangles are used.

Make no assumptions about the origin unless it is labeled.

Do *not* allow credit for plotting points that are not in the data table, e.g., (0,0), or for extending lines beyond the data points.

Do *not* deduct more than 1 credit for plotting points that are not in the data table or for extending lines beyond the data points.

47 MC on scoring key

48 [1] Allow 1 credit for person *A* and supporting your answer. Acceptable responses include, but are not limited to:

— because their tissue sample produced a lower amount of oxygen, indicating a lower amount of catalase

— They have less catalase than person *B* because less oxygen is being released.

— They have less catalase so more peroxide is present.

49 MC on scoring key

50 MC on scoring key

51 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— cell membrane

— guard cells/stomate

— vacuole/contractile vacuoles

52 [1] Allow 1 credit for an answer between 150 minutes and 190 minutes.

Note: Do *not* accept 3 hours.

53 [1] Allow 1 credit for grasses *or* weeds *or* grasses and weeds and supporting the answer. Acceptable responses include, but are not limited to:

— They are the first plants/vegetation to grow on the abandoned farmland.

— They grow in soil depleted of nutrients.

54 [1] Allow 1 credit for hardwood forest and supporting the answer. Acceptable responses include, but are not limited to:

— They make up the climax community and will remain the most common plant until the environment changes.

— The hardwood forest will remain because it is the most stable.

— They were the climax species because they replaced all the others and existed from year 70 on.

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

— Grasses and weeds would become the most common plants once again.

— Ecological succession would start again with grasses and weeds growing.

— The trees would be gone and replaced by grasses and weeds.

Part C

Note: The student's response to the bulleted items in question 56–60 need *not* appear in the following order.

56 [1] Allow 1 credit for explaining why both plants and solar panels provide renewable energy, rather than nonrenewable energy. Acceptable responses include, but are not limited to:

— The Sun provides energy for both solar panels and plants that is continually being released.

— The Sun is the energy source for both solar panels and plants and the energy is renewable.

57 [1] Allow 1 credit for stating how the widespread use of solar panels to generate electricity can help to reduce global warming. Acceptable responses include, but are not limited to:

— Fewer fossil fuels would be used, resulting in a decrease of global warming.

— Using solar panels would decrease the amount of greenhouse gasses/carbon dioxide.

58 [1] Allow 1 credit for stating how the energy-capturing process used by plants worldwide can help to reduce global warming. Acceptable responses include, but are not limited to:

— Carbon dioxide increases global warming and photosynthesis takes carbon dioxide out of the air.

— Plants remove carbon dioxide from the air.

— Photosynthesis removes carbon dioxide from the air.

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

— The transplanted organ contains foreign antigens. Cyclosporine suppresses the immune response to these antigens.

— It stops rejection of the organ.

— It suppresses the response of the immune system.

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

— An infection involves an actual pathogen that attacks the human organism. An allergy is an immune response to a harmless substance in the environment.

— An infection is caused by a microbe and an allergy is an immune response.

— An infection is usually caused by a harmful organism and an allergy is a response to a substance that is not usually harmful.

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

— mutation

— recombination during fertilization

— sexual reproduction

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

— Mosquitoes resistant to DEET will land on people and bite them and be able to reproduce successfully, while some of those not resistant will not be able to get blood and reproduce.

— Mosquitoes that do not detect the presence of DEET will land on people and bite them and then be able to reproduce.

Note: Do *not* accept answers indicating that "DEET kills the mosquitoes, so DEET-resistant mosquitoes survive and reproduce."

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

— evolution/natural selection

— adaptive radiation

— speciation

64 [1] Allow 1 credit for rats *or* cats.

Note: Do *not* allow credit for goats since they do not compete with marine iguana for food.

65 [1] Allow 1 credit for marine and for supporting the answer. Acceptable responses include, but are not limited to:

— The population is larger because their food supply is greater than that of the land iguanas.

66 [1] Allow 1 credit for land and for supporting the answer. Acceptable responses include, but are not limited to:

— These iguanas would be affected more because the goats are land animals and would compete for the cacti.

— Goats will also eat cacti.

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

— gel electrophoresis

— chromatography

— electrophoresis

— DNA fingerprinting

Note: The student's response to the bulleted items in question 68–72 need *not* appear in the following order.

68 [1] Allow 1 credit for stating *one* hypothesis the experiment would test. Acceptable responses include, but are not limited to:

— Roots of bean plant seedlings grown in aerated nutrient solution will grow faster than roots of seedlings grown without aeration of the nutrient solution.

— Bubbling air into the nutrient solution will lead to more root growth.

— If air is bubbled into the nutrient solution, then the roots will grow more rapidly.

— Air is important for root growth in bean plants.

Note: Do *not* allow credit for a hypothesis written in the form of a question.

69 [1] Allow 1 credit for describing how the control group will be treated differently from the experimental group. Acceptable responses include, but are not limited to:

— The control group will have no aeration.

— No air will be pumped through the rubber tube.

70 [1] Allow 1 credit for identifying the dependent variable in the experiment. Acceptable responses include, but are not limited to:

— number of roots

— length of roots

— rate of root growth

Note: Allow credit for an answer consistent with the student's hypothesis in question 68.

71 [1] Allow 1 credit for stating *one* reason why many setups should be used in both the experimental and control groups. Acceptable responses include, but are not limited to:

— Many setups provide more data for drawing a valid conclusion.

— so your conclusion will be valid

72 [1] Allow 1 credit for stating *one* reason why several different kinds of seedlings were not tested in this experiment. Acceptable responses include, but are not limited to:

— This experiment was done to test the presence of air on root growth in bean seedlings only.

— There should be only one variable.

Part D

73 MC on scoring key

74 MC on scoring key

75 MC on scoring key

76 MC on scoring key

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

— salt

— salt solution

78 [1] Allow 1 credit for *A* and *B* and for supporting the answer. Acceptable responses include, but are not limited to:

— They have more bases in common.

— Their DNA sequences are more similar.

— They have only one difference.

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

— add stain

— adjust the diaphragm

— use a higher magnification

— adjust fine/coarse adjustment knob

— add water to the slide

— clean the lens

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

— beta carotene

— chlorophyll *a*

— the pigment molecule that causes the yellow-orange band

81 MC on scoring key

82 MC on scoring key

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

— The two finches eat different kinds of food.

— The woodpecker finch eats insects and the large ground finch eats seeds.

— They do not compete for the same resources.

84 [1] Allow 1 credit for the cactus finch or vegetarian tree finch and supporting the answer. Acceptable responses include, but are not limited to:

— The cactus finch, because it is the only one that eats cactus.

— The vegetarian tree finch is the only one that is a fruit eater.

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

— too large to pass through the cell membrane

— no receptor site

— faulty receptor site

— molecule is charged

The *Chart for Determining the Final Examination Score for the June 2015 Regents Examination in Living Environment* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Tuesday, June 16, 2015. Conversion charts provided for previous administrations of the Regents Examination in Living Environment 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 2015 Living Environment

Standards	Question Numbers			
	Part A 1–30	**Part B–1 31–43**	**Part B–2 44–55**	**Part C 56–72**
Standard 1 — Analysis, Inquiry and Design				
Key Idea 1				
Key Idea 2				
Key Idea 3			44, 45, 46, 48	
Appendix A (Laboratory Checklist)				67, 68, 69, 70, 71, 72
Standard 4				
Key Idea 1	1, 2, 3, 6, 7, 21, 22	41, 42, 43	47	
Key Idea 2	11, 12, 18, 24, 25, 29	34, 37		
Key Idea 3	8, 13, 15, 26	31, 36		61, 62, 63
Key Idea 4	4, 5, 17, 20	39		
Key Idea 5	16, 23, 27	38	49, 50, 51, 52	58, 59, 60
Key Idea 6	30	32, 33, 35	53, 54, 55	64, 65
Key Idea 7	9, 10, 14, 19, 28	40		56, 57, 66

Part D 73–85	
Lab 1	74, 78, 80, 81
Lab 2	73, 75, 76
Lab 3	82, 83, 84
Lab 5	77, 79, 85