

FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

Wednesday, June 14, 2017 — 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 3	9 4	17 1	25 1
2 2	10 1	18 2	26 1
3 2	11 3	19 3	27 1
4 4	12 1	20 3	28 4
5 3	13 1	21 3	29 2
6 2	14 3	22 2	30 3
7 4	15 1	23 2	
8 1	16 3	24 4	
Part B-1			
31 2	35 4	39 2	43 2
32 3	36 4	40 3	
33 4	37 4	41 1	
34 2	38 2	42 2	
Part B-2			
47 2	49 4	50 1	
Part D			
73 3	75 4	81 2	
74 3	76 4	82 2	

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 Wednesday, June 14, 2017. 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

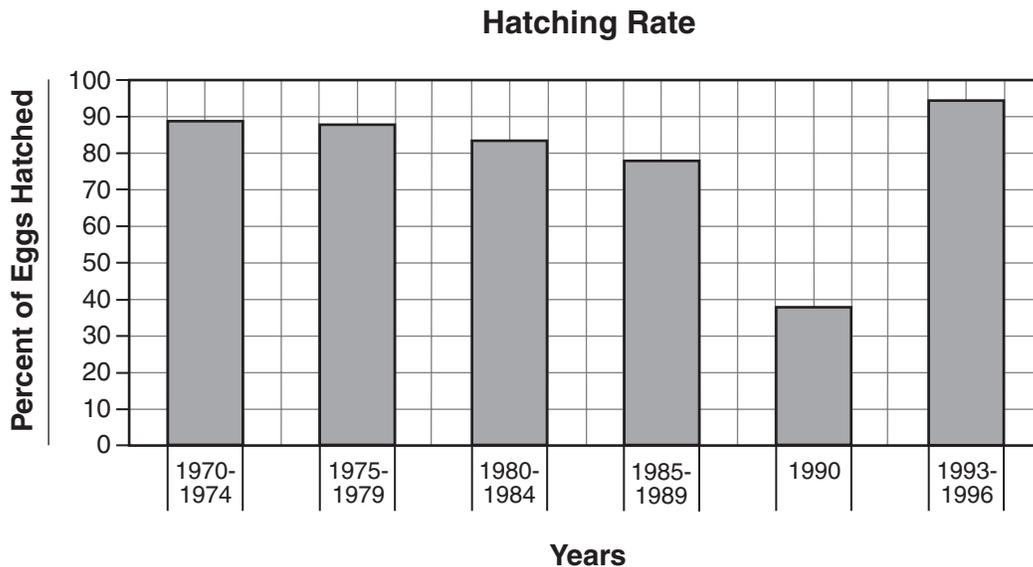
44 [1] Allow 1 credit for correctly labeling the y -axis “Percent of Eggs Hatched.”

Note: Do *not* allow credit if percent or % is not included in the label.

45 [1] Allow 1 credit for correctly marking the scale, without any breaks in the data, on the y -axis.

46 [1] Allow 1 credit for constructing vertical bars to correctly represent the data.

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



Note: Allow credit if the correct data are clearly represented, even if the bars are *not* shaded.

Do *not* assume that the intersection of the x - and y -axis is the origin (0,0) unless it is labeled. An appropriate scale only needs to include the data range in the data table.

47 MC on scoring key

48 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- amino acid sequences
- DNA/gene sequence
- the results of a gel electrophoresis test
- gene sequences
- the results of a paper chromatography test

49 MC on scoring key

50 MC on scoring key

51 [1] Allow 1 credit for ATP/ADP *or* NADH/NAD.

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

- All of the male gametes in the diagram contain half the chromosome number (haploid, monoploid, n) compared to a body cell of the same species.
- They all contain half of the species' genetic information.
- They had similar DNA sequences to a common ancestor.
- The DNA is composed of the same four subunits (A, T, C, G).

53 [1] Allow 1 credit for stating how the organism selected would be affected if the population of crustaceans in this food web were reduced due to the use of chemicals harmful to crustaceans in the fields near the stream and supporting the answer. Acceptable responses include, but are not limited to:

- The algae may increase because there are fewer crustaceans to eat it.
- The insect larvae will decrease in population because fish will eat more of them.
- The number of insect larvae will increase because there is more algae for them to eat.
- The fish would only have insect larvae to eat because of fewer crustaceans.
- Fewer crustaceans means less food for fish, which decreases reptile population.

Note: The student's response to the bulleted items in questions 54–55 need not appear in the following order.

54 [1] Allow 1 credit for stating *one* advantage of the hoot-dash. Acceptable responses include, but are not limited to:

- The hoot-dash helps to locate a mate.
- The hoot-dash attracts a mate.
- It increases chances of reproduction.

55 [1] Allow 1 credit for stating *one* disadvantage of the hoot-dash. Acceptable responses include, but are not limited to:

- The hoot-dash can attract predators.
- The male may be heard and be eaten by a predator.
- The call uses energy.

Part C

- 56** [1] Allow 1 credit for explaining what would happen during pregnancy if the placenta became damaged and could *not* maintain progesterone levels and supporting the answer. Acceptable responses include, but are not limited to:
- If adequate progesterone levels are not maintained, the lining of the uterus will not be maintained.
 - The fetus might be born prematurely because the lining of the uterus will not be maintained and contractions of the uterus will not be inhibited.
 - The woman will go into labor because uterine contractions will begin to occur.
 - Production of eggs would not be inhibited.
 - miscarriage
 - The fetus may die.
- 57** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The presence of progesterone secreted by the placenta inhibits egg production.
 - Progesterone inhibits egg release.
- 58** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- HIV/AIDS attacks the immune system directly and the body is unable to deal with the invaders.
 - AIDS damages the immune system so it does not respond as effectively.
 - AIDS damages the immune system so it cannot produce antibodies/enough antibodies to fight disease or cancer.
- 59** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Mutations are sometimes a cause of cancer and exposure to radiation increases the occurrence of mutations.
 - Radiation, such as UV, can cause cells to mutate and cause skin cancer.
 - Certain chemicals may increase the rate of mutations.
 - Radiation can alter the genetic information in cells.
 - Radiation weakens the immune system.
- 60** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The amount of food that can pass from these vessels to the placenta and to the embryo will be less than if the vessels are normal in diameter.
 - Less food and oxygen will reach the embryo.
 - The developing embryo will not receive enough food for normal development since not as much blood will flow through the placenta.

- 61** [1] Allow 1 credit for stating whether or not the vaccine was effective and supporting the answer with information from the data table. Acceptable responses include, but are not limited to:
- Yes, a much smaller number of rats receiving the vaccine developed the disease.
 - Since seven out of fifty got the disease, the vaccine may not be effective.
 - Yes, since 86% of vaccinated rats did not get the disease.

- 62** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The rats may have had a natural immunity to the disease.
 - Those rats that did not get sick had a variation that protected them.
 - They may have already had the disease and are immune.
 - Their immune system fought off the virus.

- 63** [1] Allow 1 credit for indicating whether or not the vaccine is ready for human testing using information from the table. Acceptable responses include, but are not limited to:
- No, seven rats getting sick is too many out of a total of 50.
 - A larger sample should be tested before testing on humans.
 - Only 100 rats were tested, so a larger sample size should be used before testing on humans.
 - Yes, because most rats did not develop the disease.

- 64** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- genetic engineering
 - gene manipulation
 - gene splicing
 - gene modification

Note: Do *not* allow credit for biotechnology; it is a field of science not a technique.

- 65** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Use of pesticides can have a negative impact on other species in the area.
 - Pesticides can pollute the groves.
 - Pesticides could harm people.
 - Pesticides could kill beneficial insects.
 - The disease organisms could become resistant to pesticides.

66 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- drought resistance
- insect resistance
- freeze tolerance
- faster growth rate
- larger fruit
- juicier fruit/better tasting/more nutritious

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

- Energy is lost as heat at each feeding level, and pyramid *B* has fewer levels.
- Consumers that feed directly on plants have more energy available to them than consumers feeding on other consumers, since energy is lost at each level.
- Raising cattle on the land is not as productive because energy must be transferred from plants to the cattle and then to people. Much energy will be lost as heat.

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

- The molasses displaced oxygen-rich water and the fish suffocated.
- As fish died, the predators had less food available and died.
- Molasses turned the harbor into a water wasteland where fish were suffocated.

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

- They would come into the area to feed on the dead and dying animals.
- They were attracted by the scent of dead organisms.

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

- fungi
- decomposers
- bacteria

Note: Do *not* accept humans, as they are mentioned and there is no active cleanup.

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

- Biodiversity increases the chances that at least some organisms will survive in the event of environmental change.
- Biodiversity increases the stability of the ecosystem.
- Biodiversity increases the variety of genetic material present in an ecosystem.
- Humans rely on the ecosystem for fishing, food, and tourism.

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

- Marine life would repopulate the harbor.
- The ecosystem would recover on its own.
- The ecosystem might not recover due to the degree of destruction that occurred.
- It would recover due to ecological succession/reach a climax community.

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 for indicating if both species could survive if a group of saddle-backed tortoises were brought to an island inhabited by dome-backed tortoises and supporting the answer. Acceptable responses include, but are not limited to:

- Yes, because they have long necks and can reach food that the dome-shaped tortoises cannot reach.
- Yes, if there is enough food for both species of tortoises.
- Yes, if they have different niches.
- No, because they would compete for food and one species would win.
- No, if the saddle-backed tortoise is not adapted to live in the new environment.
- No, if certain predators are present, they may not.

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

- More seeds were collected with/without competition.
- It was easier to get food without competition.
- The greater the competition, the fewer the survivors.

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

- Body system: respiratory: The person will breathe faster.
- Body system: excretory: The person will sweat more.

- 80** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- If athletes perform the same exercise as nonathletes, then the athletic students will have a lower heart rate during exercise.
 - Athletic students have a lower heart rate during similar exercise than nonathletic students.
 - Nonathletes have a higher heart rate than athletes when exercising.

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

81 MC on scoring key

82 MC on scoring key

- 83** [1] Allow 1 credit for stating *one* conclusion the student would make based upon the results and supporting the answer with information from the data table. Acceptable responses include, but are not limited to:
- The unknown liquid has starch in it, but not glucose. The glucose indicator showed no change but the starch indicator did.
 - There is no glucose in the unknown liquid—the glucose indicator did not change.
 - There is starch in the unknown liquid—the indicator turned blue-black.

- 84** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Not using the same type of clothespins is introducing a new variable.
 - New clothespins might have stronger/weaker springs.
 - New clothespins would produce different results.

- 85** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- electricity
 - electrical charge
 - attraction between opposite electrical charges

The *Chart for Determining the Final Examination Score for the June 2017 Regents Examination in Living Environment* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Wednesday, June 14, 2017. 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 2017 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			47, 54, 55	72
Key Idea 2				
Key Idea 3				61, 63
Appendix A (Laboratory Checklist)		40	44, 45, 46, 49	
Standard 4				
Key Idea 1	11, 18, 24, 27, 28, 29, 30	37, 39, 43	53	
Key Idea 2	20	34, 36, 38, 41, 42		64, 66
Key Idea 3	8, 9, 22, 23, 25, 26	31	48	
Key Idea 4	19		52	56, 57, 60
Key Idea 5	13, 14, 15, 16, 17	33	50, 51	58, 59, 62
Key Idea 6	2, 10, 12, 21			67, 68, 69, 70, 71
Key Idea 7	1, 3, 4, 5, 6, 7	32, 35		65

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