

# FOR TEACHERS ONLY

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

# LE

## LIVING ENVIRONMENT

Tuesday, June 11, 2013 — 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 ..... 1 .....	9 ..... 3 .....	17 ..... 3 .....	25 ..... 2 .....
2 ..... 3 .....	10 ..... 1 .....	18 ..... 1 .....	26 ..... 1 .....
3 ..... 1 .....	11 ..... 2 .....	19 ..... 4 .....	27 ..... 1 .....
4 ..... 3 .....	12 ..... 3 .....	20 ..... 3 .....	28 ..... 3 .....
5 ..... 4 .....	13 ..... 3 .....	21 ..... 3 .....	29 ..... 4 .....
6 ..... 4 .....	14 ..... 1 .....	22 ..... 4 .....	30 ..... 1 .....
7 ..... 3 .....	15 ..... 4 .....	23 ..... 1 .....	
8 ..... 3 .....	16 ..... 4 .....	24 ..... 4 .....	
Part B-1			
31 ..... 3 .....	35 ..... 2 .....	39 ..... 3 .....	43 ..... 2 .....
32 ..... 2 .....	36 ..... 1 .....	40 ..... 2 .....	
33 ..... 2 .....	37 ..... 4 .....	41 ..... 1 .....	
34 ..... 4 .....	38 ..... 2 .....	42 ..... 1 .....	
Part B-2			
47 ..... 4 .....	49 ..... 3 .....	50 ..... 4 .....	
Part D			
73 ..... 1 .....	75 ..... 2 .....	81 ..... 3 .....	
74 ..... 3 .....	76 ..... 1 .....	82 ..... 4 .....	

## 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 11, 2013. 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.**

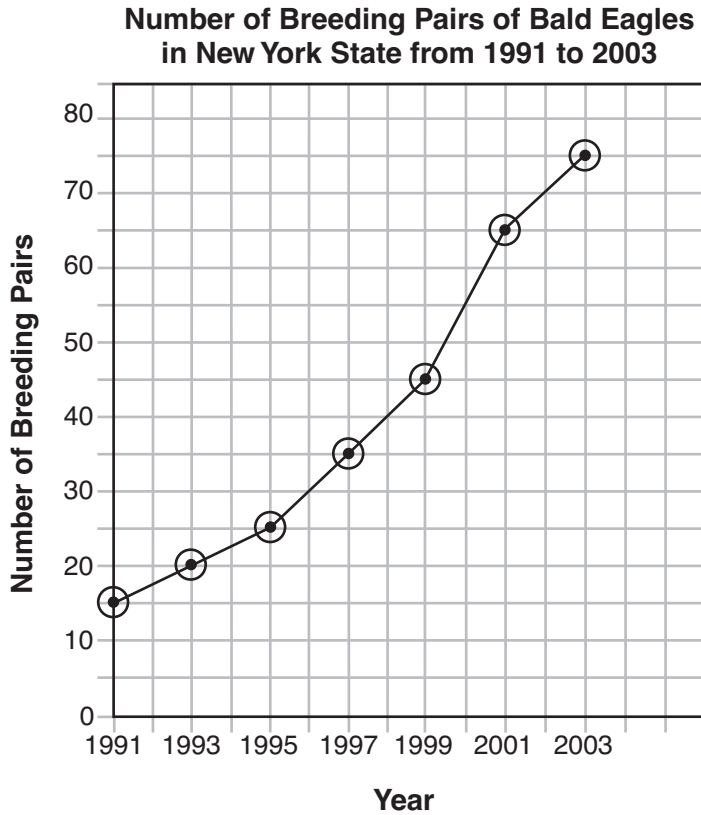
Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score.

**Part B–2**

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

45 [1] Allow 1 credit for correctly plotting the data and connecting the points.

**Example of a 2-credit graph for questions 44 and 45:**



**Note:** Allow credit if points are correctly plotted, but not circled.

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

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

46 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- decreased pesticide use
- decreased human impact on their environment
- more food available
- They were protected by laws.
- Breeding programs were established.

47 MC on scoring key

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

- Populations grow until they exceed the limits of the environment, and then they die off until they fall below environmental limits.
- Changes in available food cause changes in population size.
- Parasites/disease/starvation causes population sizes to vary.
- Variations in predator populations will cause changes in prey populations.
- competition
- seasonal/environmental changes

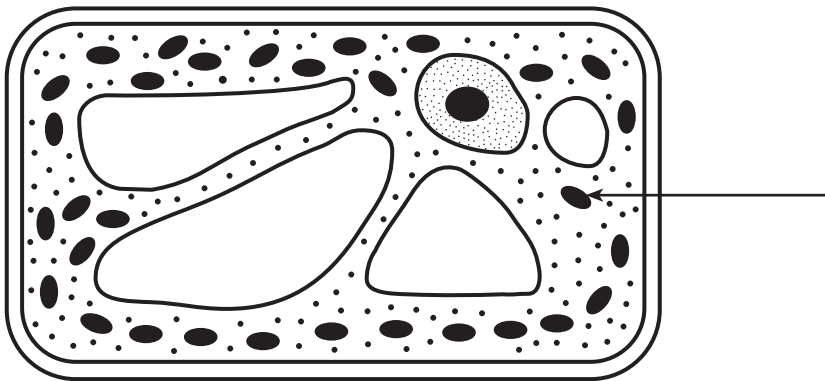
**Note:** Do *not* allow credit for carrying capacity that does not address a reason for the changes in population size.

49 MC on scoring key

50 MC on scoring key

51 [1] Allow 1 credit.

**Example of a 1-credit response:**

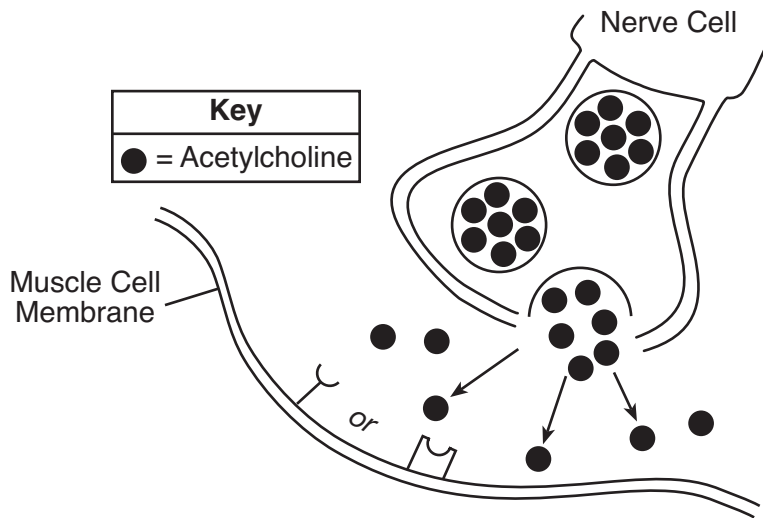


**Note:** Allow credit for any line, with or without an arrowhead, that touches a chloroplast. If more than one arrow is drawn, *all* arrows must be correct to receive credit.

52 [1] Allow 1 credit for photosynthesis *or* autotrophic nutrition *or* photolysis.

53 [1] Allow 1 credit.

**Example of a 1-credit response:**



**Note:** Acceptable responses include a receptor drawn on the muscle cell membrane that has a shape that acetylcholine could fit into.

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

- The resistant bacteria survived, reproduced, and passed on the gene for resistance.
- More of the resistant ones survived and reproduced.

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

- Find a new chemical to fight the bacteria.
- They might develop new antibiotics.
- They can genetically engineer new antibiotics.
- They might develop vaccines against disease-causing bacteria.
- Use different antibiotics.

## Part C

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

- abundant food supply
- no natural predators in the new environment
- There is a more favorable climate.
- fewer competitors

**Note:** The student's response to the bulleted items in question 57–60 need *not* appear in the following order.

**57** [1] Allow 1 credit for stating *one* effect of a loss of biodiversity in an ecosystem. Acceptable responses include, but are not limited to:

- The less biodiversity there is in an ecosystem, the less stable the ecosystem will be.
- A loss of biodiversity would make it harder for the ecosystem to maintain stability.
- It would reduce resources/food/shelter that are used by the organisms in the ecosystem.
- A species might become extinct.

**Note:** Allow credit only for an “effect of a loss of biodiversity,” not just less biodiversity.

**58** [1] Allow 1 credit for identifying a source of variation within a species that leads to biodiversity. Acceptable responses include, but are not limited to:

- mutations
- genetic changes
- genetic recombination
- sexual reproduction

**59** [1] Allow 1 credit identifying *one* specific ecosystem that has shown a decrease in biodiversity and for stating *one* cause of the decrease in biodiversity in the ecosystem identified. Acceptable responses include, but are not limited to:

- a tropical rain forest – deforestation
- Lake Erie – agricultural runoff/overfishing/introduction of non-native species
- Gulf of Mexico – oil spill
- lakes in Adirondack Mountains – acid rain
- arctic seas – global warming

- 60** [1] Allow 1 credit for identifying *one* human activity, other than setting up protected wildlife areas, that has helped to preserve biodiversity. Acceptable responses include, but are not limited to:
- establishing endangered species lists and laws that protect endangered species and their habitats
  - setting up laws that regulate the release of pollutants
  - enacting hunting or fishing regulations that protect endangered species
  - recycling of metals and plastics
  - replanting trees
  - stopping/slowing deforestation
  - breeding programs
  - regulating what chemicals can be used on farms

**Note:** The student's response to the bulleted items in question 61–64 need *not* appear in the following order.

- 61** [1] Allow 1 credit for stating *one* hypothesis the experiment would test. Acceptable responses include, but are not limited to:
- Increasing the temperature will increase the rate of ethanol production.
  - Decreasing the temperature will increase the rate of ethanol production.
  - Temperature affects the rate of ethanol production.

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

- 62** [1] Allow 1 credit for stating how the control group would be treated differently from the experimental group. Acceptable responses include, but are not limited to:
- The control group will be kept at room temperature, while the experimental group will be kept at a higher/lower temperature.
  - The control group would be kept at room temperature.

**Note:** Allow credit for an answer consistent with the student's hypothesis for question 61.

- 63** [1] Allow 1 credit for identifying *two* factors that must be kept the same in both the experimental and control groups. Acceptable responses include, but are not limited to:
- amount of yeast used
  - amount of plant material used
  - type of plant material used
  - species of yeast used

**Note:** Allow credit for an answer consistent with the student's hypothesis for question 61.

- 64** [1] Allow 1 credit for identifying the independent variable in the experiment as temperature.

**Note:** Allow credit for an answer consistent with the student's hypothesis for question 61.

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

- The more cigarettes a young man smokes, the lower his IQ.

**Note:** Allow credit *only* for responses that address the number/quantity of cigarettes smoked.

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

- Smoke enters the lungs. Chemicals diffuse into the blood and are transported to all parts of the body, including the brain.
- Chemicals reach the brain through the blood. They enter the body through the lungs.
- They inhaled the smoke and it was absorbed into the blood.

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

- This is a domestic fuel source.
- They are a renewable resource.
- provide more jobs in the Syracuse area
- It is a beneficial use of industrial wastes.

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

- There will be less corn for food.
- There will be less farmland available to grow crops other than corn.
- The cost of corn food products could go up.
- Burning ethanol produces carbon dioxide, just like fossil fuels.

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

- Construction of the factory would mean more jobs.
- An increased local supply of fuel might reduce fuel costs.
- It could generate tax revenues.

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

- There would be more traffic in the area.
- There might be increased pollution.
- A loss of habitat for animals and plants would occur.
- There would be a loss of open space for recreation.



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

Structure: *A*

— Growths covering the ovary could prevent the egg from being released from the ovary (or entering the oviduct).

Structure: *B*

— Blocking the oviduct (tube) could prevent the sperm from reaching the egg.

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

Effective treatment: surgical procedure

— surgical procedure because the growths physically block reproductive structures and need to be removed

Effective treatment: hormone therapy

— The hormones might lessen or shrink the growths.

— These hormones might block the influence of estrogen, which sometimes stimulates the growths.

## 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 completing the chart as shown below.

DNA base sequence:	AAC	GCC	GTC	CGC	TAG
mRNA codons:	<u>UUG</u>	<u>CGG</u>	<u>CAG</u>	<u>GCG</u>	<u>AUC</u>

78 [1] Allow 1 credit for 4.

79 [1] Allow 1 credit for stating *both* a description of the procedure and an explanation. Acceptable responses include, but are not limited to:

- In procedure *A*, salt water is added to the cell. The reduced water concentration outside results in water leaving the cell and its cytoplasm shrinks away from the cell wall.
- Put the cell in salt solution. Water moves out of the cell and the cell contents shrink.

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

- In procedure *B*, distilled water is added to the cell. The distilled water goes into the cell and restores the cytoplasm to the normal size.
- Process *B* is to add distilled water to dilute the salt water. Water will move into the cell and fill it back up.
- Process *B* adds a new substance that causes water to reenter the cell.

81 MC on scoring key

82 MC on scoring key

- 83** [1] Allow 1 credit for indicating if both species could survive and supporting the answer. Acceptable responses include, but are not limited to:
- Yes, but only if there is food that the Akialoa can eat, since it has a very different beak.
  - No, because the environment might not contain the type of food the Akialoa can eat.
  - Yes, because they won't compete for food.
  - Yes, if they have different niches.
  - No, it is not the habitat that the Akialoa are adapted to.
  - Yes, because based on beak shape, they eat different foods.

- 84** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- oxygen (O<sub>2</sub>)
  - carbon dioxide (CO<sub>2</sub>)
  - lactic acid
  - adrenaline

- 85** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Results from a larger sample are more reliable than results from a small sample.
  - Using data from more students makes it more likely that the results will be accurate.
  - You could compare the results for both boys and girls, which makes the study more valid.

**The *Chart for Determining the Final Examination Score for the June 2013 Regents Examination in Living Environment* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Tuesday, June 11, 2013. 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 2013 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				61
Key Idea 2				
Key Idea 3			44, 45, 46, 47, 50	
Appendix A (Laboratory Checklist)				62, 63, 64, 65
Standard 4				
Key Idea 1	1, 9, 10, 11, 13, 26	33, 34, 36	53	66
Key Idea 2	3, 8, 12, 14, 15, 28	39, 43		
Key Idea 3	6, 30	38, 40, 41	54, 55	
Key Idea 4	7, 16, 17	31		71, 72
Key Idea 5	18, 19, 20, 21, 22, 24	35, 37, 42	51, 52	
Key Idea 6	2, 23, 25, 29	32	48, 49	57, 58
Key Idea 7	4, 5, 27			56, 59, 60, 67, 68, 69, 70

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