

# FOR TEACHERS ONLY

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

## LIVING ENVIRONMENT

Friday, August 17, 2018 — 12:30 to 3:30 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 ..... 1 .....	17 ..... 1 .....	25 ..... 2 .....
2 ..... 3 .....	10 ..... 4 .....	18 ..... 3 .....	26 ..... 1 .....
3 ..... 2 .....	11 ..... 3 .....	19 ..... 3 .....	27 ..... 4 .....
4 ..... 2 .....	12 ..... 3 .....	20 ..... 2 .....	28 ..... 2 .....
5 ..... 4 .....	13 ..... 1 .....	21 ..... 3 .....	29 ..... 1 .....
6 ..... 3 .....	14 ..... 2 .....	22 ..... 2 .....	30 ..... 3 .....
7 ..... 4 .....	15 ..... 4 .....	23 ..... 3 .....	
8 ..... 4 .....	16 ..... 1 .....	24 ..... 4 .....	
Part B-1			
31 ..... 2 .....	35 ..... 4 .....	39 ..... 3 .....	43 ..... 4 .....
32 ..... 1 .....	36 ..... 4 .....	40 ..... 2 .....	
33 ..... 4 .....	37 ..... 1 .....	41 ..... 4 .....	
34 ..... 3 .....	38 ..... 2 .....	42 ..... 1 .....	
Part B-2			
47 ..... 2 .....	49 ..... 1 .....	50 ..... 4 .....	
Part D			
73 ..... 4 .....	75 ..... 2 .....	81 ..... 1 .....	
74 ..... 1 .....	76 ..... 3 .....	82 ..... 3 .....	

## 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 Friday, August 17, 2018. 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.

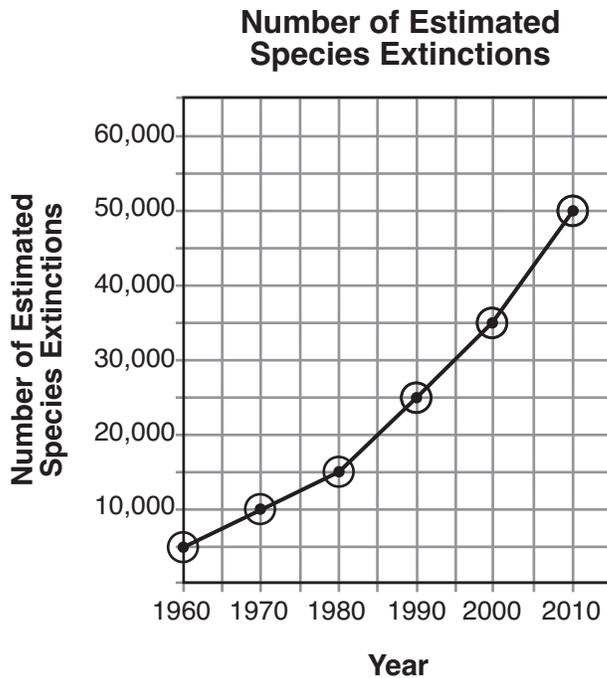
**Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.**

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 marking an appropriate scale, without any breaks in the data, on each labeled axis.
- 45 [1] Allow 1 credit for correctly plotting the data, connecting the points, and surrounding each point with a small circle.

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



**Note:** Allow credit if the 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:
- a sudden increase in environmental changes
  - species inheriting traits not favorable for a changing environment
  - less genetic diversity within many species
  - an alteration of ecosystems due to human impact/population growth
  - not enough food
  - pollution
  - habitat destruction

**47 MC on scoring key**

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

- As the ocean cooled, fish with the antifreeze protein were more likely to survive and pass on this trait.
- Icefish that did not have the gene to keep their blood from freezing would die.

**49 MC on scoring key**

**50 MC on scoring key**

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

- The sea slug is considered a producer when it makes its own food using the chlorophyll and a consumer when it eats the algae.
- It is a producer when it makes food and a consumer when it eats algae.
- They can eat and make their own food.
- They produce chlorophyll and eat algae.

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

- Fossil fuels are not renewable.
- Fossil fuels will run out one day.
- Fossil fuels take millions of years to form.

**53** [1] Allow 1 credit for identifying the process that occurs in this organelle and explaining the importance of this process to the survival of organisms. Acceptable responses include, but are not limited to:

**Process:** respiration/cell respiration/aerobic respiration

**Importance:** produces ATP for the cell to carry out life functions

**Process:** respiration

**Importance:** releases energy for use by the organism

**Process:** synthesis of ATP

**Importance:** ATP provides energy for life processes

**54** [1] Allow 1 credit for identifying the type of cell division involved in each process. Acceptable responses include, but are not limited to:

- skin cells: produced by mitosis/mitotic cell division
- gametes: produced by meiosis/meiotic cell division

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

- Skin cells contain the full number of chromosomes for the individual. Gametes contain half the number of chromosomes.
- Skin cells of an individual are normally genetically identical and gametes have variation.
- Skin cells =  $2n/46$ /diploid; gametes =  $n/23$ /haploid.
- Skin cells have twice as much genetic material.

## Part C

- 56** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Oxygen and nourishment for the developing offspring diffuse across the placenta.
  - The placenta allows the exchange of materials, including wastes, between the mother's blood and her developing fetus.
  - The placenta protects the fetus from some infections.
- 57** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The developing offspring has a greater chance of survival because it is inside the mother.
  - The offspring is more protected and therefore is more likely to survive.
  - Internal environmental conditions are more constant/controlled than with external development.
- 58** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- hormones
  - the environment
  - mother's health/nutrition
  - mother's use of drugs/alcohol/tobacco
  - disease
- 59** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Small female finches need less food to survive.
  - Small finches can mate earlier in the spring/produce more offspring.
  - Small females survive better as nestlings.
  - They can hide more easily from predators.
- 60** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Large males are more likely to mate successfully with females, producing more large males.
  - Large males are more likely to survive the winter.
  - The large males survive, reproduce, and pass on this trait.
  - They outcompete the smaller males for food.

- 61** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Male: — more large individuals/fewer small individuals
  - Males will be larger than males today.
  - Female: — more small individuals
  - Females will be smaller than females today.
  - breed earlier and raise more young
- 62** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- There will be more females hatched than males.
  - Females will outnumber the males.
  - The hatchling populations will have almost all (or maybe all) females.
- 63** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- It is important to keep the nests from getting too hot and perhaps killing all of the eggs before they hatch.
  - If there are no palm trees to shade the nests, more females than males will hatch.
  - Without trees, fewer will survive.
- 64** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Tourists using the beach could trample on or damage the nests.
  - Tourists could deliberately damage the nests by collecting the eggs for souvenirs.
  - If beaches are disturbed to make them nice for the tourists, the nests could be destroyed.
- 65** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The mice are carnivores/consumers.
  - They consume crickets, rodents, tarantulas, and even scorpions that would otherwise over-populate the area.
  - They are predators.

- 66** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- They have a defense against scorpion venom and, therefore, a source of food that would not be available to other animals.
  - They are very aggressive and take nests of other organisms so they don't have to make their own and have more time for hunting.
  - They are capable of taking down an animal much larger than themselves.
  - They don't feel the pain from the scorpion.
- 67** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Their hunting is not affected by the extreme heat during the day.
  - They are better able to sneak up on prey in the dark.
  - They are not as likely to be dehydrated by the hot Sun and will need less water.
  - Their prey are active at night.
  - They are less visible to predators/prey.
- 68** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- If scientists can isolate the mutant protein, they could give it to patients and block the sensation of pain.
  - If humans learn how the mutated protein works, the scientists might have a better idea how to treat human pain.
  - Mice are often used in research for human diseases, because mice and humans are related. If there is a chemical that works in the mouse, it might work in people.
  - The mutated protein prevents the pain signal from reaching the brain.
- 69** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Vaccinations stimulate the immune system to produce antibodies against the disease.
  - Vaccinations activate the immune system.
  - Vaccinations cause you to make antibodies.
- 70** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Because the virus is different, different antibodies would be needed.
  - The old vaccine might not work because the flu virus is different each year.
  - Vaccinations work against specific viruses. As viruses change, the vaccination must change.
  - The flu virus mutates frequently, so the old vaccine is no longer effective.

**Note:** The student's response to the bulleted items in question 71–72 need *not* appear in the following order.

- 71** [1] Allow 1 credit for explaining *one* direct effect that faucet snails have on the lake ecosystem. Acceptable responses include, but are not limited to:
- The faucet snails can infect waterfowl with a parasite that kills the birds.
  - The faucet snails can negatively affect the food web of the lake by causing the loss of the waterfowl.
  - The faucet snails kill the ducks.
- 72** [1] Allow 1 credit for describing *one* human activity that can be taken to slow the spread of the faucet snail. Acceptable responses include, but are not limited to:
- Clean the bottom of a boat when moving it from one body of water to another.
  - Check your boat for snails before putting it in a new lake.
  - Increase awareness of possible contaminants coming from boats.
  - Remove the snails from the lake.

## Part D

73 MC on scoring key

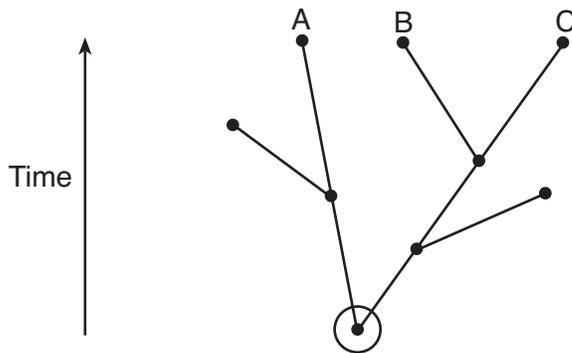
74 MC on scoring key

75 MC on scoring key

76 MC on scoring key

77 [1] Allow 1 credit.

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



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

- They might compete for nesting sites.
- They might compete for freshwater resources.
- They might compete if one of their food sources is scarce.

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

- The small tree finches might feed in the evening and the large tree finches might feed during the day.
- They feed on different types/sizes of animal food.
- They feed on food located in different areas of the island.
- There may be enough food so they do not need to compete.

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

- Beaks would be thicker/stronger.
- Birds with larger, thicker beaks would become more common in the population.
- There would be fewer birds with small beaks.

**81 MC on scoring key**

**82 MC on scoring key**

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

- If the athletes exercise, then their respiratory rates will increase.
- If the athletes exercise, then their breathing rates will decrease.
- Breathing rates are affected by exercise.
- Exercise will make you breathe faster.

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

**84** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The students are different and would have different respiratory rates.
- Some students may have a disease or medical condition that causes them to have a faster or slower breathing rate than normal.
- Some may be in better shape than others.
- Some may have been active just before the measurement.

**85** [1] Allow 1 credit.

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

Final color of X: black *or* blue-black.

Final color of Y: amber *or* amber-colored *or* yellowish

**The *Chart for Determining the Final Examination Score for the August 2018 Regents Examination in Living Environment* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Friday, August 17, 2018. 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

## August 2018 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		37, 38		
Key Idea 2				
Key Idea 3		34, 41	44, 45, 46	
Appendix A (Laboratory Checklist)		31, 32		
Standard 4				
Key Idea 1	1, 5, 15, 16, 21		51, 53	65, 66, 67, 68
Key Idea 2	3, 4, 7, 8, 9, 23		47, 50, 55	
Key Idea 3	10, 20		48, 49	59, 60, 61
Key Idea 4	11, 12		54	56, 57, 58
Key Idea 5	2, 6, 17, 18, 19, 28	35, 39, 40, 43		69, 70
Key Idea 6	22, 24, 26, 27, 29, 30	33		62, 71
Key Idea 7	13, 14, 25	36, 42	52	63, 64, 72

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