

FOR TEACHERS ONLY

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

LE

LIVING ENVIRONMENT

Monday, January 26, 2015 — 9:15 a.m. to 12:15 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 3	17 1	25 2
2 2	10 4	18 3	26 1
3 1	11 1	19 2	27 3
4 3	12 3	20 3	28 2
5 4	13 4	21 1	29 4
6 2	14 4	22 2	30 1
7 3	15 1	23 1	
8 3	16 4	24 2	
Part B-1			
31 4	35 2	39 4	43 4
32 4	36 4	40 1	
33 3	37 4	41 1	
34 4	38 1	42 2	
Part B-2			
47 3	49 3	50 2	
Part D			
73 4	75 2	81 4	
74 3	76 1	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 Monday, January 26, 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.

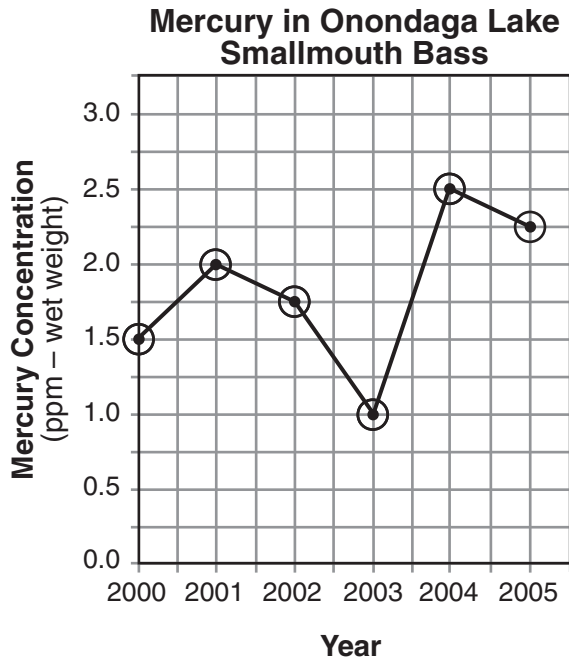
Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score.

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 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:

- It was taken up by plants, which were eaten by small fish, which were then eaten by the bass.
- Small fish that ate these aquatic plants were then eaten by smallmouth bass.

47 MC on scoring key

- 48 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The collagen protein of *Tyrannosaurus rex* more closely resembles the collagen protein of chickens than other animals.
 - similar bone structures
 - Similar proteins were identified in both.

49 MC on scoring key

50 MC on scoring key

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

- light
- minerals/nutrients
- water/rainfall
- temperature

- 52 [1] Allow 1 credit for stating if competition is likely to occur between the *Bagheera kiplingi* and ants living in acacia shrubs. Acceptable responses include, but are not limited to:

- Yes, both ants and *Bagheera kiplingi* eat the yellow vegetables of acacia shrubs.
- Yes, they both occupy similar niches.
- Competition is likely because they eat the same food.
- No, if the food supply is adequate.

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

- gene
- chromosome
- nucleus
- DNA molecule

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

- Predators will avoid it.
- Predators might mistake it for a poisonous snake and not eat it.

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

- The predators have never experienced the negative effects of attacking/eating poisonous snakes.
- There are no poisonous snakes in the area for them to learn about.

Part C

Note: The student's response to the bulleted items in question 56–59 need *not* appear in the following order.

- 56** [1] Allow 1 credit for stating a hypothesis to be tested. Acceptable responses include, but are not limited to:
- As temperature increases, the daphnia population decreases.
 - Temperature has an effect on the size of a daphnia population.
 - If the temperature decreases, then the size of the daphnia population decreases.

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

- 57** [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 be at normal temperature for the species.
 - The control group will be at normal freshwater pond temperature, while the experimental groups will be at other temperatures.

- 58** [1] Allow 1 credit for identifying the independent variable in the experiment as temperature.

- 59** [1] Allow 1 credit for identifying the type of data that will be collected. Acceptable responses include, but are not limited to:
- change in the number of daphnia in the population
 - number of daphnia at each temperature

Note: The type of data must be measurable.

- 60** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- cocaine molecule and cholera protein
 - cocaine and harmless *or* inactive cholera protein

- 61** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- stimulates the immune system to make antibodies to work against cocaine
 - causes it to make antibodies against cholera
 - stimulates antibody production

- 62** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- blocks the cocaine so the user does not feel its effects
 - The vaccine keeps the cocaine from reaching the brain.
 - prevents the cocaine from leaving the blood to get to the brain
 - causes the drug to lose its appeal

- 63** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- It doesn't use or produce any harmful chemicals.
 - Mosquito remains are returned to the environment.
 - It does not harm beneficial insects.
 - It reduces the transmission of Wet Nile virus.
- 64** [1] Allow 1 credit for stating whether or not this is a valid concern and supporting the answer. Acceptable responses include, but are not limited to:
- No. This is not a valid concern. The MKS device uses heat and carbon dioxide to attract only insects that prey on people and other warm-blooded animals.
 - No. Environmentally beneficial insects would not be attracted to the device.
 - Yes. Some beneficial insects might accidentally enter the device.
 - No. Beneficial insects use different hunting strategies.
- 65** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The practice increases the number of RBCs that would carry more oxygen to muscle cells.
 - Since muscle cells receive more oxygen for respiration, they would have more energy for the athletic event.
 - They would have more energy because they have extra oxygen.
- 66** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- RBCs are suspended in a fluid. There needs to be enough fluid surrounding these cells so they flow freely in blood vessels, rather than clump or bunch together.
 - Homeostasis could be disrupted.
 - The circulatory system might not function well with "thick" blood.
 - The heart might have trouble pumping the thicker blood.
 - not enough plasma
- 67** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Short distance runners don't run as long.
 - Some athletic events require oxygen for increased respiration for a longer time. Extra RBCs would provide an advantage.
 - Long-distance runners need increased oxygen for a longer time than sprinters.

- 68** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Some plants had a gene that made them resistant to the herbicide.
 - Some plants were resistant.
 - Some did not get enough spray to kill them.
 - Some had a mutation that caused them to be resistant.
- 69** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The resistant plants could pass on the resistance to their offspring.
 - The gene for resistance could be inherited by the next generation.
 - Only resistant plants remain to reproduce.
- 70** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The population is controlled by the amount of food available.
 - The population is controlled when too many small animals are eaten and there is a reduced amount of food for the wolves.
 - The population is limited by the carrying capacity of the environment.
 - Some die from disease/lack of food.
 - Severe winter may kill some of the wolves.
- 71** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The wolves ate the mesopredators.
 - The “apex” or top predator was at the top of the food pyramid and fed on the levels below.
 - competition for food
- 72** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Ranchers were concerned that the wolves would eat the sheep.
 - People were afraid that wolves would attack people as well as livestock.
 - People didn’t understand their importance.

Part D

73 MC on scoring key

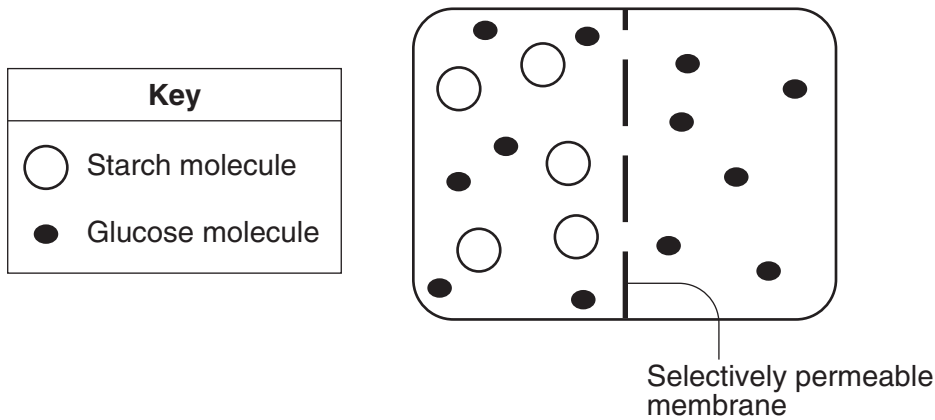
74 MC on scoring key

75 MC on scoring key

76 MC on scoring key

77 [1] Allow 1 credit for a response showing the five starch molecules only on the left side and glucose molecules distributed on both sides.

Example of a 1-credit response:



Note: The number of glucose molecules on each side does not have to be equal.

78 [1] Allow 1 credit for recording the mRNA codons coded for by the DNA base sequences in the table.

79 [1] Allow 1 credit for recording the amino acid sequence that is coded for by the mRNA codons in the table.

Example of a 2-credit response for questions 78 and 79:

DNA Base Sequence	AAG	CCA	TGA	ACA
mRNA codons	<u>UUC</u>	<u>GGU</u>	<u>ACU</u>	<u>UGU</u>
Amino acid sequence	<u>PHE</u>	<u>GLY</u>	<u>THR</u>	<u>CYS</u>

Note: Allow credit for an amino acid sequence consistent with the student's mRNA codons.

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

- There is no control.
- He did not determine his pulse rate before drinking the tea.
- He should have measured his pulse more than one time.

81 MC on scoring key

82 MC on scoring key

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

- Large ground finches prefer large seeds.
- Regions *B* and *C* lack the preferred food source of large ground finches, which is large seeds.
- Large ground finches have large edge-crushing bills, which are best for eating the large seeds found only in regions *A* and *D*.

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

- The small tree finch eats mainly animal food (insects), and insects are found in all four regions on the island.
- Insects are found in all regions.

85 [1] Allow 1 credit for 2 and supporting the answer. Acceptable responses include, but are not limited to:

- It has no bands from either parent.
- All of the puppies have bands from each parent, except for puppy 2.
- It has bands not found in either parent dog.

The *Chart for Determining the Final Examination Score for the January 2015 Regents Examination in Living Environment* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Monday, January 26, 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

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

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