FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

Wednesday, August 12, 2015 — 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 ..... **1**	9 ..... **3**	17 ..... **3**	25 ..... **4** .....
2 ..... **1**	10 ..... **2**	18 ..... **3**	26 ..... **2** .....
3 ..... **2**	11 ..... **3**	19 ..... **2**	27 ..... **4** .....
4 ..... **2**	12 ..... **2**	20 ..... **3**	28 ..... **4** .....
5 ..... **4**	13 ..... **1**	21 ..... **2**	29 ..... **1** .....
6 ..... **1**	14 ..... **2**	22 ..... **1**	30 ..... **3** .....
7 ..... **3**	15 ..... **1**	23 ..... **2**	
8 ..... **2**	16 ..... **2**	24 ..... **1**	

Part B–1

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

Part B–2

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

Part D

73 ..... **3**	75 ..... **4**	81 ..... **1**	
74 ..... **1**	76 ..... **2**	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 student's 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, August 12, 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

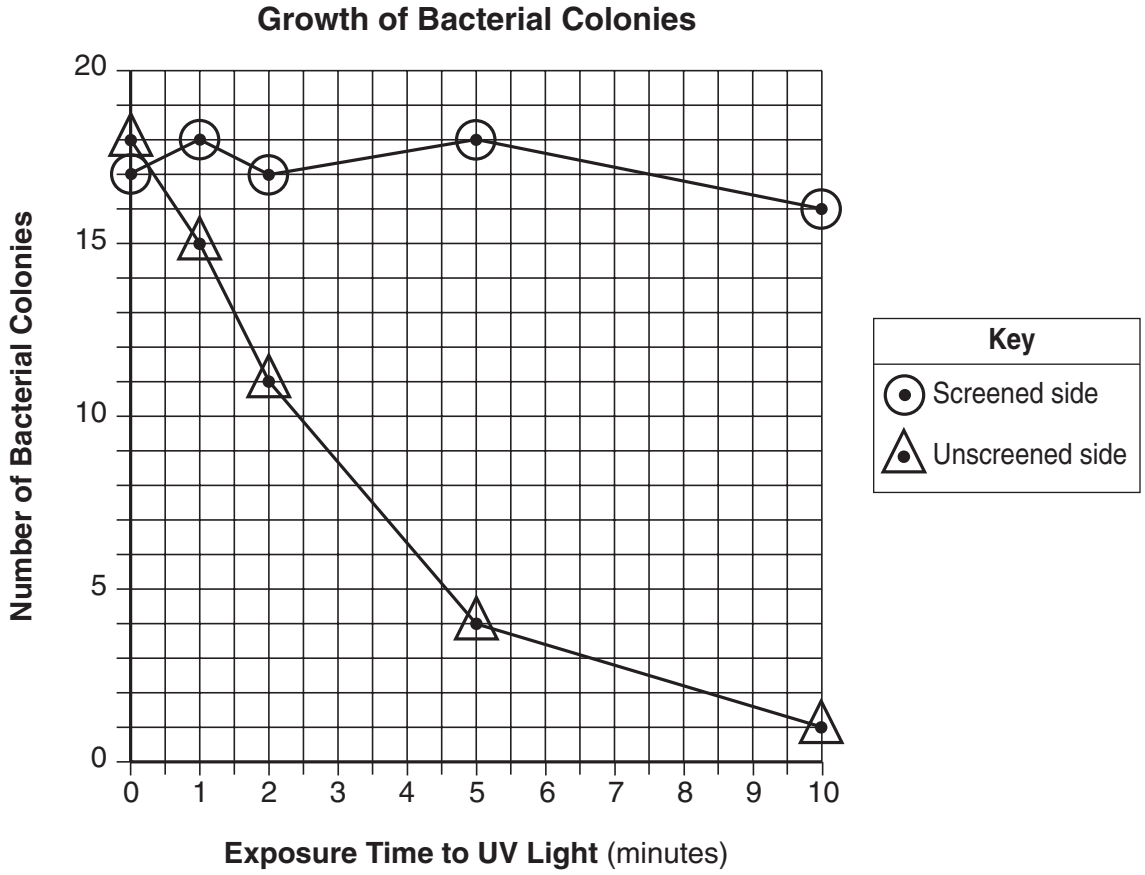
Note: The student's response to the bulleted items in question 44–46 need *not* appear in the following order.

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 plotting the data for the number of bacterial colonies on the screened side, connecting the points and surrounding each point with a small circle.

46 [1] Allow 1 credit for plotting the data for the number of bacterial colonies on the unscreened side, connecting the points and surrounding each point with a small triangle.

Example of a 3-credit response to questions 44–46:



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

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.

47 MC on scoring key

48 [1] Allow 1 credit for pepsin and supporting the answer. Acceptable responses include, but are not limited to:

— The pH of the stomach is acidic (1.5–4.0), and pepsin works best at very low pH values.

49 MC on scoring key

50 MC on scoring key

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

— The population size of organisms that feed on the hellbender will decline.

— The population size of organisms that the hellbender feeds upon will increase.

— The biodiversity of this western New York ecosystem will decrease, causing instability.

— disruption of the food chain/web

Note: The student's response to the bulleted items in question 52–54 need *not* appear in the following order.

52 [1] Allow 1 credit for identifying the type of protein molecules used to digest food. Acceptable responses include, but are not limited to:

— enzymes

— biological catalysts

53 [1] Allow 1 credit for mitochondrion/mitochondria.

54 [1] Allow 1 credit for stating *one* inference that can be made concerning a cell that has many of these organelles. Acceptable responses include, but are not limited to:

— The cell uses a great amount of energy.

— The cell is very active.

— The cell requires a lot of energy.

Note: Allow credit for an answer that is consistent with the student's response to question 53.

55 [1] Allow 1 credit for correctly completing the missing information for sections 3*a* and 3*b*.

Example of a 1-credit response:

1a. Is rod shaped	bacillus
1b. Is not rod shaped	go to 2
2a. Is spiral shaped	spirillum
2b. Is not spiral shaped	go to 3
3a. **Exists singly or Single cells**	type C
3b. **Exists in a group *or* colony *or* Clumps of cells *or* Chains of cells**	type D

Part C

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

Change: Increased pulse rate:

— moves blood rich in glucose/oxygen to the cells faster

— allows the body to get rid of waste products/carbon dioxide faster

Note: Do *not* accept an answer that only states that the blood moves faster without explaining how this helps an individual effectively respond.

Change: Increased blood glucose levels:

— provide cells with a ready source of energy more rapidly

Change: Increased breathing rate:

— eliminates carbon dioxide faster

— allows the body to get oxygen into the blood faster

57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The fight-or-flight response includes many changes in body activity, which could result in damage to the body if not returned to normal.

— The fight-or-flight response sped up activity, which must now be slowed to normal.

— Once the danger is over, the high activity levels of cells and organs are reduced to normal levels, preventing damage to the body.

— so that homeostasis can be restored

58 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Lesions interfere with water balance.

— makes them wake up during hibernation and use up energy

— Lesions interfere with heat regulation/circulation.

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

— Research to find a way to stop the spread of the disease.

— Decontaminate the clothing of researchers who are studying the caves.

— Make artificial hibernating areas.

— Decontaminate the caves in the fall before hibernation.

— Don't allow people to enter caves used as hibernation sites.

— Medicate the bats.

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

— The student could use a microscope with a known field diameter to measure the size of the two kinds of cells.

— Place both cell types on the same slide and compare them.

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

— antigens

— weakened/dead pathogen

— inactive chickenpox virus

Note: Do *not* accept "a little bit of the disease" or "a small amount of the virus."

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

— The vaccination activates the immune system.

— stimulates the production of antibodies

— stimulates the formation of memory cells

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

— Not as many people get sick, so the disease does not spread to as many other people.

— It is less likely that the disease will spread, since fewer people are going to have the disease.

— reduces the risk for exposure in the community

Note: The student's response to the bulleted items in question 64–66 need not appear in the following order.

64 [1] Allow 1 credit for stating *one* reason why removing the cormorants from the food web could have a positive impact on the fishing industry. Acceptable responses include, but are not limited to:

— There could be more lake trout/salmon available to be caught by fisherman.

— There could be more fish available for fishing.

— There would be more forage fish for the salmon/ lake trout to eat.

Note: Do *not* allow credit if the answer does not refer to the impact on fishing.

65 [1] Allow 1 credit for stating *one* possible effect of removing the cormorants on a species other than fish and supporting the answer. Acceptable responses include, but are not limited to:

— The number of eagles will decrease because of fewer cormorants to eat.

— The number of eagles will increase because there are more forage fish to eat.

— The number of plankton will decrease because there are more forage fish eating them.

— The number of invertebrates will decrease because there are more forage fish eating them.

66 [1] Allow 1 credit for describing *one* action, other than removing a population of organisms from the environment, that humans could take to preserve the fishing industry in Lake Ontario. Acceptable responses include, but are not limited to:

— Add more forage fish/food supply for the salmon/lake trout to eat.

— Increase breeding programs for fish/Stock lakes.

— Pass laws restricting fishing for forage fish.

— Limit pollution by regulating industries on the Great Lakes.

— Grow fish in fish farms.

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

— Not mowing allowed the natural progression of plant communities to occur.

— Mowing was preventing the plant populations from modifying the environment, making it more suitable for others.

— allowed other plants to grow

68 [1] Allow 1 credit for identifying *one* specific human activity, other than mowing, and describing how this activity affects biodiversity. Acceptable responses include, but are not limited to:

Human activity: cut down forest
Effect on biodiversity: Different plant and animal species will be present. Many species that live in the forest will be lost.

Human activity: plant trees
Effect on biodiversity: decrease biodiversity by shading out small plants or increase biodiversity by adding new species.

Human activity: building a mall
Effect on biodiversity: removes many plants and animals from the environment

Human activity: plant wild flowers
Effect on biodiversity: increase biodiversity because you are adding new plants

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

— The ecosystem would undergo succession again and eventually return to its stable state.

— The ecosystem would gradually change back to the climax community that was there before the flood.

— The ecosystem would slowly change back to what it was before the flood.

— Succession would begin from bare soil.

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

— Spinach should be displayed under fluorescent lights.

— Spinach should be displayed in transparent packaging, under lighted conditions.

— Spinach should not be sold in containers that block light.

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

— People could get oil to be used for energy, but they might damage the environment while doing it.

— Oil companies provide many jobs for people, but there could be a negative effect on the environment.

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

— More birds were killed.

— The breeding grounds were contaminated.

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 male 1 and supporting the answer. Acceptable responses include, but are not limited to:

— All of the cub's DNA fragments match fragments found in either the female or male 1.

— Half of the cub's DNA fragments matched DNA fragments from male 1.

— The cub's DNA has two matches with male 1 and only one match with male 2.

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

— Salt could cause water to diffuse out of the cells of the plants.

— The solution contains less water than was in the leaves, so water could diffuse out of the leaves.

— Water could leave the plant.

— They would dehydrate.

79 [1] Allow 1 credit for identifying the finch population that would most likely survive on the island and supporting the answer. Acceptable responses include, but are not limited to:

— large ground finch, because it has a large, crushing bill

— medium ground finch, because it has a crushing bill and eats mainly plant food

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

— This procedure reduces the chance of trapping air bubbles.

81 MC on scoring key

82 MC on scoring key

83 [1] Allow 1 credit for predicting what most likely will happen to the populations of both species *A* and species *B* if species *C* successfully survives on the island and supporting the answer. Acceptable responses include, but are not limited to:

— Both species *A* and species *B* will decrease in number, since species *C* competes with each of them.

— Species *A* will compete with species *C* for nesting sites and species *B* will compete for food. Therefore, the populations of both *A* and *B* will decrease.

— Both will survive if there are adequate resources.

84 [1] Allow 1 credit for stating if there is a relationship between height and resting pulse rate and supporting the answer. Acceptable responses include, but are not limited to:

— No, the data are scattered.

— No, the data do not show a trend.

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

— Adenine and thymine are present in equal numbers.

— There is the same number of each molecule.

The *Chart for Determining the Final Examination Score for the August 2015 Regents Examination in Living Environment* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, August 12, 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

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

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