FOR TEACHERS ONLY

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

LE

LIVING ENVIRONMENT

Monday, January 27, 2014 — 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 ..... **4**	9 ..... **2**	17 ..... **4**	25 ..... **1** .....
2 ..... **2**	10 ..... **1**	18 ..... **3**	26 ..... **2** .....
3 ..... **3**	11 ..... **4**	19 ..... **1**	27 ..... **3** .....
4 ..... **2**	12 ..... **1**	20 ..... **4**	28 ..... **3** .....
5 ..... **4**	13 ..... **3**	21 ..... **3**	29 ..... **2** .....
6 ..... **2**	14 ..... **3**	22 ..... **4**	30 ..... **1** .....
7 ..... **3**	15 ..... **1**	23 ..... **4**	
8 ..... **2**	16 ..... **3**	24 ..... **2**	

Part B–1

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

Part B–2

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

Part D

73 ..... **2**	75 ..... **2**	81 ..... **1** .....
74 ..... **4**	76 ..... **2**	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 to 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 Monday, January 27, 2014. 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.

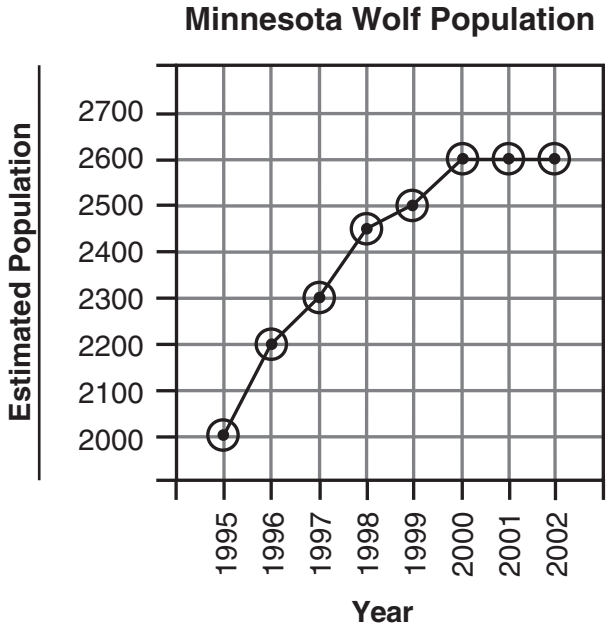
Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that for each administration, the conversion chart provided for that administration be used to determine the student's final score.

44 [1] Allow 1 credit for correctly labeling the *y*-axis.

45 [1] Allow 1 credit for marking an appropriate scale, without any breaks, on each axis.

46 [1] Allow 1 credit for correctly plotting the data and connecting the points.

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



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.

47 MC on scoring key

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

— speed

— antlers

— hooves for protection/defense

— fur color similar to surroundings

— well-developed senses

49 MC on scoring key

50 MC on scoring key

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

— Young bighorn sheep are able to climb mountains too steep for predators to follow.

— They can scale cliffs.

— They are surefooted.

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

— genetic engineering

— gene splicing

— gene manipulation

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

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

— use reusable water bottles not made with BPA

— pass legislation that outlaws the manufacturing of products with BPA

— ensure that water bottles are not littered in the environment

— recycle disposable water bottles

— use metal/glass containers

— control the disposal of industrial waste

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

— The blood takes in oxygen as it flows through the respiratory system.

— The oxygen level goes up/increases.

— It releases water.

— It releases carbon dioxide.

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

— The predator might feed on beneficial organisms.

— might outcompete other species of predators

— might become a pest

— They might overpopulate and wipe out prey species.

— might bring in a disease

— could alter the existing ecosystem

Part C

Note: The student's response to the bulleted items in question 56–60 need *not* appear in the following order.

56 [1] Allow 1 credit for identifying the molecules that are used to digest the starch. Acceptable responses include, but are not limited to:

— enzymes

— biological catalysts

— amylase molecules

57 [1] Allow 1 credit for identifying the molecules produced when starch is digested. Acceptable responses include, but are not limited to:

— glucose molecules

— simple sugars

— monosaccharides

— sugars

58 [1] Allow 1 credit for explaining why starch must be digested before its building block molecules can enter the bloodstream. Acceptable responses include, but are not limited to:

— Starch molecules are too large.

— They are too big to get from the digestive tract into the blood.

— Large molecules cannot diffuse through cell membranes.

59 [1] Allow 1 credit for identifying the structure in the cell that will produce ATP from the starch building blocks as the mitochondrion (mitochondria).

60 [1] Allow 1 credit for stating why ATP is important to cells. Acceptable responses include, but are not limited to:

— ATP is the molecule that supplies usable energy for all the activities of a cell.

— ATP molecules provide energy for cells.

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

— to have a group for comparison

— to use the unwashed group as a control

— to see what would happen without the treatment

— the control

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

— Data from single trials are more likely to include error.

— to make the experiment/conclusion more valid

— Averaging data makes the conclusion more valid.

— to make the experiment/conclusion more reliable

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

— Solution 3 is the most effective antibacterial hand-cleansing solution of those tested.

— Solution 2 is the least effective antibacterial hand-cleansing solution of those tested.

— Solutions 1, 2, and 3 are all more effective at killing bacteria than no treatment.

— All of them are equally effective.

— None of them were 100% effective.

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 identifying *two* factors that could influence the nutrients that can pass from the mother to the fetus. Acceptable responses include, but are not limited to:

— diet of the mother

— hormones

— blood supply to the placenta

— the ability of the placenta to sense nutrients

— concentration of nutrients in the blood/blood vessels

— permeability of the placenta

— improper functioning of the placenta

— illness/disease

— size of molecules

65 [1] Allow 1 credit for identifying the group of hormones that alter cell membrane receptors and for explaining how this alteration can affect cell function. Acceptable responses include, but are not limited to:

— Glucocorticoids–Receptors have a specific shape that determines their function. If the shape of a receptor is altered, it might not be able to perform its job appropriately.

— Glucocorticoids–They alter cell function by changing the structure of the cell membrane receptors.

— Glucocorticoids–They alter receptors to help them function.

66 [1] Allow 1 credit for stating the role of the uterus in the development of the fetus and the placenta. Acceptable responses include, but are not limited to:

— The uterus is where the placenta forms and the fetus develops.

— provides protection

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

— This method gives the offspring characteristics of each variety, and does not make a copy of just one.

— This method can create new varieties.

— increases biodiversity

Note: The student's response to the bulleted items in question 68–70 need *not* appear in the following order.

68 [1] Allow 1 credit for identifying *one* feedback mechanism in the human body. Acceptable responses include, but are not limited to:

— the change in heart rate in response to exercise

— the change in respiratory rate in response to exercise

— sweating or shivering in response to changes in body temperature

— the maintenance of blood sugar levels

— regulation of body temperature on a hot day

— increase in white blood cells in response to an infection

69 [1] Allow 1 credit for identifying, other than death, *one* specific result if homeostasis fails in the human body. Acceptable responses include, but are not limited to:

— disease/gets sick

— disruption in the body's ability to carry out respiration/digestion/excretion, etc.

— The body is unable to respond to external/internal stimuli correctly.

— diabetes

— heat stroke/hypothermia

Note: Do *not* allow credit for death.

70 [1] Allow 1 credit for describing how a plant regulates water loss through a feedback mechanism that involves guard cells. Acceptable responses include, but are not limited to:

— Guard cells close openings in the leaves, slowing/stopping water loss.

— When guard cells close the stomata, less water evaporates out of the leaves.

— Guard cells regulate the rate of transpiration when they change shape.

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

— The decision involves balancing the economic gains and the possible environmental damage.

— Fracking will provide people with more natural gas but might damage the environment.

— There might be more jobs, but there is a possibility for increased water pollution.

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

— solar energy – Energy from the Sun is free.

— wind energy – no air pollution

— geothermal – no carbon dioxide released

— hydroelectricity – Energy is generated locally.

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. Acceptable responses include, but are not limited to:

— diffusion

— osmosis

— dehydration

78 [1] Allow 1 credit for 2 and supporting the answer. Acceptable responses include, but are not limited to:

— It has the most characteristics in common with the unknown species.

— It has the same gel electrophoresis banding pattern.

— It has only one amino acid sequence different from the unknown species.

79 [1] Allow 1 credit for *two* additional pieces of evidence that can be used to determine if two plant species are related. Acceptable responses include, but are not limited to:

— shapes of the leaves

— structures of the stems/flower

— characteristics of the seeds

— types of chlorophyll present

— comparison of DNA sequences

— fossil records

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

— Each island has its own set of environmental conditions which might not provide food or shelter for some of these species.

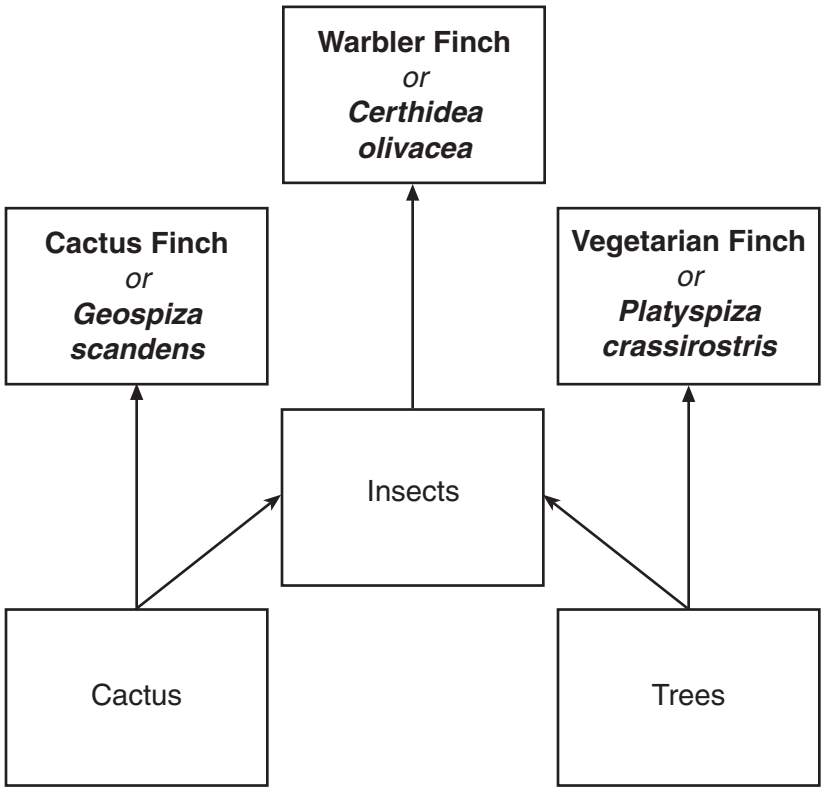
— Different islands might have different kinds of food available.

— too much competition

81 MC on scoring key

82 MC on scoring key

83 [1] Allow 1 credit for completing the three boxes with the correct finch species, as shown below.



84 [1] Allow 1 credit for identifyng *one* trait, other than beak characteristic, that could affect the survival of a finch and supporting the answer. Acceptable responses include, but are not limited to:

Coloration:

— Camouflage would help survival.

— attract a mate for successful reproduction

Strength:

— helps in competition for food

Aggressiveness:

— helps in competition for mate/food

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

— oxygen

— glucose

The *Chart for Determining the Final Examination Score for the January 2014 Regents Examination in Living Environment* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Monday, January 27, 2014. 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 2014 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				
Key Idea 2		31, 33		62
Key Idea 3		32	44, 45, 46	
Appendix A (Laboratory Checklist)				61, 63
Standard 4				
Key Idea 1	1	41, 43	49, 50, 51, 54	56, 57, 58, 59, 60
Key Idea 2	2, 3, 4, 30	34, 35, 38, 39	52	
Key Idea 3	5, 6, 11, 26, 27	37, 40		
Key Idea 4		36		64, 65, 66, 67
Key Idea 5	7, 8, 9, 10, 13, 14, 15	42		68, 69, 70
Key Idea 6	12, 16, 17, 18, 19, 20, 21, 23		47, 48	
Key Idea 7	22, 24, 25, 28, 29		53, 55	71, 72

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