FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

Wednesday, June 15, 2016 — 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 ..... **2**	9 ..... **1**	17 ..... **4**	25 ..... **1** .....
2 ..... **4**	10 ..... **1**	18 ..... **4**	26 ..... **4** .....
3 ..... **2**	11 ..... **2**	19 ..... **3**	27 ..... **2** .....
4 ..... **3**	12 ..... **2**	20 ..... **3**	28 ..... **4** .....
5 ..... **3**	13 ..... **2**	21 ..... **4**	29 ..... **1** .....
6 ..... **2**	14 ..... **1**	22 ..... **1**	30 ..... **4** .....
7 ..... **2**	15 ..... **4**	23 ..... **1**	
8 ..... **4**	16 ..... **3**	24 ..... **4**	

Part B–1

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

Part B–2

47 ..... **4**	49 ..... **2**	50 ..... **3** .....

Part D

73 ..... **1**	75 ..... **4**	81 ..... **3** .....
74 ..... **3**	76 ..... **3**	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 Wednesday, June 15, 2016. 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.

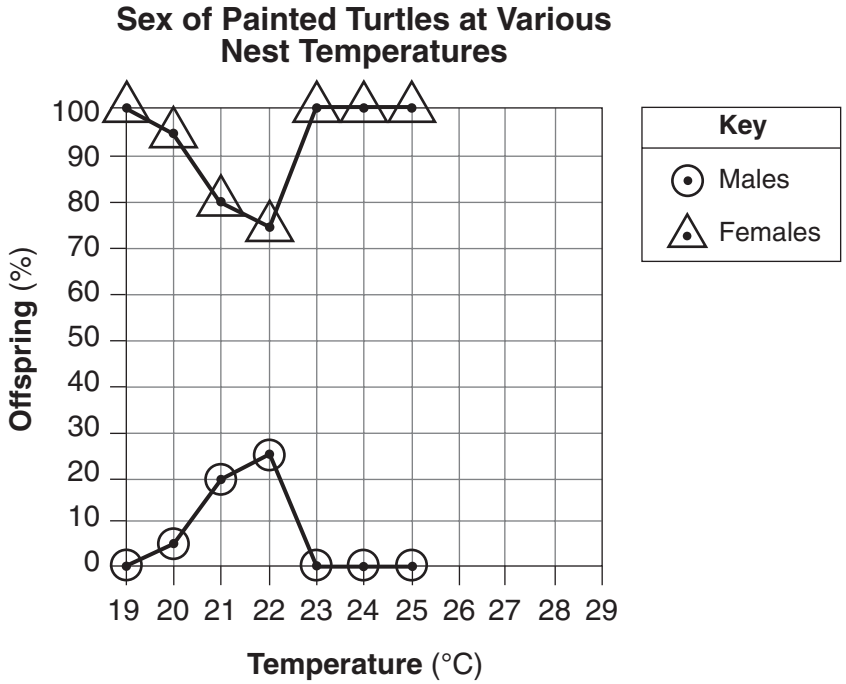
Part B–2

44 [1] Allow 1 credit for an appropriate scale, without any breaks in the data, on both axes.

45 [1] Allow 1 credit for correctly plotting the data for percent males, connecting the points and surrounding each point with a small circle.

46 [1] Allow 1 credit for correctly plotting the data for percent females, connecting the points and surrounding each point with a small triangle.

Example of a 3-credit graph for 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.

Do *not* deduct more than 1 credit for plotting points that are not in the data table 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:

— With more intense light, a higher percentage of the disks floated.

— More light intensity equals more disks floating.

— As light intensity increases, the percentage of floating disks increases.

49 MC on scoring key

50 MC on scoring key

51 [1] Allow 1 credit for chloroplast.

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

Advantages:

— Solar energy is a renewable resource.

— no air pollution from solar vehicle

— burning less oil/coal/natural gas

— using less gasoline

Disadvantages:

— cost

— cannot charge at night

— cannot use year-round in some areas

— may not be able to drive at night

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

— The dinosaur could fly.

— Dinosaurs are the ancestors of/related to birds.

— Some types of dinosaurs evolved into birds.

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

— Well-fed parents will probably have well-fed and stronger offspring.

— They will have more food.

— They will likely be good twig users.

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

— There is a chance that some other variation will also affect some of the crows' ability to survive.

— The tool may not be useful in their environment.

— There are many other factors that influence survival (e.g., vision, size, muscle strength).

Part C

Note: The student's response to the bulleted items in question 56–57 need *not* appear in the following order.

56 [1] Allow 1 credit for stating *one* possible hypothesis for the experiment proposed by the student. Acceptable responses include, but are not limited to:

— The presence of lotion on the leaves will slow the growth of the plants.

— If the leaves of an African violet plant are rubbed with body lotion, growth will be reduced.

— Lotion brushed on the leaves of an African violet plant will have no effect on the leaves.

— Lotion on the leaves has a negative effect on plants.

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

57 [1] Allow 1 credit for describing the type of data that should be collected to determine if brushing with lotion was having a *negative* effect on the African violet plant. Acceptable responses include, but are not limited to:

— the number of leaves that wilted during the five-day period

— the growth of each plant measured in centimeters

— the number of leaves that dropped off/turned yellow

— size of area of damage on leaves

— the number of damaged leaves

— change in size of the leaves brushed on each plant

Note: The type of data must be measurable.

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

— A mutation resulted in the initial color change.

— Recombination provides genetic variability for fur color in offspring.

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

— The black pocket mice blended in with their surroundings better, and more were able to survive and reproduce.

— After the color change in the environment, the black mice were more difficult for predators to see.

— The black mice are harder to see at night.

60 [1] Allow 1 credit for 38%.

61 [1] Allow 1 credit for circling yes and supporting the answer. Acceptable responses include, but are not limited to:

— because there are high percentages of C and G bases

— because the percent of C and G is over 50%

— because the segment of DNA is most likely a gene

Note: Allow credit for a response that is consistent with the student's response to question 60.

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

— The tumor cells might lack antigens that the antibodies can recognize and attack.

— The antigens on the surface of the tumor cells could be interpreted by the immune system as being on cells that are not harmful and therefore do not form antibodies to attack them.

— The cancer cells might not have any antigens on their surfaces. Without antigens, antibodies will not attack.

Note: Do *not* allow credit if the student does not answer the question using the terms antigens and antibodies.

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

— Cancer cells undergo uncontrolled cell division.

— Cancer cells have more mutations.

— Cancer cells are more harmful and disrupt homeostatis.

64 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Move some uninfected animals to an area where they will not come into contact with infected animals.

— Remove baby devils from the population and place them in a zoo or wildlife refuge.

— Separate the animals while they are feeding.

— Provide more food to decrease competition/fighting.

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

— The lynx is adapted to stay on top of the snow, while coyotes are not.

— Coyotes could not prey on animals in the same area as the lynx.

— Coyotes lack the foot design of the lynx, and could not chase hares where the snow is soft and deep.

— Coyotes could not walk in the deep, soft snow.

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

— The niche is to feed on snowshoe hares in a snowy environment.

— The niche includes being a predator in an environment that has snow during the winter.

— They're all predators/carnivores.

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

— Carrying capacity limits the number of organisms that can live in an area. There are only so many hares, so there can be only so many predators of hares.

— There is a limited number of prey animals. These determine the carrying capacity of the area and can support only a certain number of predators.

— The carrying capacity of the predators is directly related to the size of the hare population.

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

— The ticks could become toxic and the oxpeckers that eat them get sick and die.

— Pesticides could kill the birds.

— The ticks were the food source for the birds.

— Without ticks for food, the bird population would die off.

— biomagnification

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

— Each oxpecker can eat 13,000 ticks in a day, reducing the parasite population.

— No harmful chemicals are used.

— Biodiversity is increased.

— The birds will have food to eat.

— It will save the oxpeckers from extinction.

Note: Do *not* allow credit for stating that it is "natural" without an explanation.

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

— An increase in CO_2 levels caused the ice to melt.

— An increase in CO_2 brought about global warming, which melted the ice.

— As the level of CO_2 increased, ice mass decreased.

— As CO_2 increased, the temperature increased, and the ice mass decreased.

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

— The penguins' food source grows and develops under the ice masses.

— less ice, fewer krill for the penguins to eat

— loss of habitat for the penguins

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

— Humans' burning of fossil fuels is increasing CO_2 levels.

— Increased industrialization is releasing more CO_2 into the atmosphere.

— deforestation

— driving cars

Note: Do *not* allow credit for just pollution.

Part D

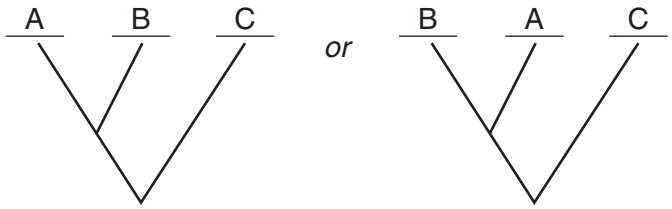
73 MC on scoring key

74 MC on scoring key

75 MC on scoring key

76 MC on scoring key

77 [1] Allow 1 credit for completing the diagram as follows:



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

— They have the weaker beak because the majority of the population is at the low end of the graph.

— because it has a weaker beak than species 2, except where the two lines overlap

— More of species 1 finches are at the low-strength end of the graph.

79 [1] Allow 1 credit for *C* and supporting the answer. Acceptable responses include, but are not limited to:

— At point *C*, the beak strength has the same value for both species.

— because that is where the lines intersect

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

— The curve for species 1 may be lower and shorter.

— The curve for species 1 may be eliminated.

— Both curves might show an increase in beak strength.

— There would be more individuals in species 2 than in species 1.

— The curve for species 1 would shift to the right.

81 MC on scoring key

82 MC on scoring key

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

— More nutrients are used when muscle cells are more active.

— Muscle cells use more oxygen.

— to help maintain homeostasis

— A faster pulse rate will remove waste more rapidly.

84 [1] Allow 1 credit for 66.2.

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

— different activities they did before pulse was taken

— Some may be in better shape.

— Some may take medication.

— individual variations

— They were less active before they exercised.

The *Chart for Determining the Final Examination Score for the June 2016 Regents Examination in Living Environment* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, June 15, 2016. 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 2016 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			49, 50	
Key Idea 2				
Key Idea 3			44, 45, 46, 48, 53	
Appendix A (Laboratory Checklist)		33		56, 57
Standard 4				
Key Idea 1	1, 3, 5, 6, 8, 11, 29	31, 32, 36, 42		
Key Idea 2	7, 10, 19	40, 41	47	60, 61
Key Idea 3	9, 14, 16, 17		54, 55	58, 59
Key Idea 4	4, 12, 15, 18, 26	43		
Key Idea 5	13, 20, 21, 23, 28	37, 38	51	62, 63, 64
Key Idea 6	22, 25	34, 35		65, 66, 67, 68, 69
Key Idea 7	2, 24, 27, 30	39	52	70, 71, 72

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