FOR TEACHERS ONLY

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

LE

LIVING ENVIRONMENT

Wednesday, January 25, 2012 — 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/apda/ 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 ..... **2**	25 ..... **2** .....
2 ..... **3**	10 ..... **2**	18 ..... **2**	26 ..... **4** .....
3 ..... **4**	11 ..... **1**	19 ..... **4**	27 ..... **3** .....
4 ..... **3**	12 ..... **2**	20 ..... **2**	28 ..... **1** .....
5 ..... **3**	13 ..... **1**	21 ..... **4**	29 ..... **3** .....
6 ..... **3**	14 ..... **1**	22 ..... **3**	30 ..... **2** .....
7 ..... **4**	15 ..... **2**	23 ..... **3**	
8 ..... **1**	16 ..... **3**	24 ..... **2**	

Part B–1

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

Part B–2

47 ..... **1**	49 ..... **2**	50 ..... **3** .....

Part D

73 ..... **3**	75 ..... **3**	81 ..... **1** .....
74 ..... **4**	76 ..... **4**	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.

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.

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/apda/ on Wednesday, January 25, 2012. 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.

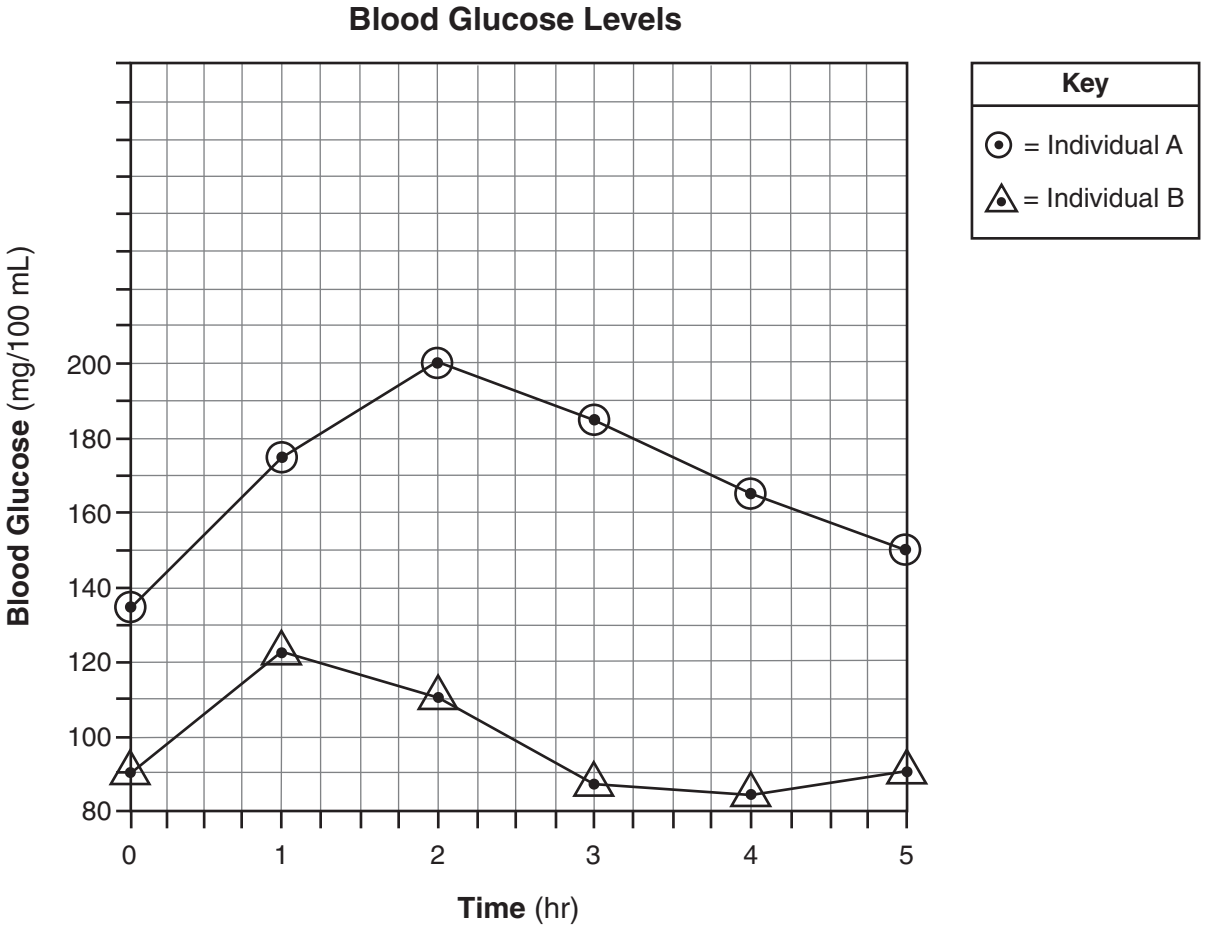
Part B–2

44 [1] Allow 1 credit for marking an appropriate scale, without any breaks, on each labeled axis.

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

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

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 for plotting points 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 for insulin *or* glucagon.

49 **MC on scoring key**

50 **MC on scoring key**

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

— Warmer water holds less oxygen, so some species would not have enough oxygen to live.

— There would be less oxygen available for organisms and some organisms may die off.

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

— dead/weakened pathogen

— antigens

— a small piece of the virus/viral coat

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

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

— The body responds to the vaccine by producing antibodies to protect against polio.

— The vaccine triggers an immune response against a particular disease.

— The immune system is activated to fight off the virus.

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

— The children who did not receive the vaccine served as the control group.

— They needed a group for comparison.

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

— The trait increases chances for survival of the small mammals by helping them blend into their environment.

— They can avoid being eaten by predators if they are camouflaged.

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 *one* biological process by which a population of this variety may develop resistance. Acceptable responses include, but are not limited to:

— natural selection

— evolution

— reproduction

— mutation

57 [1] Allow 1 credit for describing how this process is involved in the production of a population of resistant organisms. Acceptable responses include, but are not limited to:

Natural Selection:

— The population had some members that were naturally resistant to antibiotics. They survived and reproduced, passing on the resistance.

Evolution:

— Some organisms were resistant to the pesticide. They survived and passed on the trait.

Reproduction:

— Resistant members survived and passed on the trait.

Mutation:

— It produces variations that give some organisms a survival advantage.

Note: Allow credit for a response consistent with the process identified in question 56.

58 [1] Allow 1 credit for identifying *one* problem caused by this resistance. Acceptable responses include, but are not limited to:

— Resistant bacteria will survive and continue to make people sick.

— Insects will continue to destroy crops.

— Antibiotics do not work anymore.

— There will be less food available.

59 [1] Allow 1 credit for stating *one* solution to this problem. Acceptable responses include, but are not limited to:

— Do not use antibiotics/antibacterial products unless needed.

— Use different antibiotics or pesticides.

— Use a natural predator for pests.

— Insert genes into plants that will make them resistant to bacteria or pests.

— Research and find new antibiotics/ways of controlling insect pests.

Note: Allow credit for a response consistent with the problem identified in question 58.

60 [1] Allow 1 credit for identifying *one* possible *negative* effect of this solution. Acceptable responses include, but are not limited to:

— People might be sick longer.

— More people could get sick.

— Organisms may become resistant to other treatments.

— Natural predators may get out of control.

— Inserted genes may have an undesired effect.

— Research takes a lot of time and money.

Note: Allow credit for a response consistent with the student's solution to question 59.

Note: The student's response to the bulleted items in question 61–63 need *not* appear in the following order.

61 [1] Allow 1 credit for identifying the organism targeted by green tea. Acceptable responses include, but are not limited to:

— bacteria

— acne

— *C. acnes*

— *Propionibacterium acnes*

62 [1] Allow 1 credit for identifying *one* advantage of using green tea extract instead of benzoyl peroxide cream to treat acne. Acceptable responses include, but are not limited to:

— causes fewer side effects

— less itching

— lightening of acne on the skin

— improved overall complexion

63 [1] Allow 1 credit for stating *one* reason why, even though the findings are promising, they are "not yet substantial enough to change clinical practice." Acceptable responses include, but are not limited to:

— need to repeat experiment to see if results are the same

— need a larger sample group

— need to see if side effects occur later on

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

— It is an organism that causes disease.

— produces toxins that cause fewer and other symptoms

— because it invades cells and causes food poisoning

— Salmonella makes people sick.

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

— It takes time for the bacteria to reproduce.

— It takes time for the bacteria to produce enough toxins.

— It takes time for the bacteria to invade intestine walls.

— It takes time for the bacteria to cause inflammation.

Note: The student's response to the bulleted items in question 66–68 need *not* appear in the following order.

66 [1] Allow 1 credit for identifying the body system that was responsible for triggering the reaction she experienced as the immune system.

67 [1] Allow 1 credit for identifying the type of reaction the student was most likely experiencing. Acceptable responses include, but are not limited to:

— an allergic reaction or allergy

— an immune response to a usually harmless substance

68 [1] Allow 1 credit for stating *one* reason why her symptoms are *not* likely due to an infectious agent. Acceptable responses include, but are not limited to:

— An infection would probably take longer to develop.

— An infection by a pathogen would probably not end so suddenly.

— The symptoms went away when she left her friend's house.

Note: The student's response to the bulleted items in question 69–72 need *not* appear in the following order.

69 [1] Allow 1 credit for stating *one* specific reason why public health officials are concerned about the use of these chemicals. Acceptable responses include, but are not limited to:

— These chemicals have been found to cause health problems in animals and in humans.

— PBDEs have been found to cause thyroid problems and nervous system damage in animals.

— Phthalates may contribute to infertility.

70 [1] Allow 1 credit for identifying the technique used to determine exposure levels to these chemicals in humans as biomonitoring.

71 [1] Allow 1 credit for stating *one* possible reason why young children might have higher levels of exposure to these chemicals than do adults. Acceptable responses include, but are not limited to:

— Young children have more contact with the products that contain these chemicals.

— Young children play with more toys/use baby bottles.

— Children wear flame-retardant clothing.

72 [1] Allow 1 credit for stating *one* possible reason why chemical manufacturers might participate in the voluntary testing programs set up by the EPA. Acceptable responses include, but are not limited to:

— They may participate to prevent being sued in the future.

— They may participate because it improves their public image.

— They may participate to make sure their product is safe.

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:

— The heart rate increases, which transports more oxygen from the lungs to the muscle cells.

— The heart beats faster and transports carbon dioxide to the lungs faster for elimination.

— Increased heart rate removes wastes from cells more rapidly.

78 [1] Allow 1 credit.

Example of a 1-credit response:

Species 1: T A C C | G G A T T A G T T A T G C C | G G A T C G

Species 2: T A C G G A T G C C | G G A T C G G A A A T T C G

79 [1] Allow 1 credit.

Example of a 1-credit response:

Results of Catalyst Action

	Number of Cuts	Number of Resulting Pieces of DNA
Species 1	2	3
Species 2	1	2

Note: Allow credit for an answer consistent with the student's response to question 78.

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

— No, the biological catalyst made two cuts in species 1 DNA and only one cut in species 2 DNA.

— No, the catalyst cut the DNA of species 1 into three pieces and cut the DNA of species 2 into only two.

— No, 15 out of 24 bases are different.

— No, the base sequences are very different.

Note: Allow credit for an answer consistent with the student's response to question 79.

81 **MC on scoring key**

82 **MC on scoring key**

83 [1] Allow 1 credit for warbler finch and supporting the answer. Acceptable responses include, but are not limited to:

— Small tree finches may eat some plant food, while warbler finches eat only animal food.

— Warbler finches eat only animal food, while small tree finches may eat some plant food.

84 [1] Allow 1 credit for identifying *one* species of finch that would most likely survive a sudden change in climate that destroyed seeds with small, thin coverings, leaving only seeds with large, thick coverings, and supporting the answer. Acceptable responses include, but are not limited to:

— large ground finch *or* medium ground finch *or* small ground finch *or* sharp-billed ground finch because it has a large crushing beak and eats mainly plant food

— large/small tree finch *or* woodpecker finch *or* warbler finch because they don't eat much plant food

— The warbler finch eats only animal food, so it would not be affected.

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

— different niches

— eat at different times

— live in different areas

— amount of food was sufficient to support both

— may eat different plants/different parts of plant

The *Chart for Determining the Final Examination Score for the January 2012 Regents Examination in Living Environment* will be posted on the Department's web site at: http://www.p12.nysed.gov/apda/ on Wednesday, January 25, 2012. 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 2012 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				61, 62, 63
Key Idea 2		31		
Key Idea 3		39	44, 45, 46	
Appendix A (Laboratory Checklist)		32, 43		
Standard 4				
Key Idea 1	1, 2, 3, 4, 6, 18, 19	33, 36, 37	50	
Key Idea 2	5, 7, 8, 9, 11, 12, 15	38		
Key Idea 3	10, 20, 29		55	56, 57, 58, 59, 60
Key Idea 4	13, 14, 16	34		65
Key Idea 5	21, 22		47, 48, 52, 53, 54	64, 66, 67, 68
Key Idea 6	23, 24, 26	35, 40, 41, 42	49, 51	
Key Idea 7	17, 25, 27, 28, 30			69, 70, 71, 72

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