FOR TEACHERS ONLY

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

LE

LIVING ENVIRONMENT

Tuesday, January 26, 2010 — 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 http://www.emsc.nysed.gov/osa/ and select the link "Examination 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.

Part A and Part B–1
Allow 1 credit for each correct response.

Part A

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

Part B–1

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

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*.

Use only *red* ink or *red* pencil in rating Regents papers. Do *not* attempt to *correct* the student's work by making insertions or changes of any kind.

Allow 1 credit for each correct response for multiple-choice questions.

On the detachable answer sheet for Part A and Part B–1, indicate by means of a check mark each incorrect or omitted answer to multiple-choice questions. In the box provided in the upper right corner of the answer sheet, record the number of questions the student answered correctly for each of these parts.

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 all 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. In the student's examination booklet, record the number of credits earned for each answer in the box printed to the right of the answer lines or spaces for that question.

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.

Raters should enter the scores earned for Part A, Part B–1, Part B–2, Part C, and Part D on the appropriate lines in the box printed on the answer sheet and should add these five scores and enter the total in the box labeled "Total Raw Score." Then the student's raw score should be converted to a scaled score by using the conversion chart that will be posted on the Department's web site http://www.emsc.nysed.gov/osa/ on Tuesday, January 26, 2010. The student's scaled score should be entered in the box labeled "Final Score" on the student's answer sheet. The scaled score is the student's final examination score.

All student answer papers that receive a scaled score of 60 through 64 **must** be scored a second time. For the second scoring, a different committee of teachers may score the student's paper or the original committee may score the paper, except that no teacher may score the same open-ended questions that he/she scored in the first rating of the paper. The school principal is responsible for assuring that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

Because scaled scores corresponding to raw scores in the conversion chart may change from one examination 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

43 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— dead/weakened organisms that cause this infection

44 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The vaccine would stimulate antibody production.
— The vaccinated person would produce antibodies against this organism.
— produce an immune response
— stimulates the formation of memory cells

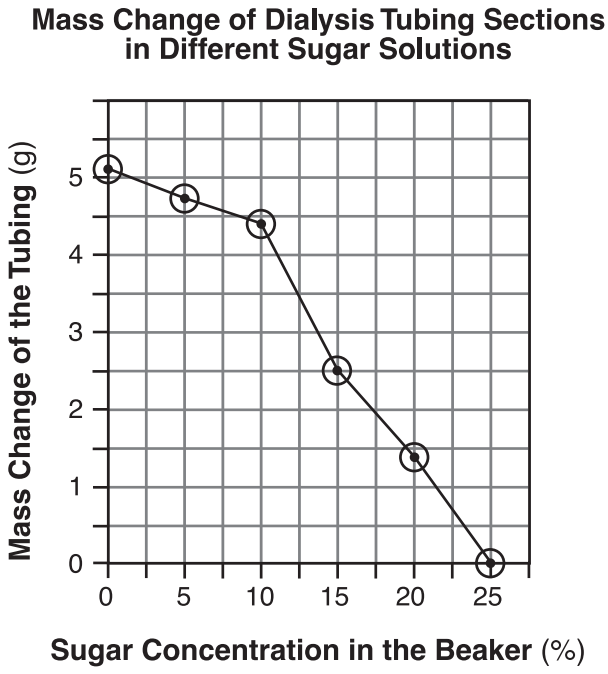
45 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— DNA

46 [1] Allow 1 credit for marking an appropriate scale on each axis.

47 [1] Allow 1 credit for correctly plotting the data, surrounding each point with a small circle, and connecting the points.

Example of a 2-credit graph for questions 46 and 47:



Note: Allow credit if the points are plotted correctly but *not* circled.
Make no assumption about the origin unless it is labeled.
Do *not* allow credit for plotting points that are not in the data table; e.g., (0,0).

48 4

49 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— diffusion
— passive transport
— osmosis

50 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— faults in its genes
— its mother's inadequate diet
— environmental factors such as alcohol/drugs/tobacco
— toxins
— infections
— multiple fetuses

51 4

52 [1] Allow 1 credit for level 1 and supporting the answer. Acceptable responses include, but are not limited to:

— has the greatest amount of stored energy

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

— Energy is lost at each feeding level.

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

— There are few effective predators to keep the rabbit population in check.
— They have a faster reproductive rate than the native species.
— Rabbits are better adapted.

55 [1] Allow 1 credit for *Sphyrna mokarran or S. mokarran*.

Part C

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

— gases associated with acid rain, such as nitrogen and sulfur oxides

— CO_2

— sulfur compounds

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

— CO_2: leads to global warming

— sulfur/nitrogen compounds: dissolve in the rain to produce acid rain that damages plants

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

A — The poisoned food supplies may poison animals other than the deer.

— The poison may get into streams and cause water pollution.

B — The new predator may not have any natural enemies in the northeast and it may become a problem if it overpopulates.

— The introduced predator may feed on animals that do not need to be controlled.

C — The other animal species may replace the deer and cause greater problems than those caused by the deer.

— The combined effect of the deer and the introduced animal species may increase crop destruction.

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

— This antibiotic will have no effect on the growth of this bacterium.

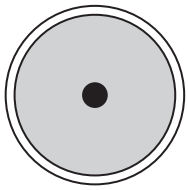
— The new antibiotic will slow down bacterial growth.

— The antibiotic will kill the bacteria.

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

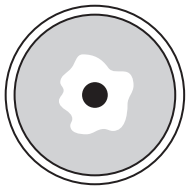
60 [1] Allow 1 credit for completing the diagram to represent an example of experimental results that would support the student's hypothesis in question 59 *and* supporting the answer.

Examples of 1-credit responses:



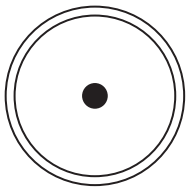
— The bacteria continued to grow, so the antibiotic was not effective.

— The antibiotic did not kill the bacteria.



— Some of the bacteria in the dish died off, so the antibiotic was somewhat effective.

— The antibiotic killed some of the bacteria.



— All the bacteria were killed, so the antibiotic was very effective.

— The antibiotic killed all the bacteria.

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

— Soak the disk in sterile water.

— Do not add any antibiotic to the disk.

62 [3] Allow a maximum of 3 credits, allocated as follows:

- Allow 1 credit for identifying the building blocks of starches. Acceptable responses include, but are not limited to:
  - — simple sugars
  - — glucose
- Allow 1 credit for identifying the process used to produce these building blocks. Acceptable responses include, but are not limited to:
  - — photosynthesis
  - — digestion
  - — synthesis
- Allow 1 credit for stating *one* way cardinals use these building blocks to survive. Acceptable responses include, but are not limited to:
  - — as an energy source
  - — as a building unit for some cell parts

63 [3] Allow a maximum of 3 credits, allocated as follows:

- Allow 1 credit for explaining why the child exhibits symptoms of the genetic disorder even though the parents do *not*. Acceptable responses include, but are not limited to:
  - — Nondisjunction could have occurred.
  - — A mutation might have taken place.
  - — The child may have inherited two recessive alleles.
- Allow 1 credit for identifying *one* technique that can be used to detect a genetic disorder. Acceptable responses include, but are not limited to:
  - — amniocentesis
  - — karyotyping
  - — blood screening
  - — electrophoresis
- Allow 1 credit for identifying *one* genetic disorder. Acceptable responses include, but are not limited to:
  - — Down syndrome
  - — sickle-cell anemia
  - — hemophilia

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

— short development time
— embryo develops outside body of female allowing for easier observation of development
— The embryo is transparent.
— hundreds of offspring

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

— It takes thousands of mice/many years.
— The fetus develops inside the mother, so you cannot see it.
— The embryo is not transparent.

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

— building materials for the residents living in the town
— employment opportunities for the town
— clear land for farming

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

— destruction of habitat
— loss of biodiversity
— loss of O_2/increased CO_2
— erosion
— contribute to global warming

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

— parkland for the residents to enjoy
— education center for schools and/or families
— recreational opportunities
— preserve habitats
— prevent soil erosion

Part D

69 [1] Allow 1 credit for tough seed coats *or* spiny seed coats.

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

— natural selection
— mutation
— sexual reproduction

71 1

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

— sample size is larger
— results are averaged
— including both males and females rather than just one sex

73 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The students may not all be in similar physical condition.
— relatively small sample size used
— Not all people will respond in the same way.

74 4

75 2

76 [1] Allow 1 credit for *both A* and *C*.

77 [1] Allow 1 credit for *E*.

78 [1] Allow 1 credit for stating *two* acceptable responses. Acceptable responses include, but are not limited to:

— enlarged

— upside down

— backward

— more detail

79 [2] Allow a maximum of 2 credits, 1 credit for *all* of the correct mRNA codons, and 1 credit for *all* of the correct amino acids.

Example of a 2-credit response:

mRNA codons:	AUG	AAU	AGU	AUC
Amino acids:	MET	ASN	SER	ILE

Note: Allow credit for amino acids that are consistent with the mRNA codons.

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

— may be a source of new medicines

— may give new evidence for evolutionary pathways or relationships

— may be new source of food

— may be commercially important

The *Chart for Determining the Final Examination Score for the January 2010 Regents Examination in Living Environment* will be posted on the Department's web site http://www.emsc.nysed.gov/osa/ on Tuesday, January 26, 2010. 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 www.emsc.nysed.gov/osa/exameval/.
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 2010 Living Environment

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

Part D 69–80	
Lab 1	79,80
Lab 2	72,73
Lab 3	69,70,74
Lab 5	71,75,76,77,78