FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

Friday, January 24, 2025 — 9:15 a.m. to 12:15 p.m., only

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: https://www.nysed.gov/state-assessment/high-school-regents-examinations 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.

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*.

Allow 1 credit for a correct response to each item.

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 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. Do not attempt to correct the student's work by making insertions or changes of any kind. 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: https://www.nysed.gov/state-assessment/high-school-regents-examinations on Friday, January 24, 2025. 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.

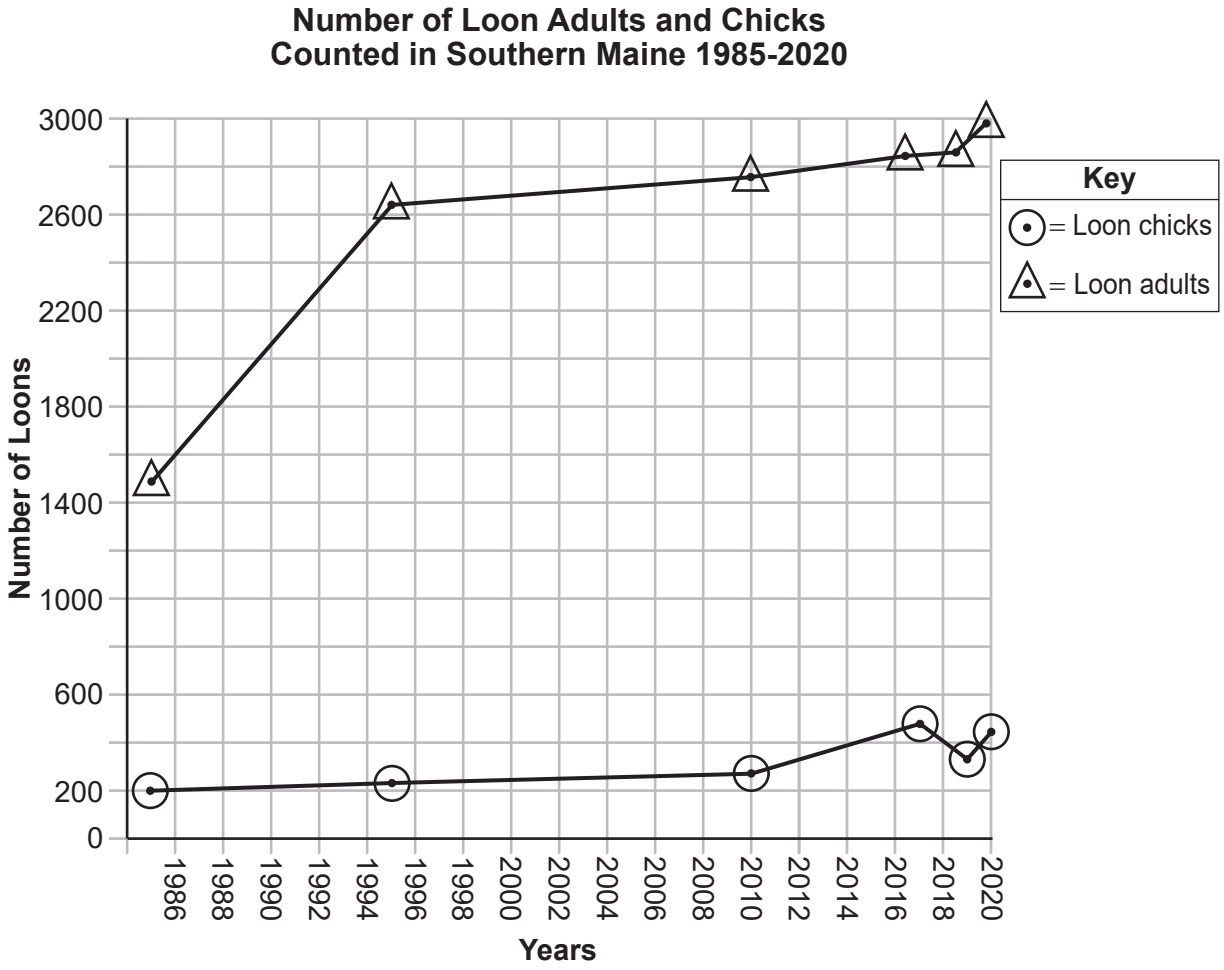
Part B–2

44 [1] Allow 1 credit for *D*.

45 [1] Allow 1 credit for marking an appropriate scale, without any breaks in the data, on *each* labeled axis.

46 [1] Allow 1 credit for correctly plotting the data, connecting the points, and surrounding each point for the loon adults with a small triangle and each point for the loon chicks with a small circle.

Example of a 2-credit graph for questions 45-46:



Do *not* assume 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 2

48 [1] Allow 1 credit for comparing the trend in loon population sizes represented in the two New York graphs to the trend observed in the data table for the southern part of Maine and supporting the answer. Acceptable responses include, but are not limited to:

— In both New York and Maine the number of adult loons and chicks increased.

— In 2001 there were 308 adults and 59 chicks counted in New York. The number increased to 551 adults and 70 chicks in 2020. In Maine the number of adults and chicks also increased over this time.

— In New York and Maine the number of loons increased during the study. In Maine, there were 2780 adult loons in 2010 and in 2020, there were 2974. In New York, there were 308 adult loons in 2001 and 551 in 2020.

49 2

50 2

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

— The blockage could prevent sperm from fertilizing the egg.

— The sperm will be prevented from reaching the egg.

— This could cause infertility since gametes won't combine.

— If the other oviduct/fallopian tube is not blocked, fertilization could still occur but the chance of pregnancy would be reduced.

— It prevents fertilization in humans.

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

— Detritivores recycle nutrients needed for ecosystem stability.

— If detritivores were removed, the dead organisms would not be broken down in the ecosystem, and there would not be enough nutrients for other organisms.

— Nutrients/material cycles will be disrupted.

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

— pH
— temperature
— concentration of enzyme
— concentration of substrate

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

— Enzymes are specific.
— Enzymes react with substrates based on shape.
— because enzymes/substrates do not fit

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

— It might harm pets such as dogs and cats.
— Is it safe for people?

Part C

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

— One of the twins could have a diet high in foods with methyl groups while the other twin does not.

— One twin may be under more stress/smoke/use drugs while the other twin is/does not. These activities could cause epigenetic changes.

— Some genes could be turned off (not function) due to methylation in one twin and not the other.

— Only one twin has methylated DNA.

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

— The original DNA sequence is not altered.

— The sequence of nitrogen bases in the DNA remains the same. The only difference is the presence of methyl groups turning the gene off.

— They can be reversed.

58 [1] Allow 1 credit for explaining why the number of predators that feed exclusively on scorpions would *decrease* over time and justify your answer. Acceptable responses include, but are not limited to:

— The predators would decrease because they have more competition, since more animals would be able to eat the scorpions.

— The number of predators would decrease because they would consume many of the scorpions and would not have enough food.

— The predators would die of starvation. Their number would decrease because they ate most of their food.

59 [1] Allow 1 credit for identifying the original source as mutation/genetic recombination.

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

— The brown color will increase in frequency because humans will pick the yellow ones before they can reproduce.

— There will be more brown flowers because they will blend in with the rocks and survive and reproduce while the yellow ones will be picked and die.

— Brown will increase since they will pass on their genes while the yellow will be picked and not reproduce.

61 [1] Allow 1 credit for stating one argument to justify continued efforts to preserve this species. Acceptable responses include, but are not limited to:

— The herb is a medicine that could be useful, so we should try to grow it instead of direct-harvesting it from the environment.

— One reason to try and grow the herb is to maintain biodiversity so it doesn't become extinct.

— The plant has value for humans, so we should try to preserve it by cultivating it.

62 [1] Allow 1 credit for selecting food chain (a) and supporting the answer. Acceptable responses include, but are not limited to:

— Food chain (a) because it has four feeding levels. Energy is transferred to the environment at each level.

— Energy is transferred as heat to the environment at each feeding level and is no longer available to the organisms. Food chain (a) has the most levels and would have the least energy available for the last consumer.

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

— The uterus supports the internal development of the embryo/fetus.

— The uterus is the organ to which the placenta attaches.

— The embryo/fetus develops in the uterus.

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

— The immune system might attack the transplanted organ because it is interpreted as foreign.

— The immune system would attack the uterus because antigens on the transplanted organ would activate an immune response.

— The woman could make antibodies or white blood cells that attack the organ if she doesn't take certain drugs to prevent this.

65 [1] Allow 1 credit for making a claim about how human actions have affected biodiversity, and supporting the claim with evidence from the graph. Acceptable responses include, but are not limited to:

— Biodiversity has declined because the number of species extinctions has increased as the human population increased and destroyed habitats.

— As the increasing human population used resources required by other species, biodiversity decreased as extinctions increased.

— An increase in human population has lead to more deforestation, resulting in an increase in extinction, as shown in the graph.

66 [1] Allow 1 credit for explaining why the pancreas would secrete more hormone a short time later and supporting the answer. Acceptable responses include, but are not limited to:

— The starchy snack will be broken down into sugar that would be absorbed into the blood, causing high blood sugar. This would cause the pancreas to secrete more hormone to lower the blood sugar.

— Starch will be broken down into sugar, and insulin will be released due to the blood sugar level increase.

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

— Energy is needed to move *A* across the membrane. Without nutrients, energy is not available.

— Active transport requires energy, which is supplied by nutrients used to make ATP. Without nutrients, ATP will not be available.

— Energy from nutrients is stored in ATP, which is needed to move material *A* across the membrane.

— Without nutrients, the cell will not have the energy to carry out active transport, which is needed to move *A* across the cell membrane.

— If there is a lack of energy from nutrients, the cell will not transport *A* into the cell.

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

— The mitochondria make energy available for life functions. Without this energy, an organism would die.

— The mitochondria convert energy stored in food to usable energy for the organism.

— Respiration takes place in the mitochondria, and energy is made available for use by the organism.

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

— The chart shows that the children are only affected when the mother has mutated mitochondrial DNA.

— The chart shows that when the father has the disease, it is not passed on to his children.

70 [1] Allow 1 credit for liver cells and supporting the answer. Acceptable responses include, but are not limited to:

— Liver cells may be most affected since they contain the most mitochondria.

— Liver cells could be most affected since they contain more mitochondria than the other cells listed.

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

— The loss of ice or sea-level rise could be reduced.

— The severity of storms could be reduced.

— Climate change could be slowed.

— It could have a positive effect on climate change.

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

— Without reducing carbon emissions, the planet will still continue to warm up.

— More carbon emissions will continue to warm the planet, and more particles will need to be sprayed into the upper atmosphere.

— This technology only tries to cool the planet, but doesn't address how to prevent it from warming up in the first place.

— This technology doesn't address increased CO_2 in oceans, which leads to ocean acidification.

— Continually adding chemicals to the atmosphere could damage the ozone layer.

Part D

73 3

74 2

75 4

76 1

77 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— DNA sequences/protein comparisons could show relatedness of these species.
— Using additional forms of evidence would provide more reliability.

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

— Finding the average pulse rate is more valid.
— You may not get the same number every time.
— decreases the effect of sampling error

79 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— amount of food available to them
— predators in the area
— climate and temperature of the area
— temperature of the peninsula (environment)

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

— The pulse rates would be higher.
— There might be more variation in pulse rates.

81 4

82 2

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

— chromatography
— Test to see if the plants make the same enzymes or proteins.
— Test for the presence of a particular enzyme/enzyme, *M*.
— Compare the amino acid sequence of a protein produced by all plants.

84 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

Respiratory system
— The breathing rate would increase.

Skin/integumentary system/excretory system
— They would sweat more.

Muscular system
— Muscle cells would be using more energy.

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

— Two species do not compete for food.
— The island has both plant food and animal food.
— The two species have different beaks for different types of food.

The *Chart for Determining the Final Examination Score for the January 2025 Regents Examination in Living Environment* will be posted on the Department's web site at: https://www.nysed.gov/state-assessment/high-school-regents-examinations on the day of the examination. 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 https://www.nysed.gov/state-assessment/teacher-feedback-state-assessments.

2. Click Regents Examinations.

3. Complete the required demographic fields.

4. Select the test title from the Regents Examination dropdown list.

5. Complete each evaluation question and provide comments in the space provided.

6. Click the SUBMIT button at the bottom of the page to submit the completed form.

Map to Core Curriculum (Operational)

January 2025 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				
Key Idea 3		36, 40	47, 48, 49	70
Appendix A (Laboratory Checklist)		31	45, 46	
Standard 4				
Key Idea 1	11, 18, 19, 21, 25	34, 37, 42	52	58, 67, 68
Key Idea 2	1, 22	33		56, 57, 69
Key Idea 3	4, 7, 12, 14, 20	43	44	59, 60
Key Idea 4	16, 23, 26, 28, 29		50, 51	63
Key Idea 5	2	32, 35, 39	53, 54, 55	64, 66
Key Idea 6	3, 8, 10, 13, 17, 24, 27, 30			61, 62
Key Idea 7	5, 6, 9, 15	38, 41		65, 71, 72

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