

FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

v202

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.

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 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 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: <http://www.p12.nysed.gov/assessment/> on the day of the exam. 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.

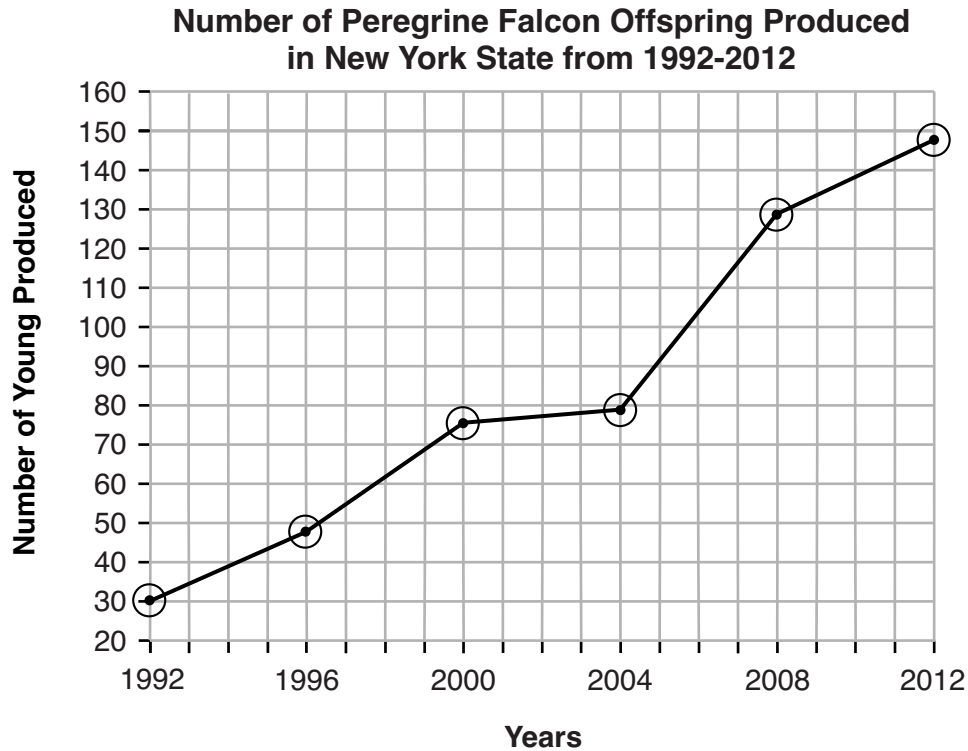
Part B-2

- 44 [1] Allow 1 credit for marking an appropriate scale on the grid provided, without any breaks in the data, on each labeled axis.

Note: Do *not* allow credit if the grid is altered to accommodate the scale.

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

Example of a 2-credit graph for questions 44-45:



Note: Allow credit if the points are plotted correctly, 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.

- 46** [1] Allow 1 credit for identifying a body system in the falcon that was directly affected and led to the loss of nesting peregrine falcons from New York State in the early 1960s and supporting the answer. Acceptable responses include, but are not limited to:

System: Reproductive

- Support: — Egg laying/egg shells are part of the reproduction of falcons.
— The eggs had thin shells, which drastically lowered breeding success.
— because it drastically lowered breeding success

47 MC on scoring key

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

- The antibiotics a person receives may not kill all of the bacteria causing the infection.
- The overuse of antibiotics may cause antibiotics to become ineffective.
- If bacteria develop a resistance to an antibiotic, the antibiotic will be less effective for humans infected by the bacteria.
- The bacteria may develop an immunity to the antibiotic.

49 MC on scoring key

50 MC on scoring key

- 51** [1] Allow 1 credit for identifying a biological process that led to the presence of 90 different species of frogs throughout the United States and supporting the answer. Acceptable responses include, but are not limited to:

Biological Process: Sexual reproduction/genetic recombination

Support: This results in the production of offspring with many variations that can lead to evolution of new species.

Biological Process: Natural selection/evolution

Support: Some frogs are better able to survive in certain environments, reproduce, and pass on their traits, eventually resulting in a new species.

Biological Process: Mutations

Support: Certain mutations make the frogs better fit to their environments. They survive and pass on the new traits to their offspring.

Biological Process: Survival of the fittest/adaptation

Support: Some frogs have characteristics that make them more fit/better adapted to certain environments. They pass these on to their offspring.

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

Part A:

Oviducts/fallopian tube:

- Fertilization might not occur.
- Eggs will not be able to get to the uterus.

Part B:

Ovary:

- Eggs might not be produced.
- Hormones that regulate the menstrual cycle might not be synthesized.

Part C:

Uterus:

- The embryo/placenta might not implant.
- The fetus may not be able to develop.

53 [1] Allow 1 credit for completing the diagram as shown below.



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

- It helps scientists design new experiments or new hypotheses.
- The new information can be used for future investigations.
- An unsupported hypothesis provides scientists with information that is important to understanding the scientific concepts being studied.
- It tells scientists they are incorrect.

55 [1] Allow 1 credit for completing the diagram as shown below.

organelles → cells → tissues → organs → organ systems → organism

Part C

- 56 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Phytoplankton is the beginning of the food chain/web in the ocean.
 - If the amount of phytoplankton decreases in the ocean, there will be less food/oxygen available for the fish.
 - Producers provide energy for all the other organisms in the ocean. A reduction in the number of producers will lead to a reduction in the number of fish.
 - It disrupts the stability of the ecosystem because there is less food for the fish.
 - It would lead to more competition for food.

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

Human Activity: Urbanization/coastline development

- As towns develop, land is taken away from the organisms that live along the coast.

Human Activity: Mining of natural resources

- This could deplete natural resources and/or increase the acidity of the ocean.

Human Activity: Oil spills

- Oil spills from mining or transportation can kill plants and animals in the area, upsetting food webs.

Human Activity: Destruction of mangrove forest/deforestation

- Deforestation decreases photosynthesis/increases CO₂ levels.
- Deforestation removes animal habitats.

Note: Do *not* allow credit for just “an increase in the acidity level.” It is the result of human activity, *not* a human activity.

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

- The Indian Ocean provides food for a large number of people.
- The more biodiversity in the ocean, the healthier/more stable it will be.
- If all the resources in the ocean are used/greatly reduced, there won't be enough food or other ocean resources for future generations.

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

- The water chestnut blocks out the light, so other plants die out because they can't compete.
- There is less food for animals and insects.
- The local food web is disrupted.
- The plant blocks 95% of the sunlight.

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

Advantage:

- No chemicals are added to disrupt the ecosystem.
- Biological control will not poison the water.
- It eliminates water chestnuts.

Disadvantage:

- Other plants in the ecosystem may be eaten by the new insects, not just the water chestnut plants.
- The new insects may spread to other ecosystems, where they could cause damage by competing with local insects.
- The insects will overpopulate due to the lack of natural predators.

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

- Many other plants and some animals are also removed from the sediment, not just the water chestnut plants.
- Other kinds of plants/animals are killed too.
- The harvester removes many local species/organisms together with the water chestnuts.
- The plants will grow back.
- The machine could pollute the water.

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

- The burning/combustion of fossil fuels releases carbon dioxide into the environment.
- Increased deforestation removes organisms that would absorb carbon dioxide from the environment.
- Industrialization brings an increased demand for the burning of fossil fuels.

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

- The sharks might not detect enough prey to feed on and might not survive.
- Since sharks lack the ability to detect their food source, the population of their prey would sharply increase.
- There could be an increase in prey and a decrease in the populations which the prey consume.
- Without the shark population holding its prey in check, the number of prey will increase.

- 64** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The body plan of the weasel allows it to get food/prey by entering small spaces that other carnivores cannot.
 - The long, slender body allows weasels to travel very close to the ground, avoiding their own predators and allowing them to sneak up on their prey.
 - It is slender and can fit into tight places.
- 65** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Limiting factors, such as available food/prey, space, and competition, can limit the size of weasel populations.
 - Larger predators can attack weasels and keep the population of weasels from getting too large.
 - They need to eat a third of their body weight per day.
 - External development makes the young more vulnerable to predators.
 - The weasels have reached their carrying capacity.
- 66** [1] Allow 1 credit for circling the appropriate term and supporting the answer. Acceptable responses include, but are not limited to:
- Relationship: Positive
Support: The weasels are able to control the number of rodents and rabbits that could otherwise consume farm or garden crops.
- Relationship: Positive
Support: The weasels are able to control the number of rodents, and some rodents carry diseases that can affect human health.
- Relationship: Negative
Support: The weasels can consume small animals, such as chickens, that are raised for human food.
- 67** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The host will not recognize the virus as an invader.
 - The cell membrane has antigens that indicate that it is a normal part of the host, so it won't be attacked by the immune system.
 - The virus is enclosed by a cell membrane that the host's immune system won't recognize as a pathogen.
 - The immune system would recognize the virus as being part of the individual, since it will have receptors and other chemicals that identify it as not being a pathogen.

- 68 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- HIV destroys white blood cells/helper T cells/B cells.
 - HIV weakens the immune system.
- 69 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Snakes without limbs could escape predators/capture prey better than those with limbs.
 - The legless snakes could seek shelter more easily in smaller places than those with legs.
- 70 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- genetic engineering
 - gene editing
 - CRISPR/CAS9
 - gene splicing
 - genetic manipulation

Note: Do *not* allow credit for biotechnology. It is a branch of science, *not* a technique.

71 [1] Allow 1 credit for deletion.

- 72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- They had fossils of snake ancestors that showed the presence of leg bones.
 - Fossils have been discovered showing snake ancestors with four limbs.
 - They examined the fossil record and found fossils of snake ancestors with legs.
 - examining the characteristics of common ancestors
 - by examining vestigial structures of modern snakes

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 stating one possible reason that the medium ground finches with a smaller beak were able to survive during the 2004-2005 drought and supporting the answer. Acceptable responses include, but are not limited to:

- Medium ground finches with a smaller beak had less competition for food than the medium ground finches with a larger beak.
- A smaller beak was better for obtaining the food that was still available during the drought.
- The smaller beak provided them with the ability to obtain more seeds.
- They were better adapted to eat smaller seeds than the other finches that died.

78 [1] Allow 1 credit for indicating that there is no change and supporting the answer. Acceptable responses include, but are not limited to:

- The two changes in the code result in the same amino acids, so the protein produced is the same.
- Both changes in the code still result in the same amino acid.
- The original amino acids will still be in the same location in the protein, even with the changes.

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

- the bands closest to the wells
- near the wells
- at the top, near where the DNA is put in the gel
- near the negative end

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

- electricity
- electric charge
- electric current
- positive and negative charges

81 MC on scoring key

82 MC on scoring key

- 83** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Wastes/carbon dioxide would be removed more quickly.
 - The increased heart rate results in more glucose/oxygen being delivered to the cells.
 - The increase in heart rate helps maintain homeostasis.

- 84** [1] Allow 1 credit for completing the chart as shown below.

Clothespin Squeezing Activity

Trial	20-Second Clothespin Squeezing (Dominant Hand)	Clothespin-Squeezing Rate Per Minute (Dominant Hand)	20-Second Clothespin Squeezing (Nondominant Hand)	Clothespin-Squeezing Rate Per Minute (Nondominant Hand)
Trial 1	26	<u>78</u>	18	54
Trial 2	33	<u>99</u>	28	84
Trial 3	24	<u>72</u>	29	87
Average		<u>83</u>		75

- 85** [1] Allow 1 credit for yes or no and supporting the answer. Acceptable responses include, but are not limited to:

Yes:

- The average of the student’s squeezing number with their dominant hand is higher than the student’s squeezing number with their nondominant hand.

No:

- The conclusion is based on the work of only one student/not enough trials/needed more students to do the experiment

Note: Allow credit only for an answer that is consistent with question 84 on the data provided in the table.

Map to Core Curriculum

v202 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		39	54	
Key Idea 2		38		
Key Idea 3			47	
Appendix A (Laboratory Checklist)		31, 32, 33	44, 45	
Standard 4				
Key Idea 1	1,3,6,8	34, 35, 36, 37	55	59, 63
Key Idea 2	7, 9, 10, 14, 17, 19			70, 71
Key Idea 3	5, 11		48, 49, 50, 51	69, 72
Key Idea 4	13, 15, 18		46, 52, 53	
Key Idea 5	12, 16, 22, 28, 29, 30	40, 41, 42		67, 68
Key Idea 6	2, 4, 20, 24, 26			56, 64, 65, 66
Key Idea 7	21, 23, 25, 27	43		57, 58, 60, 61, 62

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

The *Chart for Determining the Final Examination Score for the v202 Regents Examination in Living Environment* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on the day of the exam. 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.p12.nysed.gov/assessment/teacher/evaluation.html>.
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.