FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

Tuesday, August 20, 2024 — 12:30 to 3:30 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 Tuesday, August 20, 2024. 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.

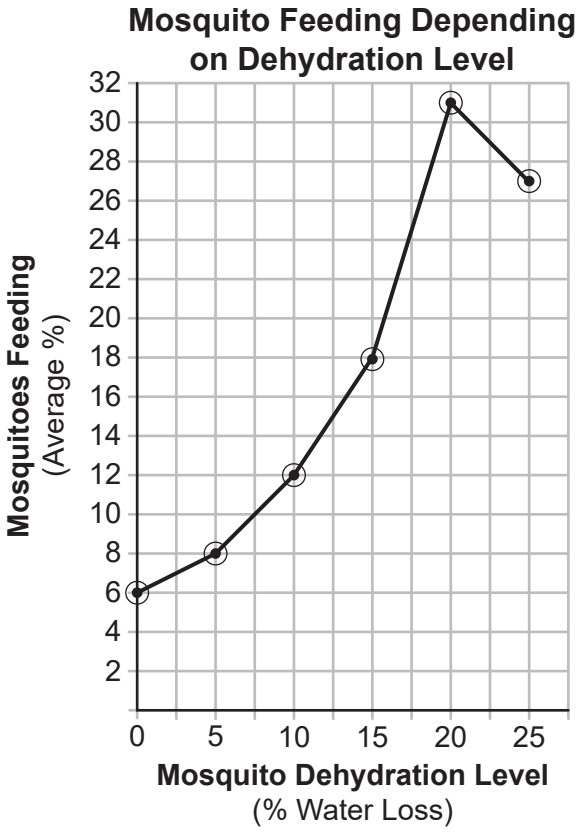
Part B–2

44 [1] Allow 1 credit for marking an appropriate scale on the axis labeled "Mosquitoes Feeding, (Average %)."

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

45 [1] Allow 1 credit for correctly plotting the data, 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 stating that the claim is not supported and supporting the answer with specific data. Acceptable responses include, but are not limited to:

— The claim is not supported because as mosquitoes went from 0 to 20 percent water loss, there was an increase in feeding. This could result in passing on the virus.

— The claim is not supported because as dehydration increased, feeding increased, increasing disease transmission.

— The claim is not supported because as the weather got drier, the mosquitos bit more.

47 3

48 [1] Allow 1 credit for stating no and supporting the answer. Acceptable responses include, but are not limited to:

— No. Once trees that produce the bigger and sweeter apples are produced, they can be crossed with each other and most offspring would produce these newer apples.

— No. Genetic engineering could be used to produce many trees with the desired trait.

— No. The trees could be grown asexually.

49 2

50 3

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

— It would probably be a forest of maple or other trees and no longer a pine bush ecosystem.

— It would have undergone succession, and without fires would probably be all forest.

— It would have changed into a different type of ecosystem through ecological succession.

52 [1] Allow 1 credit for raccoon.

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

— Mitotic cell division produces new cells that will form the embryo.

— An embryo cannot grow unless it adds new cells. These new cells are formed by the process of mitosis.

— Mitosis copies the genetic information from the zygote, providing all the resulting cells with the information they need to develop.

54 [1] Allow 1 credit for explaining why scientists might classify *Eusthenopteron* as a species of fish that is not closely related to *Tiktaalik* and supporting the answer. Acceptable responses include, but are not limited to:

— It appears to have fins and no appendages.

— It appears to have scales.

— *Eusthenopteron* does not have a flat head with eyes on top.

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

— Scientists could use DNA/protein evidence if available.

— They could use other structural similarities revealed by the CT images.

Part C

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

— As the stocking rate is increased, the height of the seedlings decreases.

— As the sheep stocking rate goes up, the reduction in seedling height increases.

— As the stocking rate is increased, the probability of survival/seedling survival rate decreases.

— With 7x or 8x stocking rate of the sheep, the probability of seedling survival is nearly 0%.

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

— The trees helped sustain the lumber industry but became invasive in some areas, crowding out native species.

— The trees helped control erosion in hilly areas, but became a problem for native species as they spread out of control in other areas.

— The trees helped replace the native tree species, which helped the lumber industry, but they became invasive in other areas and had negative effects on other native plants and animals.

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

— Trout and whitefish are not adapted to living in water with a low dissolved oxygen content.

— Whitefish and trout cannot survive in water that has a high level of sewage waste.

— The trout and whitefish disappeared because they were outcompeted by the carp population.

59 [1] Allow 1 credit for identifying *one* action a pregnant woman can take and explaining how that action would have a positive effect on the fetus. Acceptable responses include, but are not limited to:

— A proper diet for the mother will provide the necessary nutrients for the developing embryo/fetus.

— Regular visits to a doctor can identify any problems early and prevent them from getting worse.

— Taking certain vitamins can help to keep the embryo/fetus healthy.

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

— UV radiation can cause mutations in cells, which can lead to uncontrolled cell division.

— Radiation can damage the genetic information in a cell, causing it to become a cancer cell.

— UV radiation can alter DNA in skin cells.

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

— The temperature is more consistent than the outside environment.

— They eat underground stems (tubers) that grow in or near their tunnels.

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

— The bacteria digest the plant fibers so the nutrients can be used by both.

— Both mole rats and bacteria absorb the nutrients after the bacteria digest the fibers.

— Mole rats eat tubers, the bacteria digest the tubers, and both the mole rat and the bacteria get nutrients.

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

— Without repairing damaged DNA, there could be a greater risk of earlier death.

— DNA repair genes produce enzymes that repair mutations in naked mole rats that might cause cancer and death in mice.

— Repairing the DNA will result in cells producing proteins that are needed to keep the mole rats healthy.

— Damaged DNA can lead to a disruption of homeostasis.

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

— The starch can be broken down into glucose for use by the body since someone with GSD can't access their stored glucose.

— When someone with GSD has low blood sugar, the starch can be digested into glucose to maintain homeostasis.

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

— Glucose is a simple sugar that is small enough to be absorbed, but glycogen is a large molecule made of many glucose molecules and can't be absorbed until broken down.

— Glycogen is too large to be absorbed.

— Glucose is smaller than glycogen.

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

— Before the rinderpest vaccination program, disease primarily limited the wildebeest population. After the rinderpest vaccination program, the habitat/food supply limited the size of the population.

— Initially, disease limited the wildebeest population. After, its population size was limited by resources such as predation and the availability of food and water as carrying capacity was reached.

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

— The animals might use up all of the available food. This would cause a massive decrease in the wildebeest population and would likely damage the environment for other populations.

— Many wildebeests in one area could result in the rapid spread of a new disease that would kill many wildebeests and other animals.

68 [1] Allow 1 credit for supporting the claim with data from the graph. Acceptable responses include, but are not limited to:

— The size of the population remained stable from about 1978 to 1991.

— Before 1963, the herd numbered 300,000 individuals. After 1978, the herd numbered 1,300,000 individuals. The population has remained stable for many years.

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

— The sharks use a yolk sac for food, not a placenta.

— The sharks develop in two uterine chambers, not just one.

— The sharks normally have two offspring, humans usually have only one.

— The sharks' development takes one year, not nine months.

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

— They have two uterine chambers, which allows for the development of more offspring.

— Internal development provides a safe habitat for the embryos.

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

— The trend indicates that the Greenland ice sheet mass is decreasing, and a human activity contributing to this trend is burning fossil fuels.

— The Greenland ice is decreasing as a result of burning fossil fuels, which contributes to global warming.

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

— Solar can produce useful energy without continually producing carbon dioxide. With less carbon dioxide in the atmosphere, global temperatures could be lowered.

— Replacing some use of fossil fuels with solar power produces less CO_2, so global temperatures may decrease.

— Using solar power reduces the amount of CO_2 going into the air.

Part D

73 3

74 1

75 1

76 4

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

— When the starch indicator molecules moved into the cell, they reacted with the starch to turn it black/blue black.

— The starch indicator diffused in and reacted with the starch to produce a black color.

— The starch indicator diffused in and combined/mixed with the starch.

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

— Water will leave the blood cells, which would cause the cells to shrink/get smaller.

— The blood cells will shrivel up/shrink.

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

— The two iguana species occupy different niches.

— They have different resource requirements.

— They have some variation in their food sources.

— The pink land iguana can feed on shrubs that the other land iguana doesn't eat.

80 [1] Allow 1 credit for stating that the data in the table does not support the hypothesis the students proposed and supporting the answer. Acceptable responses include, but are not limited to:

— No, because we cannot tell how their ability to do the exercises changed after eating the candy bar.

— No, because there was no control in the experiment.

— We cannot tell if it does or not, because we don't know how many they could have done before they ate the candy bar.

81 2

82 4

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

— They were trying to figure out which plants are most similar.

— They were trying to figure out which plants are most closely related.

— By doing the tests, they could determine evolutionary relationships.

— They were trying to determine which varieties most likely contained the same medicinal chemical.

84 [1] Allow 1 credit for student *B* and supporting the answer. Acceptable responses include, but are not limited to:

— Student *B* was seated, so he/she is most likely to have a slower pulse than his/her friends who were more active.

— Student *B* was least active. His/her muscles were not very active and used less oxygen.

85 [1] Allow 1 credit for *W* and *Z* and supporting the answer. Acceptable responses include, but are not limited to:

— Individuals *W* and *Z* have identical lines (genes).

— The pattern of lines for *W* and *Z* is the same.

Map to Core Curriculum

August 2024 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				56, 61
Key Idea 2				
Key Idea 3		36, 41, 43	54	68
Appendix A (Laboratory Checklist)			44, 45, 46	
Standard 4				
Key Idea 1	1, 2, 7, 9, 12, 17	32		64, 65, 67
Key Idea 2	8, 13, 22, 24, 27		48, 49	63
Key Idea 3	11, 15, 30	38	52, 55	62
Key Idea 4	28, 29	39	53	59, 69, 70
Key Idea 5	5, 6, 10, 16, 20, 21, 23, 26	31, 33, 34		60
Key Idea 6	14, 18, 19	35, 37, 40	47, 51	66
Key Idea 7	3, 4, 25	42	50	57, 58, 71, 72

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

Regents Examination in Living Environment

August 2024

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

The *Chart for Determining the Final Examination Score for the August 2024 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 Tuesday, August 20, 2024. 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. 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.