FOR TEACHERS ONLY

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

LIVING ENVIRONMENT

Friday, June 16, 2000 — 1:15 to 4:15 p.m., only

SCORING KEY

Directions to the Teacher:

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

Scan each answer sheet to make certain that the student has marked only one answer for each question. If a student has marked two or more answers with an X in ink, draw a red line through the row of numbers for that question to indicate that no credit is to be allowed for that question when the answer sheet is scored.

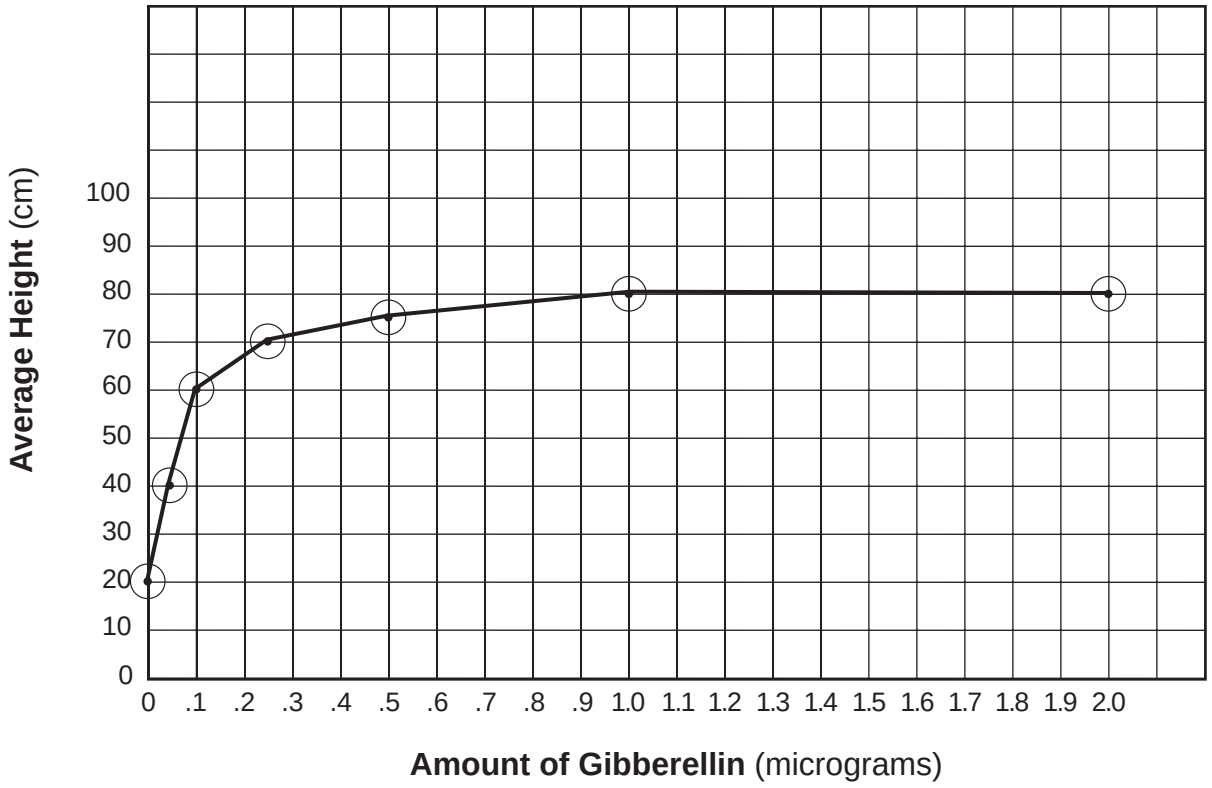
To facilitate scoring, the scoring key for **Part A** has been printed in the same format as the answer sheet. The scoring key may be made into a scoring stencil by punching out the correct answers. Be sure that the stencil is aligned with the answer sheet so that the holes correspond to the correct answers. To aid in proper alignment, punch out the first and last item numbers in each part and place the stencil on the answer sheet so that these item numbers appear through the appropriate holes.

Part A (35 credits)

Allow a total of 35 credits for Part A, one credit for each correct answer.

1	**X**	2	3	4	**13**	1	2	**X**	4	**25**	1	2	**X**	4
2	1	2	3	**X**	**14**	1	2	**X**	4	**26**	1	2	**X**	4
3	1	**X**	3	4	**15**	1	2	3	**X**	**27**	1	**X**	3	4
4	1	2	**X**	4	**16**	1	**X**	3	4	**28**	**X**	2	3	4
5	1	2	**X**	4	**17**	1	2	3	**X**	**29**	**X**	2	3	4
6	1	2	3	**X**	**18**	1	2	**X**	4	**30**	1	2	3	**X**
7	**X**	2	3	4	**19**	**X**	2	3	4	**31**	1	**X**	3	4
8	1	**X**	3	4	**20**	**X**	2	3	4	**32**	1	2	3	**X**
9	1	**X**	3	4	**21**	1	**X**	3	4	**33**	1	**X**	3	4
10	1	2	3	**X**	**22**	1	2	3	**X**	**34**	1	2	**X**	4
11	1	2	**X**	4	**23**	1	2	3	**X**	**35**	**X**	2	3	4
12	**X**	2	3	4	**24**	1	**X**	3	4					

60–61


Average Height (cm)
100
90
80
70
60
50
40
30
20
10
0
0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0
Amount of Gibberellin (micrograms)

Part B (30 credits)

Allow a total of 30 credits for Part B. In this part, sample responses are given for questions that require a constructed response. Other scientifically correct answers should also be accepted. Allow no partial credit for 1-credit responses.

36 X 2 3 4

37 The student must state *two* ways the investigation could be modified to lead to a more reliable conclusion. Allow 1 credit for each correct statement up to a maximum of 2 credits.
—use more plants in each location
—include a setup with full-time light
—use other species in the experiment

38 X 2 3 4

39 1 2 X 4

40 1 2 X 4

41 The student should state *two* reasons that someone should question the claims made in the advertisement. Allow 1 credit for each correct statement up to a maximum of 2 credits.
—do not know what the people ate along with taking the pill
—do not know if the people were truthful
—do not know how many people were in the study
—ten people too few for making a valid conclusion

42 —HIV attacks the immune system.
—Their resistance is lowered by HIV infection.

43 A

44 D

45 —Sperm cells need to swim to the egg.
—Sperm cells need nutrients to provide energy.

46 —Intervals on the *y*-axis are not appropriate.
—The title is incorrect.

47 —They are producers.
—They contain the most energy.

48 1 2 3 **X**

49 —There is less energy available at each succeeding level.
—Energy is lost as heat at each level.

50 —Scavengers remove dead organisms from the environment.
—Scavengers break down dead organisms.

51 —Energy in carbohydrate molecules is transferred to ATP.
—Carbohydrates have energy in their bonds that can be used to make ATP for carrying on life functions.

52 1 2 3 **X**

53 —Veins and arteries may be blocked and tissue damage may result.
—The body may reject the new organ.

54 To prevent rejection of a transplanted organ

55 —The drug might weaken the ability of the body to fight diseases.
—The drug may leave the patient less able to fight infection.

56 —The organs would not be rejected.
—Organs produced by this process would not be foreign material and would not be attacked by the patient's immune system.

57 1 **X** 3 4

58 —They introduced industry to the area.
—They built factories that produced soot (pollution).

59 —Effect of Gibberellin on Growth of Corn
—Effect of Gibberellin on Corn Seedling Height
—Relationship of Gibberellin to Corn Growth

60–61 **Example of acceptable response**
[See back of the Scoring Key for Part A for acceptable graph.]

Rating Instructions for Questions 60–61

60 Allow one credit for each of the following:
- marking an appropriate scale on the axis labeled **"Amount of Gibberellin"**
- marking an appropriate scale on the axis labeled **"Average Height"**

61 Allow one credit for plotting the data correctly, surrounding each point with a small circle, and connecting the points.

62 —Increasing the amount of gibberellin applied to corn plants causes the plants to grow taller.
—As the amount of gibberellin is increased from 0.05 to 0.50 microgram, the average height of the corn plants increased from 40 to 75 cm.

Part C

Allow a total of 20 credits for Part C.

63 *a* The student should write one or more paragraphs describing some of the relationships in the food web. The student's answer should include:
- an identification of one carnivore (e.g., wolf, worm, or fish) [1 credit]
- a description of the path of energy from the Sun to that carnivore (e.g., Sun Æ pond algae Æ rotifers Æ worms Æ fish) [1 credit]
- an explanation of why decomposers are necessary in this food web. (The explanation should include reference to the return of resources to the environment or to the recycling of materials in the environment.) [1 credit]

b The student should write a statement about the probable effect on the grass population a year after a significant decrease in the wolf population (e.g., the grass population would decrease). [1 credit]

c The student should write one or more complete sentences explaining why there were higher levels of pesticide in fish than in any other pond organism several years later. (The explanation should mention pond algae taking in pesticides and the pesticides becoming more concentrated at each succeeding level.) [1 credit]

64 The student should select *two* life functions from the list, define both life functions, and explain how they interact to keep an organism alive.
—Award 1 credit for each correct definition.
—Award either 1 or 2 credits for the explanation of the interaction.

The following example shows a full-credit response:

circulation—moves materials through the body from one place to another
excretion—gets rid of cellular wastes from the body
The circulatory system moves cell wastes to places where they can be removed from the body.

65 The student should name *two* processes that can result in variation in a population and explain how these processes cause variation.
Appropriate responses include, but are not limited to, the following:
- Mutations change DNA, resulting in new traits.
- Crossing over during meiosis may produce new gene combinations.
- Fertilization involves union of sex cells from each of two parents, resulting in offspring different from either parent.

66 The student should write one or more paragraphs comparing asexual and sexual reproduction.
Appropriate responses may include, but are not limited to, the following:
Similarities between asexual and sexual reproduction:
- both produce new organisms
- both transfer genetic material [1 credit]

Differences between asexual and sexual reproduction:
- no fusion of nuclei in asexual reproduction; fusion of gamete nuclei in sexual reproduction
- asexual reproduction involves no sex cells; sexual reproduction involves sex cells, the sperm and the egg
- offspring of asexual reproduction is from one parent; offspring of sexual reproduction is from a combination of two parents' DNA
- in asexual reproduction, there is little or no variation (e.g., binary fission); in sexual reproduction, there is greater variation [1 credit]

Examples of organisms that reproduce by asexual reproduction:
- bacteria
- yeast
- ameba
- hydra
- planaria [1 credit]
- bread mold

Examples of organisms that reproduce by sexual reproduction:
- humans
- most animals
- fish
- earthworms
- grasshoppers
- flowering plants [1 credit]

67 The student should state one possible disadvantage of spraying insecticide from an airplane.
Appropriate responses include, but are not limited to, the following:
—The spray may reach other areas (not targeted) and harm people, pets, or other animals in that area.
—The spray could kill beneficial insects.

68 The student should state one alternative method of mosquito control that may have a more lasting impact on the mosquito population. Appropriate responses include, but are not limited to, the following:
—Predators (or parasites) of mosquitos could be released into the area to control them.
—Swamp areas could be drained to reduce breeding areas.
—Sterilized male mosquitos could be released to mate with females to reduce the rate of reproduction.

69 The student should state one positive *or* one negative effect, other than killing mosquitos, of the alternative method stated in the response to question 68. Appropriate responses include, but are not limited to, the following:
Positive:
—No pesticide to harm other species
Negative:
—Habitat modifications could be detrimental to other species.
—Predators or parasites released could harm other species or spread disease.