The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

LIVING ENVIRONMENT

Tuesday, August 16, 2005 — 12:30 to 3:30 p.m., only

Student Name _____

School Name _____

Print your name and the name of your school on the lines above. Then turn to the last page of this booklet, which is the answer sheet for Part A and Part B–1. Fold the last page along the perforations and, slowly and carefully, tear off the answer sheet. Then fill in the heading of your answer sheet.

You are to answer all questions in all parts of this examination. Write your answers to the Part A and Part B–1 multiple-choice questions on the separate answer sheet. Write your answers for the questions in Parts B–2, C, and D directly in this examination booklet. All answers should be written in pen, except for graphs and drawings which should be done in pencil. You may use scrap paper to work out the answers to the questions, but be sure to record all your answers on the answer sheet and in this examination booklet.

When you have completed the examination, you must sign the statement printed on your separate answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet cannot be accepted if you fail to sign this declaration.

The use of any communications device is strictly prohibited when taking this examination. If you use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Part A

Answer all questions in this part. [30]

Directions (1–30): For *each* statement or question, write on your separate answer sheet the *number* of the word or expression that, of those given, best completes the statement or answers the question.

1 Which substances are found on cell surfaces and respond to nerve and hormone signals?

(1) starches and simple sugars
(2) subunits of DNA
(3) vitamins and minerals
(4) receptor molecules

2 Which sequence illustrates the increasing complexity of levels of organization in multicellular organisms?

(1) organelle → cell → tissue → organ → organ system → organism
(2) cell → organelle → tissue → organ → organ system → organism
(3) organelle → tissue → cell → organ → organ system → organism
(4) cell → organism → organ system → organ → tissue → organelle

3 Which statement best describes a scientific theory?

(1) It is a collection of data designed to provide support for a prediction.
(2) It is an educated guess that can be tested by experimentation.
(3) It is a scientific fact that no longer requires any evidence to support it.
(4) It is a general statement that is supported by many scientific observations.

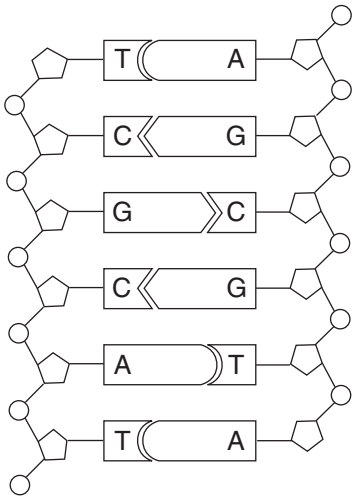
4 In one variety of corn, the kernels turn red when exposed to sunlight. In the absence of sunlight, the kernels remain yellow. Based on this information, it can be concluded that the color of these corn kernels is due to the

(1) process of selective breeding
(2) rate of photosynthesis
(3) effect of environment on gene expression
(4) composition of the soil

5 Which row in the chart below best describes asexual reproduction?

Row	Number of Parents	Comparison of Offspring to Parents
(1)	one	identical
(2)	one	different
(3)	two	identical
(4)	two	different

6 The diagram below represents a portion of an organic molecule.



This molecule controls cellular activity by directing the synthesis of

(1) carbohydrates
(2) minerals
(3) fats
(4) proteins

7 In the body of a human, the types of chemical activities occurring within cells are most dependent on the

(1) biological catalysts present
(2) size of the cell
(3) number of chromosomes in the cell
(4) kind of sugar found on each chromosome

8 The enzyme pepsin is produced in the cells of the stomach but *not* in the cells of the small intestine. The small intestine produces a different enzyme, trypsin. The reason that the stomach and small intestine produce different enzymes is that the gene that codes for pepsin is

(1) in the cells of the stomach, but not in the cells of the small intestine
(2) expressed in the stomach but not expressed in the small intestine
(3) mutated in the small intestine
(4) digested by the trypsin in the small intestine

9 The presence of some similar structures in all vertebrates suggests that these vertebrates

(1) all develop at the same rate
(2) evolved from different animals that appeared on Earth at the same time
(3) all develop internally and rely on nutrients supplied by the mother
(4) may have an evolutionary relationship

10 A mutation occurs in the liver cells of a certain field mouse. Which statement concerning the spread of this mutation through the mouse population is correct?

(1) It will spread because it is beneficial.
(2) It will spread because it is a dominant gene.
(3) It will not spread because it is not in a gamete.
(4) It will not spread because it is a recessive gene.

11 Which cell process occurs only in organisms that reproduce sexually?

(1) mutation
(2) replication
(3) meiosis
(4) mitosis

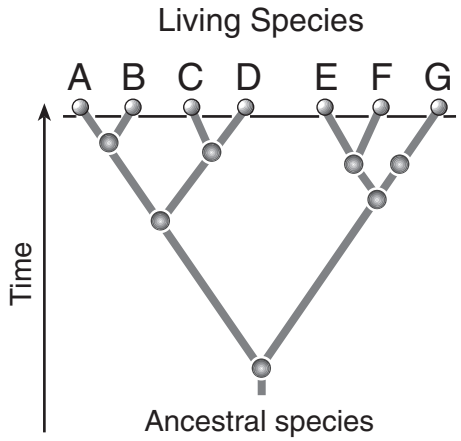
12 Which factor is *least* likely to contribute to an increase in the rate of evolution?

(1) presence of genetic variations in a population
(2) environmental selection of organisms best adapted to survive
(3) chromosomal recombinations
(4) a long period of environmental stability

13 Researchers Cohn and Boyer transferred a gene from an African clawed frog into a bacterium. To accomplish this, these scientists had to use

(1) enzymes to cut out and insert the gene
(2) hereditary information located in amino acids
(3) radiation to increase the gene mutation rate of the bacterial cells
(4) cancer cells to promote rapid cell division

14 The evolutionary pathways of seven living species are shown in the diagram below.



Which two species are likely to have the most similar DNA base sequences?

(1) *B* and *G*
(2) *E* and *G*
(3) *B* and *C*
(4) *C* and *D*

15 The human brain, kidney, and liver all develop from the same zygote. This fact indicates that cells formed by divisions of the zygote are able to

(1) differentiate
(2) mutate
(3) undergo cloning
(4) be fertilized

16 The reproductive cycle of a human is usually regulated by

(1) gametes
(2) hormones
(3) natural selection
(4) immune responses

17 Which reproductive structure is correctly paired with its function?

(1) uterus—usual site of fertilization
(2) testis—usual location for egg development
(3) ovary—delivers nutrients to the embryo
(4) sperm—transports genetic material

18 Toxins can harm a developing fetus. They usually enter the fetus by the process of

(1) blood flow from the mother to the fetus
(2) active transport from the ovary
(3) diffusion across placental membranes
(4) recombination of genes from the fetus and mother

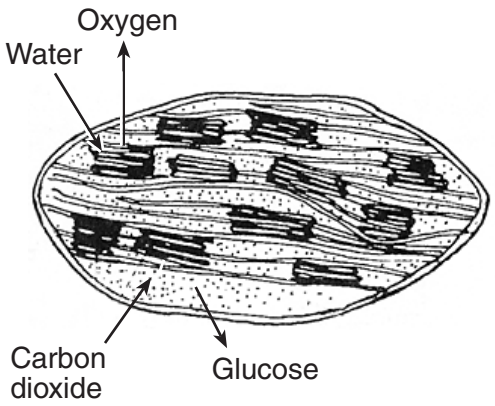
19 Which statement best describes cellular respiration?

(1) It occurs in animal cells but not in plant cells.
(2) It converts energy in food into a more usable form.
(3) It uses carbon dioxide and produces oxygen.
(4) It stores energy in food molecules.

20 Antibody molecules and receptor molecules are similar in that they both

(1) control transport through the cell membrane
(2) have a specific shape related to their specific function
(3) remove wastes from the body
(4) speed up chemical reactions in cells

21 The diagram below illustrates the movement of materials involved in a process that is vital for the energy needs of organisms.



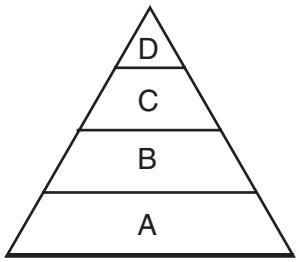
The process illustrated occurs within

(1) chloroplasts
(2) mitochondria
(3) ribosomes
(4) vacuoles

22 Feedback interactions in the human body are important because they

(1) determine the diversity necessary for evolution to occur
(2) direct the synthesis of altered genes that are passed on to every cell in the body
(3) regulate the shape of molecules involved in cellular communication
(4) keep the internal body environment within its normal range

23 The diagram below represents an energy pyramid.



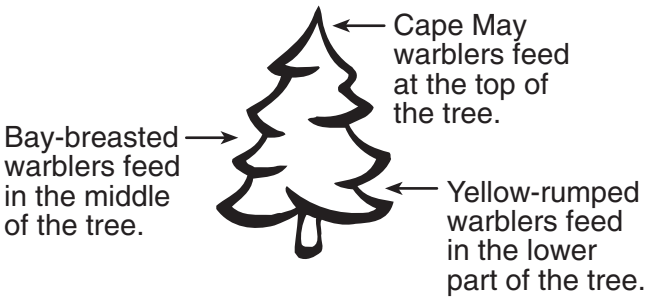
At each successive level from *A* to *D*, the amount of available energy

(1) increases, only
(2) decreases, only
(3) increases, then decreases
(4) remains the same

24 The purpose of introducing weakened microbes into the body of an organism is to stimulate the

(1) production of living microbes that will protect the organism from future attacks
(2) production of antigens that will prevent infections from occurring
(3) immune system to react and prepare the organism to fight future invasions by these microbes
(4) replication of genes that direct the synthesis of hormones that regulate the number of microbes

25 The feeding niches of three bird species are shown in the diagram below.



What is the advantage of these different feeding niches for the birds?

(1) less competition for food
(2) fewer abiotic resources for each bird species
(3) fewer biotic resources for each bird species
(4) less energy available as the birds feed higher in the tree

26 Cutting down a rain forest and planting agricultural crops, such as coffee plants, would most likely result in

(1) a decrease in biodiversity
(2) an increase in the amount of energy recycled
(3) a decrease in erosion
(4) an increase in the amount of photosynthesis

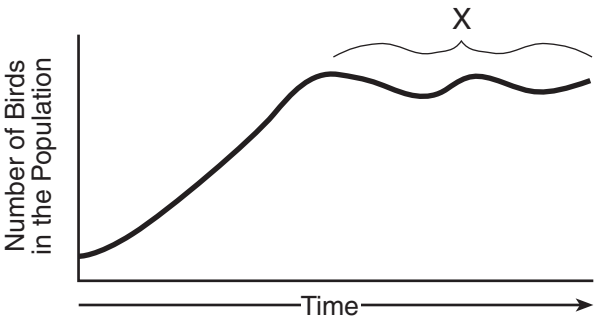
27 Which long-term change could directly cause the other three?

(1) pollution of air and water
(2) increasing human population
(3) scarcity of suitable animal habitats
(4) depletion of resources

28 Which statement describes all stable ecosystems?

(1) Herbivores provide energy for the autotrophs.
(2) The populations of predators are dependent on the populations of their prey.
(3) The number of autotrophs equals the number of heterotrophs.
(4) Consumers synthesize ATP from light energy.

29 The graph below shows the number of birds in a population.



Which statement best explains section *X* of the graph?

(1) Interbreeding between members of this population increased the mutation rate.
(2) An increase in the bird population caused an increase in the producer population.
(3) The population reached a state of dynamic equilibrium due to limiting factors.
(4) Another species came to the area and provided food for the birds.

30 Humans have altered ecosystems in many ways. The most positive impact on an ecosystem would result from

(1) planting a single economically valuable crop in a 25-acre area
(2) seeding an area with valuable plants that are from another ecosystem
(3) planting many different plants that are native to the area in a vacant lot
(4) filling in a swamp and planting grass and trees for a community park

Part B–1

Answer all questions in this part. [10]

Directions (31–40): For *each* statement or question, write on the separate answer sheet the *number* of the word or expression that, of those given, best completes the statement or answers the question.

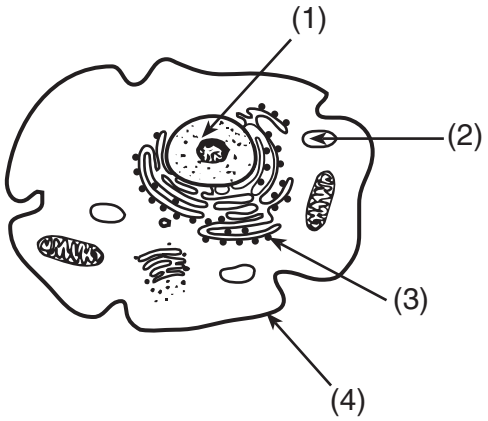
31 Some data concerning bird species are shown in the chart below.

Number of Bird Species	Location
26	northern Alaska
153	southwest Texas
600	Costa Rica

Which statement is a valid inference based on information in the chart?

(1) The different species in northern Alaska can interbreed.
(2) There are conditions in Costa Rica that account for greater biodiversity there.
(3) The different species in southwest Texas evolved from those in northern Alaska.
(4) The greater number of species in Costa Rica is due to a greater number of predators there.

32 In the diagram below, which structure performs a function similar to a function of the human lungs?

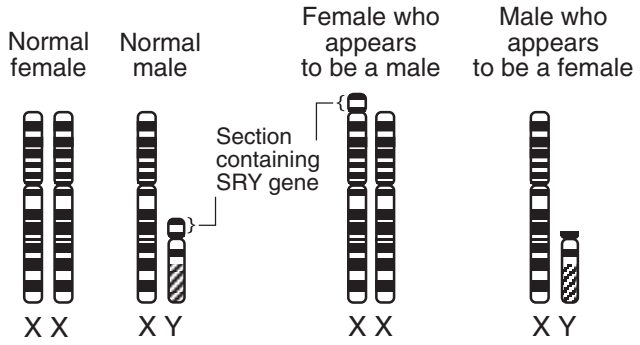


(1) 1
(2) 2
(3) 3
(4) 4

33 Which source would provide the most reliable information for use in a research project investigating the effects of antibiotics on disease-causing bacteria?

(1) the local news section of a newspaper from 1993
(2) a news program on national television about antigens produced by various plants
(3) a current professional science journal article on the control of pathogens
(4) an article in a weekly news magazine about reproduction in pathogens

34 The *Y*-chromosome carries the SRY gene that codes for the production of testosterone in humans. Occasionally a mutation occurs resulting in the SRY gene being lost from the *Y*-chromosome and added to the *X*-chromosome, as shown in the diagram below.

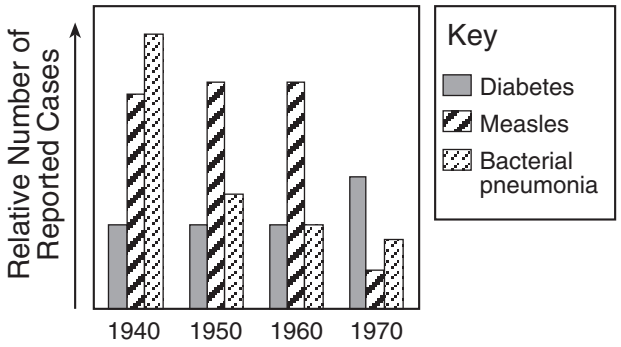


Based on the diagram, which statement is correct?

(1) The production of testosterone influences the development of male characteristics.
(2) Reproductive technology has had an important influence on human development.
(3) Normal female characteristics develop from a single *X*-chromosome.
(4) Male characteristics only develop in the absence of *X*-chromosomes.

Base your answers to questions 35 through 37 on the graph below and on your knowledge of biology.

Incidence of Three Human Diseases in Four Different Years



35 The greatest difference between the incidence of measles and the incidence of bacterial pneumonia occurred in

(1) 1940
(2) 1950
(3) 1960
(4) 1970

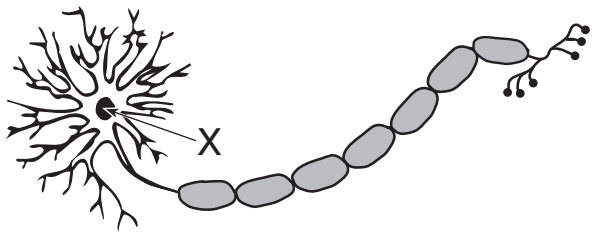
36 Which statement best explains a change in the incidence of disease in 1970?

(1) Children were vaccinated against measles.
(2) New drugs cured diabetes.
(3) The bacteria that cause pneumonia developed a resistance to drugs.
(4) New technology helped to reduce the incidence of all three diseases.

37 Which statement provides the best possible reason for the decrease in number of cases of bacterial pneumonia from 1940 to 1970?

(1) As a result of genetic engineering, humans became immune to the bacteria.
(2) Antibiotics were made available for the treatment of bacterial infections.
(3) The bacteria did not respond to medical treatments.
(4) As a result of sexual reproduction, the bacteria evolved into a harmless form.

Base your answers to questions 38 and 39 on the diagram below of a cell associated with coordination and on your knowledge of biology.



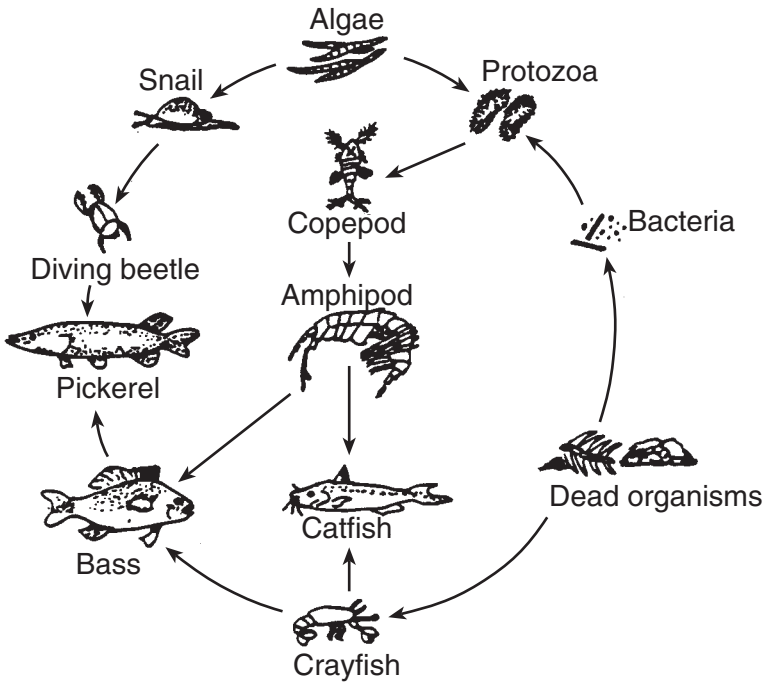
38 Structure *X* would be involved in the

(1) storage of digestive enzymes
(2) absorption of energy from the Sun
(3) development of pathogens
(4) synthesis of proteins

39 Which statement best describes a function of the entire structure shown in the diagram?

(1) It unites with an egg cell during fertilization.
(2) It synthesizes a hormone involved in the control of blood sugar level.
(3) It releases chemicals involved in cellular communication.
(4) It controls the replication of genetic material.

40 A food web is shown below.



Which organisms feed on *both* producers and decomposers?

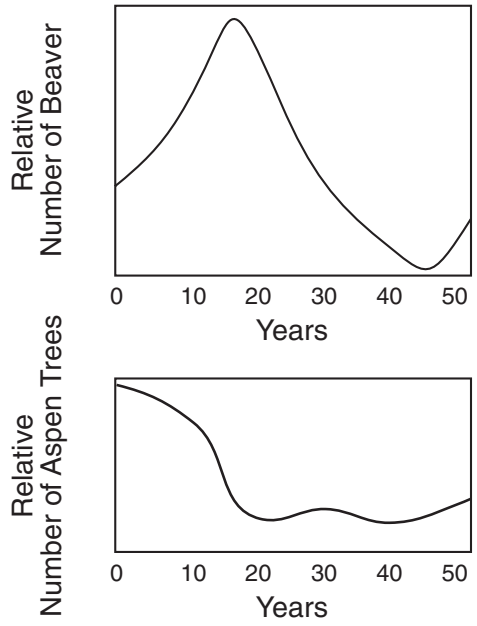
(1) amphipods
(2) catfish
(3) crayfish
(4) protozoa

Part B–2

Answer all questions in this part. [15]

Directions (41–54): For those questions that are followed by four choices, circle the *number* of the choice that best completes the statement or answers the question. For all other questions in this part, follow the directions given in the question and record your answer in the spaces provided.

Base your answers to questions 41 through 43 on the graphs below, which show changes in the number of aspen trees and the beaver population in an area over a 50-year period.



41 State the relationship that exists between the number of aspen trees and the beaver populations in this region during the first 15 years. [1]

_____

_____ 41

42 State *one* possible reason for the relationship between the aspen tree and the beaver populations. [1]

_____

_____ 42

43 Predict how the number of aspen trees would change if a parasite that targets the beaver population were introduced into the area during year 5. Explain your answer. [1]

_____

_____

_____ 43

For Teacher Use Only

Base your answers to questions 44 through 47 on the information below and on your knowledge of biology.

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Insecticides are used by farmers to destroy crop-eating insects. Recently, scientists tested several insecticides to see if they caused damage to chromosomes. Six groups of about 200 cells each were examined to determine the extent of chromosome damage after each group was exposed to a different concentration of one of two insecticides. The results are shown in the data table below.

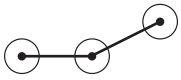
Cell Damage After Exposure to Insecticide

Insecticide	**Insecticide Concentration** (ppm)	**Number of Cells with Damaged Chromosomes**
Methyl parathion	0.01	7
	0.10	15
	0.20	30
Malathion	0.01	3
	0.10	4
	0.20	11

Directions (44–46): Using the information in the data table, construct a line graph on the grid on the next page, following the directions below.

44 Mark an appropriate scale on the axis labeled, "Number of Cells with Damaged Chromosomes." [1]

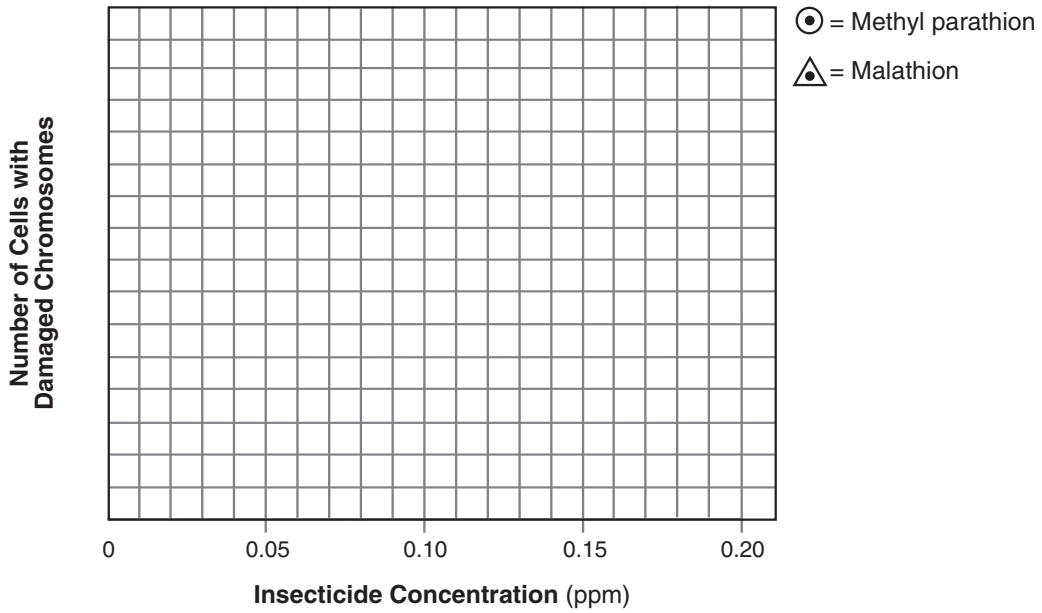
45 Plot the data for methyl parathion on the grid. Surround each point with a small circle and connect the points. [1]

Example: 

46 Plot the data for malathion on the grid. Surround each point with a small triangle and connect the points. [1]

Example: 

Cell Damage After Exposure to Insecticide



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44 ☐

45 ☐

46 ☐

47 Which insecticide has a more damaging effect on chromosomes? Support your answer. [1]

_____

_____

_____

47 ☐

48 State *one* specific way white blood cells help to protect the human body from pathogens. [1]

_____

_____

48 ☐

49 Identify *two* body systems that help maintain glucose levels in the blood and describe how each system is involved. [2]

(1) _____

_____

_____

(2) _____

_____

_____

49 ☐

Base your answers to questions 50 through 52 on the information below and on your knowledge of biology.

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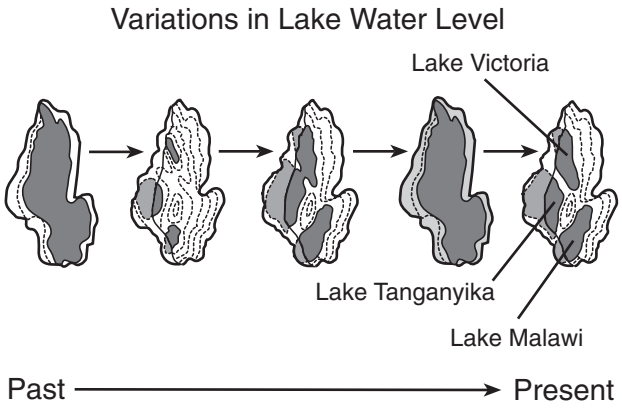

The three great lakes in Africa (Victoria, Tanganyika, and Malawi) contain a greater number of fish species than any other lakes in the world. Lake Malawi alone has 200 species of cichlid fish. The diversity of cichlid species in these African lakes could have been caused by changes in water level over thousands of years.

According to one hypothesis, at one time the three lakes were connected as one large lake and all the cichlids could interbreed. When the water level fell, groups of cichlids were isolated in smaller lakes as shown in the diagram. Over time, the groups of cichlids developed genetic differences. When the water levels rose again, the isolated populations were brought back into contact. Due to significant genetic differences, these populations were unable to interbreed. Variations in water level over thousands of years resulted in today's diversity of cichlid species.

50 Which discovery would support this explanation of cichlid diversity?

(1) The water level changed little over time.

(2) The local conditions in each of the small lakes were very different.

(3) Differences between cichlid species are small and interbreeding is possible.

(4) Once formed, the lakes remained isolated from each other.

50 ☐

51 As the water level of the lakes changed, many species of cichlids survived while others became extinct. State why some species survived while others became extinct. [1]

_____

_____

51 ☐

52 Each cichlid population is genetically different from the other cichlid populations. State *one* reason for these genetic differences. [1]

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52 ☐

Base your answers to questions 53 and 54 on the information below and on your knowledge of biology.

> The ice fields off Canada's Hudson Bay are melting an average of three weeks earlier than 25 years ago. The polar bears are therefore unable to feed on the seals on these ice fields during the last three weeks in spring. Polar bears have lost an average of 10% of their weight and have 10% fewer cubs when compared to a similar population studied just 20 years ago. Scientists have associated the early melting of the ice fields with the fact that the average world temperature is about 0.6°C higher than it was a century ago and this trend is expected to continue.

53 What ecological problem most likely caused the earlier melting of the ice fields in the Hudson Bay area of Canada? [1]

53 ☐

54 State *one* specific long-term action that humans could take that might slow down or reduce the melting of the ice fields. [1]

54 ☐

Part C

Answer all questions in this part. [17]

Directions (55–61): Record your answers in the spaces provided in this examination booklet.

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55 The drugs usually used to treat high blood pressure do not affect blood vessels in the lungs. Bosentan is a new drug being studied as a treatment for high blood pressure in the lungs. In an experiment, patients treated with bosentan showed an improvement in the distance they could walk without fatigue within 12 weeks.

Design an experiment to test the effectiveness of bosentan as a drug to treat high blood pressure in the lungs. In your answer be sure to:

- state the hypothesis your experiment will test [1]
- state how the control group will be treated differently from the experimental group [1]
- state *two* factors that must be kept the same in both the experimental and control groups [1]
- state the type of data that should be collected to determine if the hypothesis is supported [1]

55 ☐

56 Describe *one* example of diffusion in the human body. In your description be sure to:

- identify the place where diffusion takes place [1]
- identify a substance that diffuses there [1]
- identify where that substance diffuses from and where it diffuses to, at that place [1]

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56

57 When living organisms obtain water and food from their environment, they may also take in toxic pesticides. Low concentrations of some pesticides may not kill animals, but they may damage reproductive organs and cause sterility. The data table below shows concentrations of a pesticide in tissues of organisms at different levels of a food chain.

Concentration of Pesticide in Tissues	
Organisms	**Pesticide Concentration** (parts per million)
producers	0.01–0.03
herbivores	0.25–1.50
carnivores	4.10–313.80

What does this information suggest to a person who is concerned about health and is deciding on whether to have a plant-rich or an animal-rich diet? Support your answer using the information provided. [1]

57

Base your answers to questions 58 and 59 on the information below and on your knowledge of biology.

> Our national parks are areas of spectacular beauty. Current laws usually prohibit activities such as hunting, fishing, logging, mining, and drilling for oil and natural gas in these areas. Congress is being asked to change these laws to permit such activities.

58 Choose *one* of the activities listed above. State *one* way that activity could harm the ecosystem. [1]

Activity: _____

Harm: _____

_____

58 ☐

59 State *one* way allowing the activity you chose could benefit society. [1]

_____

_____

59 ☐

60 One variety of wheat is resistant to disease. Another variety contains more nutrients of benefit to humans. Explain how a new variety of wheat with disease resistance and high nutrient value could be developed. In your answer, be sure to:

- identify *one* technique that could be used to combine disease resistance and high nutrient value in a new variety of wheat [1]
- describe how this technique would be carried out to produce a wheat plant with the desired characteristics [1]
- describe *one* specific difficulty (other than stating that it does not always work) in developing a new variety using this technique [1]

_____

_____

_____

_____

_____

_____

_____

_____

60 ☐

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61 Organelles carry out specific processes involving chemical reactions. In the chart below, identify *two* organelles and, for each, identify a process involving chemical reactions that occurs there. Describe *one* specific way each process identified is important to the functioning of the organism. [4]

Organelle	Process Involving Chemical Reactions that Occur in the Organelle	How the Process is Important to the Functioning of the Organism
(1) _____	_____	_____
_____	_____	_____
	_____	_____
(2) _____	_____	_____
_____	_____	_____
	_____	_____

61 ☐

Part D

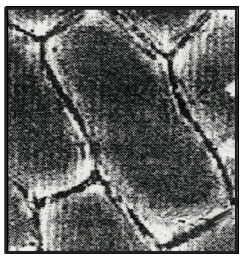
Answer all questions in this part. [13]

Directions (62–73): For those questions that are followed by four choices, circle the *number* of the choice that best completes the statement or answers the question. For all other questions in this part, follow the directions given in the question.

For Teacher Use Only

Base your answers to questions 62 through 64 on the information and diagram below.

A student prepared a wet-mount slide of red onion skin and observed it under high power of a compound light microscope (view *A*). After adding a substance to the slide and waiting one minute, the student observed that there were changes in the cells (view *B*).

View A	View B
	

62 Identify *one* substance that could have been added to the cells on the slide in view *A* that would make them resemble the cells observed in view *B*. [1]

_____

62 ☐

63 Identify the specific substance that diffused to cause the change in appearance from view *A* to view *B*. [1]

_____

63 ☐

64 In the box below, sketch how view *B* would appear when viewed under lower power of the same compound light microscope. [1]

64 ☐

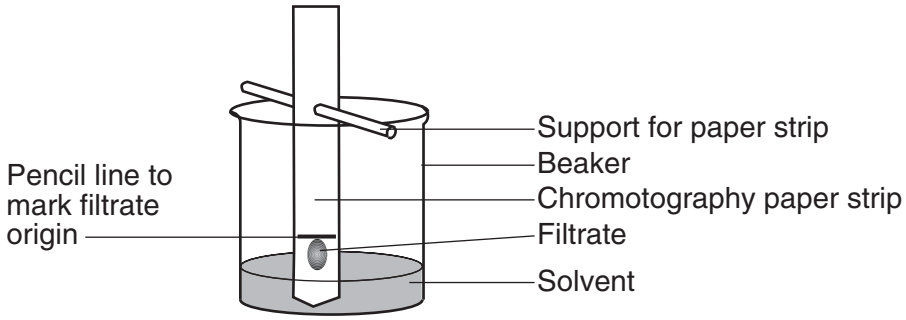
Base your answers to questions 65 through 67 on the information below and on your knowledge of biology.

For Teacher Use Only

Paper chromatography can be used to investigate evolutionary relationships.

Leaves from a plant were ground and mixed with a solvent. The mixture of ground leaves and solvent was then filtered. Using a toothpick, twenty drops of the filtrate (material that passed through the filter) were placed at one spot on a strip of chromatography paper.

This procedure was repeated using leaves from three other species of plants. A separate strip of chromatography paper was prepared for each plant species. Each of the four strips of chromatography paper was placed in a different beaker containing the same solvent for the same amount of time. One of the laboratory setups is shown below.



65 State *one* reason for using a new toothpick for the filtrate from each plant. [1]

_____

_____ 65

66 State *one* way the four strips would most likely be different from each other after being removed from the beakers. [1]

_____

_____ 66

67 State how a comparison of these resulting strips could indicate evolutionary relationships. [1]

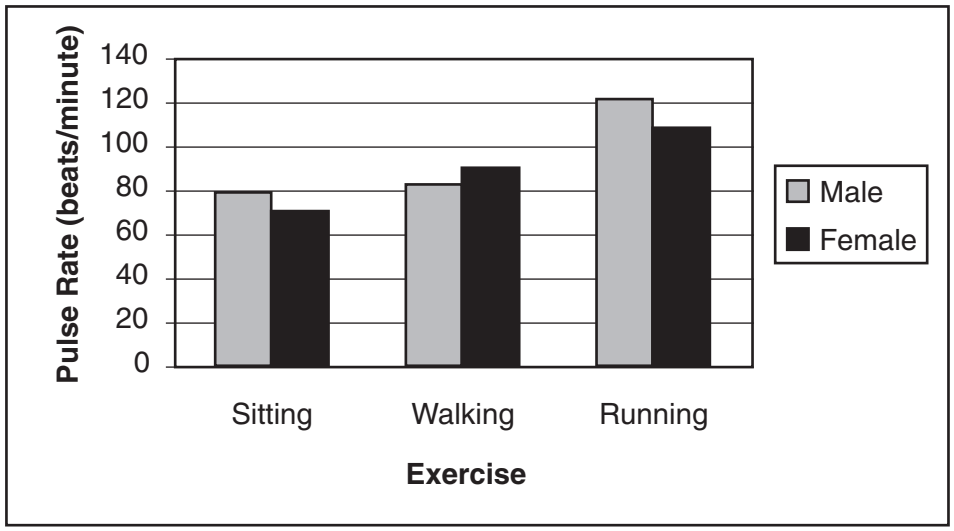
_____

_____ 67

Base your answers to questions 68 and 69 on the information below and on your knowledge of biology.

For Teacher Use Only

In an investigation, 28 students in a class determined their pulse rates after performing each of three different activities. Each activity was performed three times during equal time intervals. The average results are shown in the graph below.



68 Before constructing the graph it would have been most helpful to organize the results of the investigation in

(1) a research plan

(2) an equation

(3) a data table

(4) a generalization

68 ☐

69 Some students concluded that males always have a higher pulse rate than females. Does the graph support this conclusion? Justify your answer. [1]

_____

_____

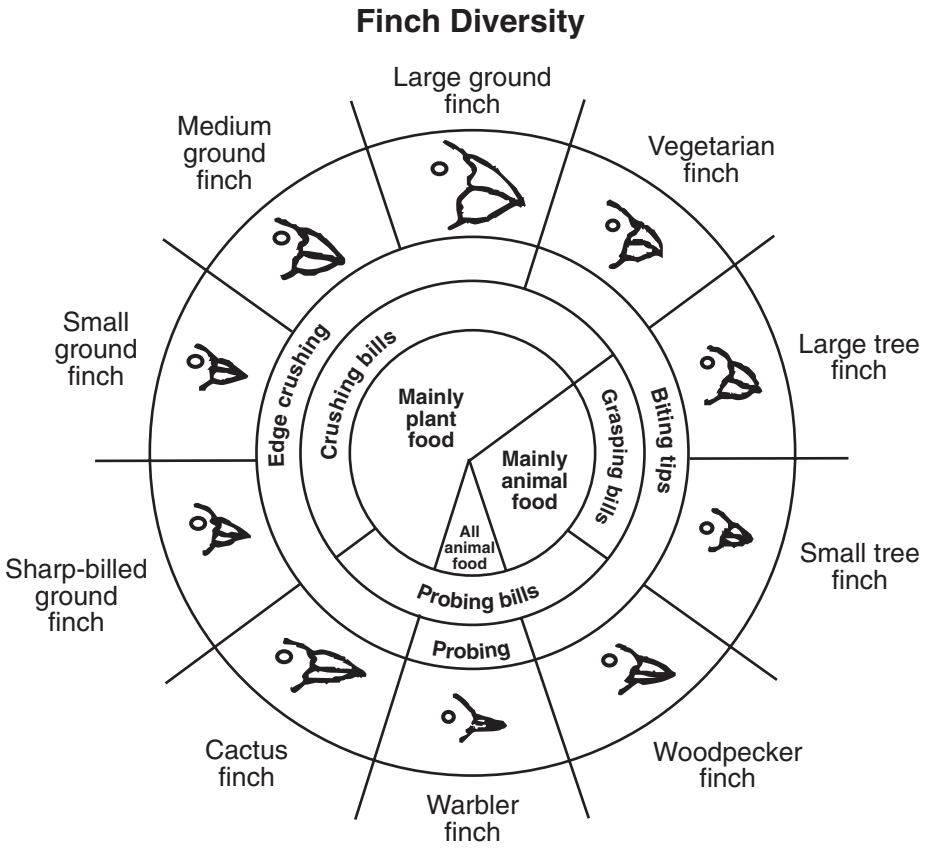
_____

_____

69 ☐

70 The diagram below shows variations in beak sizes and shapes for several birds on the Galapagos Islands.

For Teacher Use Only



Using information provided in the chart, identify *two* birds that would most likely compete for food in times of food shortage and explain why they would compete. [2]

_____ and _____

_____

_____

_____

70 ☐

71 Even though the finches on the various Galapagos Islands require different biotic and abiotic factors for their survival, these finches would most likely be grouped in the same

(1) species, but found in different habitats

(2) kingdom, but found in different ecological niches

(3) species and found in the same biosphere

(4) population, but found in different ecosystems

71 ☐

72 Galapagos finches evolved partly due to

(1) cloning and recombination

(2) migration and selective breeding

(3) mutation and asexual reproduction

(4) variation and competition

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72 ☐

Base your answer to question 73 on the portion of the mRNA codon chart and information below.

AUU, AUC, AUA } **ILE** (Isoleucine) AUG } **MET** (Methionine)	ACU, ACC, ACA, ACG } **THR** (Threonine)	AAU, AAC } **ASN** (Asparagine) AAA, AAG } **LYS** (Lysine)	AGU, AGC } **SER** (Serine) AGA, AGG } **ARG** (Arginine)

Series I represents three mRNA codons. Series II includes a mutation of series I.

Series I AGAUCGAGU

Series II ACAUCGAGU

73 How would the amino acid sequence produced by the mutant strand (series II) compare to the amino acid sequence produced by series I?

(1) The amino acid sequence would be shorter.

(2) One amino acid in the sequence would change.

(3) The amino acid sequence would remain unchanged.

(4) More than one amino acid in the sequence would change.

73 ☐

Tear Here

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

LIVING ENVIRONMENT

Tuesday, August 16, 2005 — 12:30 to 3:30 p.m., only

ANSWER SHEET

Student ..... Sex: ☐ Female ☐ Male

Teacher .....

School ..... Grade .....

Part	Maximum Score	Student's Score
A	30	
B–1	10	
B–2	15	
C	17	
D	13	
Total Raw Score (maximum Raw Score: 85)		
Final Score (from conversion chart)		

Raters' Initials

Rater 1 ..... Rater 2 .....

Record your answers to Part A and Part B–1 on this answer sheet.

Part A

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

Part A Score

Part B–1

31	36 .....
32	37 .....
33	38 .....
34	39 .....
35	40 .....

Part B–1 Score

The declaration below must be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature

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