



**THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK**  
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**TO:** District Superintendents  
Superintendents of Public School Districts  
Principals of Public and Nonpublic Schools  
Administrators of Nonpublic and Charter Schools  
Science Coordinators  
Living Environment Teachers

**FROM:** David Abrams

**SUBJECT:** Part D of the Regents Examination in Living Environment

The Regents Examination in Living Environment is designed to provide a measure of students' attainment of the New York State Learning Standards in Science, as defined by the New York State Learning Standards for Mathematics, Science and Technology and the Living Environment Core Curriculum. The Regents Examination in Living Environment, which is made available to schools three times each year: January, June and August, has contained three parts (A, B, and C), consisting of multiple-choice and open-ended questions.

In September 2002, the Office of State Assessment notified schools that beginning in June 2004 the Regents Examination in Living Environment will include a fourth part, Part D. Part D will consist of multiple-choice and open-ended questions that will be based on at least three of the four required Living Environment laboratory activities disseminated to living environment teachers in September 2002. These laboratory activities are:

- o Laboratory Activity #1—Relationships and Biodiversity
- o Laboratory Activity #2—Making Connections
- o Laboratory Activity #3—The Beaks of Finches
- o Laboratory Activity #5—Diffusion Through a Membrane\*

\* Please note that Laboratory Activity #4 remains under development and has not been released to living environment teachers.

Schools were encouraged to use these laboratory activities during the 2002 – 2003 school year to meet the State mandated laboratory requirement. Section 100.5(b)(7)(iv)(d) states that in order for students to be eligible to take a Regents Examination in Science they must complete 1200 minutes of actual hands-on laboratory experience and complete written reports of those laboratory activities in a format specified by the school. The 1200 minutes of laboratory experience must be in addition to the required classroom instruction time associated with earning one unit of credit in science.

Samples of the types of questions that will be included in Part D of the Regents Examination in Living Environment are enclosed. The total raw score on the Regents Examination in Living Environment will remain at 85. Part D will account for approximately 15% of the total raw score. The test specifications for the entire test along with these sample questions for Part D are available on the Department's website at <http://www.emsc.nysed.gov/ciai/mst/sci.html>.

Further details related to the implementation and test administration of Part D of the Regents Examination in Living Environment will be included in the Information Booklet for Administering and Scoring Regents Examinations in the Sciences that will be sent to administrators prior to the June 2004 test administration period. For more information, please contact the Office of State Assessment at [emscassessinfo@mail.nysed.gov](mailto:emscassessinfo@mail.nysed.gov) or the Office of Curriculum, Instruction and Instructional Technology at [emscurric@mail.nysed.gov](mailto:emscurric@mail.nysed.gov).

Enclosure

# LIVING ENVIRONMENT



w -36required laboratory  
**Living Environment Part D: Sample Questions**

Beginning with the June 2004 administration, the Regents Examination in Living Environment will include a new section, Part D. The questions on Part D will consist of a combination of multiple-choice and open-ended questions related to at least three of the four required living environment laboratory activities and will comprise approximately 15% of the examination.

These sample questions are provided to help teachers and students become familiar with the format

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Base your answers to questions 3 through 6 on the information and data table below and on your knowledge of biology.

A student was told that three different plant species are very closely related. She was provided with a short segment of the same portion of the DNA molecule that coded for enzyme X from each of the three species.

Information Regarding Enzyme X

DNA sequence from plant species A Amino acid sequence for enzyme X coded for by that DNA	CAC Val	GTG His	GAC Leu
DNA sequence from plant species B X			

## Universal Genetic Code Chart

Messenger RNA codons and the amino acids they code for.

SECOND BASE												
		U	C	A	G							
FIRST BASE	U	UUU } UUC } UUA } UUG }	PHE	UCU } UCC } UCA } UCG }	SER	UAU } UAC } UAA } UAG }	TYR	UGU } UGC } UGA } UGG }	CYS	STOP	TRP	U C A G
		CUU } CUC } CUA } CUG }	LEU	CCU } CCC } CCA } CCG }	PRO	CAU } CAC } CAA } CAG }	HIS	GLN	CGU } CGC } CHA } CGG }	ARG	U C A G	
		AUU } AUC } AUA } AUG }	ILE	ACU } ACC } ACA } ACG }	THR	AAU } AAC } AAA } AAG }	ASN	LYS	AGU } AGC } AGA } AGG }	SER	ARG	U C A G
		GUU } GUC } GUA } GUG }	VAL	GCU } GCC } GCA } GCG }	ALA	GAU } GAC } GAA } GAG }	ASP	GLU	GGU } GGC } GGA } GGG }	GLY	U C A G	
											THIRD BASE	

## Sample Items Related to Lab Activity #2: Making Connections

Base your answers to questions 7 through 9 on the information and data table below and on your knowledge of biology.

In the Making Connections laboratory activity, a group of students obtained the following data:

Student Tested	Pulse Rate at Rest	Pulse Rate After Exercising
1	70	97
2	75	106
3	84	120
4	60	91
5	78	122

- 7 Explain how this change in pulse rate is associated with homeostasis in muscle cells. [1]
  - 8 Identify the system of the human body whose functioning is represented by this data. [1]
  - 9 Identify ~~one~~ other system of the human body whose functioning would be expected to be altered as a direct result of the exercise. Describe how this system would most likely be altered. [1]
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Base your answers to question 10 and 11 on the information below and on your knowledge of biology.

A biology class performed an investigation to determine the influence of exercise on pulse rate. During the investigation, one group of twelve students, Group A, counted how many times they could squeeze a clothespin in a 1-minute period, then exercised for 4 minutes, and repeated the clothespin squeeze for an additional 1 minute. Another group of twelve students, Group B, also counted how many times they could squeeze a clothespin in a 1-minute period, but then they rested for 4 minutes, and repeated th


## Sample Items Related to Lab Activity #5: Diffusion Through a Membrane

Base your answers to questions 12 and 13 on the diagrams below and on your knowledge of biology.



Diagram 1: red onion cells

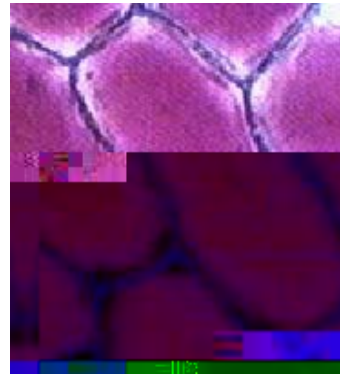


Diagram 2: red onion cells

- 12 Describe how to prepare a wet-mount slide of red onion cells with the cell membrane shrinking away from the cell wall, as shown in diagram 1. The following materials are available: microscope slide, pipettes, cover slips, paper towels, water, salt solution, and red onion sections. [3]
  - 13 List the laboratory procedures to follow that would cause the cells in diagram 1 to resemble the cells in diagram 2. [2]
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- 14 A student places an artificial cell, similar to the one used in the laboratory activity **Diffusion Through a Membrane**, in a beaker containing water. The artificial cell contains starch and sugar. A starch indicator is added to the water in the beaker. Explain how the student will know if the starch is able to diffuse out of the artificial cell. [1]

## Scoring Guide for Sample Part D Questions

- 1 Allow 1 credit for stating one way the student's final chromatogram would be different from a chromatogram that resulted from using the corr

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- 7 Allow 1 credit for explaining how this change in pulse rate is associated with homeostasis in muscle cells. Acceptable responses include but are not limited to:

- x a description of how a wet-mount slide is made
- x an indication that salt solution must be used

Acceptable 3-credit responses include, but are not limited to:

- Break the onion piece and peel off the skin. Put it on a slide and add water. Add a coverslip. Place a piece of paper towel on the edge of the coverslip and add salt solution to the other side. After adding a