

Science and Technology

Secondary Cycle 2, Year 1
555-306
Mid-Year Evaluation Task

January 2010

A Hospital Stay



TEACHER ANSWER BOOKLET



Commission scolaire English-Montréal
English Montreal School Board

QUESTION 1

a)

Any question that is able to eliminate an illness based on its symptoms or conditions under which it occurs is acceptable.

Competency 2 - Formulation of appropriate questions

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b)

Students must explain that the questions that they formulated served to eliminate illnesses based on their symptoms or conditions under which they occurred.

Competency 3 - Accurate interpretation of scientific and technological messages

1	2	3	4	5
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c)

Student should find that the patient is suffering from either Inherited mitochondrial disease or a heart attack. An explanation of the student's diagnosis should include that these two illnesses share general pain in various locations of the body and difficulty breathing, while other illnesses present with diarrhea or fever.

Competency 3 – Accurate interpretation of scientific and technological messages

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Competency 3 – Appropriate production & sharing of scientific & technological messages

1	2	3	4	5
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QUESTION 2

a)

The athlete's diet has a deficiency in carbohydrates, in order to sustain his daily energy requirements.

There are not enough servings of breads and Cereals (4 or 5 servings) necessary to supply body/muscles with carbohydrates/starches to provide energy.

There are not enough servings of fruits and vegetables (recommended 5-10 portions) necessary to regulate metabolism with vitamins, minerals, dietary fiber and water.

Competency 2 - Appropriate use of scientific and technological concepts, laws, models and theories

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Competency 3 – Accurate interpretation of scientific and technological messages

1	2	3	4	5
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b)

Opinions may vary. Student must support his/her answer

If YES, student suggests increasing protein intake because the athlete lacks protein in his present diet. Protein is needed during training to help build and repair muscle tissue, which will improve strength and performance.

If NO, student suggests not increasing protein intake because athlete has sufficient protein intake and excess protein intake may lead to weight gain if extra protein is not metabolized.

Competency 2 - Appropriate use of scientific and technological concepts, laws, models and theories

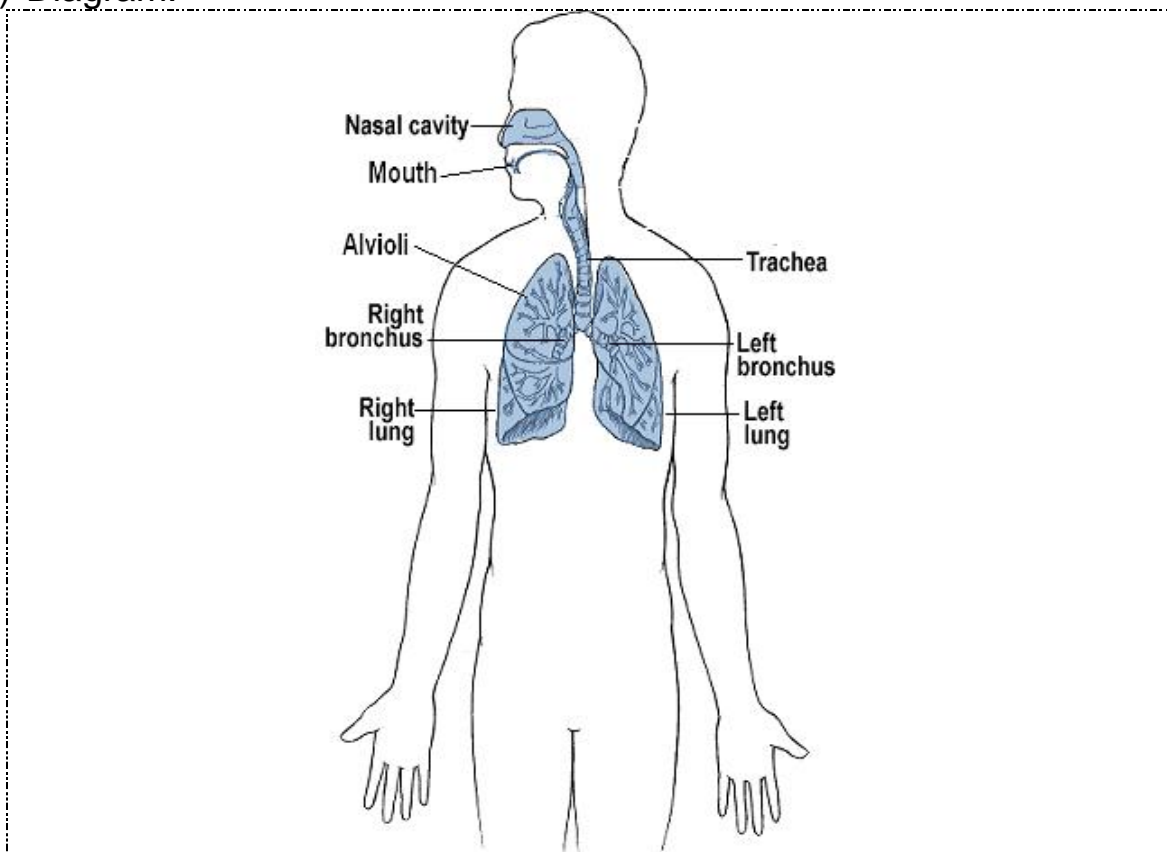
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Competency 3 - Accurate interpretation of scientific and technological messages

1	2	3	4	5
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QUESTION 3

a) Diagram:



The diaphragm contracts and moves down. Intercostal muscles contract moving the ribs up and out. The volume of the lungs increases. Air is inhaled through the mouth and/or nose. Air travels down trachea into bronchi, then into bronchioles and finally inside alveoli. Oxygen diffuses into the blood stream through alveoli.

Carbon Dioxide diffuses into the lungs through the alveoli out from the blood stream. The diaphragm relaxes and moves up. Intercostal muscles relax, moving the ribs in and down. The volume of the lungs decreases. Carbon Dioxide is exhaled out through mouth and/or nose.

Competency 2 - Appropriate use of scientific and technological concepts, laws, models and theories

1	2	3	4	5
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Competency 3 – Use of appropriate scientific and technological terminology, rules and conventions

1	2	3	4	5
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b)

The Heimlich Manoeuvre applies an upward force with fists under the ribcage squeezing the lungs, which decreases the volume of the lungs and forces air out through the trachea dislodging and expelling the object out through the mouth.

Competency 2 – Relevant explanations or solutions

1	2	3	4	5
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Competency 3 – Use of appropriate scientific and technological terminology, rules and conventions

1	2	3	4	5
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QUESTION 4

a)

Cloning is similar to mitosis in that the donor cell contains the same DNA as the daughter cells. Each cell division from the instant the initial cloned cell is created is a mitotic division.

Competency 2 – Appropriate use of scientific and technological concepts, laws, models and theories

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Competency 2 – Relevant explanations, solutions or actions

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b)

Answers against cloning should contain at least one of the following:

- *Against therapeutic cloning may argue that all life is valuable and that the potential fetus is entitled to the same rights of any human.*
- *Against reproductive cloning may include the argument that individuality may be compromised if there are multiple copies of people.*
- *The answer may also include an argument that the world cannot support an increase in population and that the world is already overpopulated.*

Answers in favour of cloning should contain at least one of the following:

- *In favour of therapeutic cloning may argue that cloned cells are never implanted and thus cannot be considered alive.*
- *The answer may also include an argument that a great number of lives can be saved by eliminating our dependence on organ donation.*
- *In favour of reproductive cloning may argue that human loss is tragic and that reproductive cloning may allow humans to reconnect with people that have died. (Keeping in mind that this argument assumes that human behaviour is genetic and has no dependence on environmental stimuli.)*

Competency 2 – Suitable justification of explanations, solutions or actions

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Competency 2 – Appropriate production and sharing of scientific and technological messages

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