Applied Science and Technology

Secondary Cycle 2, Year 1
557-306
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

1	2	3	4	5

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

c)

Students should find that the patient is suffering from either <u>Inherited mitochondrial disease</u> or a <u>heart attack</u>. An explanation of the students' 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

1	2	3	4	5

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

1	2	3	4	5

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 Grain Products necessary to supply body/muscles with carbohydrates/starches to provide energy.

There are not enough servings of Vegetables and Fruits necessary to regulate metabolism (with vitamins, minerals, dietary fiber and water).

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

1	2	3	4	5

Competency 3 – Accurate interpretation of scientific and technological messages

1	2	3	4	5

b)

Opinions may vary. Student must support his/her answer

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.

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

1	2	3	4	5

Competency 3 - Accurate interpretation of scientific and technological messages

1	2	3	4	5

QUESTION 3

a)

The power source to the wire:

- *The link can be described as <u>permanent</u> if power source is a part of the whole machine with parts that are not meant to be exchanged. The link can be described as <u>removable</u> if the power source is described as a replaceable battery.*
- *The link must be <u>fixed</u> to maintain the current in the circuit.*
- *The link can be described as <u>direct</u> to conserve power loss; the link can be described as <u>indirect</u> as long as it is connected through a secondary direct link.*
- *The link can be described as either <u>rigid</u> if the link is described as needing to be solid as movement would break the circuit or <u>elastic</u> like a spring in order to better handle and movement that might otherwise break the circuit.*

The paddle and the patient's chest:

- *The link must be <u>removable and moveable; indirect and elastic</u> because the paddles are temporary and are able to slide across the application gel, indirect because of the gel applied and elastic because the victims' skin is elastic.*

Competency 2 – Relevant explanations or solutions

1	2	3	4	5

Competency 3 – Use of appropriate scientific and technological terminology, rules and conventions

1	2	3	4	5

b)

The victim's clothing:

The victims clothing would act as an insulator which is why the paddles must be applied to bare skin.

The defibrillator paddles:

The defibrillator paddles are electrical conductors but the handles are insulators in order to protect the medical professional using the device.

The application gel:

The application gel can be described as both an insulator and a conductor; it insulates the skin against an electrical burn but must also conduct electricity in order to complete the circuit.

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

1	2	3	4	5

Competency 3 - Accurate interpretation of scientific and technological messages

1	2	3	4	5

QUESTION 4

a)

The <u>attenuated</u> is prepared from live bacteria or viruses where as <u>inactivated</u> are prepared from bacteria or viruses that have been killed.

The student could recommend that the patient get the <u>attenuated</u> vaccination if he/ she mentions that:

- *It takes about one week to take effect.*
- *Booster shots are needed every five years where the inactivated vaccine requires a booster every two years when traveling.*
- *Does not cause swelling pain or redness at the injection site.*

The student could recommend that the patient get <u>inactivated</u> the vaccination if he/she mentions that:

- *It cannot be given to children under six years old (if they are above two years old).*
- *Is given in one dose rather than four.*
- *One dose provides protection where the live vaccination requires a booster shot.*
- *Cannot be taken within 24 hours of taking antibiotics.*
- *Cannot be taken if the immune system is in a weakened state.*
- *Cannot contract the virus the vaccine is meant to protect against.*

Competency 2 – Relevant explanations, solutions or actions

1	2	3	4	5

Competency 3 – Accurate interpretation of scientific and technological messages

1	2	3	4	5

b)
There are micro organisms that can get into certain foods and cause the food to break down and cause overgrowth of harmful bacteria

Pasteurization is the process by which we bring a solution to a high temperature for a short period of time (approximately 15 sec). We then rapidly cool the solution so as to destroy most if not all of the harmful bacteria in the solution.

This process stops the proliferation of micro organisms which prevents the solution from spoiling prematurely.

If milk is not pasteurizes it may contain many strains of harmful bacteria such as ecoli, which can cause vomiting and diarrhea.

Competency 2 – Suitable justification of explanations, solutions or actions

1	2	3	4	5

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

1	2	3	4	5