



Preparation for the National Grade Six Assessment

Guide #3 | Science Free Response

Who are you?

If you are in grade 5 or 6 and will be taking the next National Grade Six Assessment, then this packet is for you. This packet has past exam questions which have been solved with explanations to help you learn how to solve similar questions. Completing this packet will increase your chances of passing the exam with the highest possible score.

Who are we?

This packet was created by the Caribbean Education Project, a team of students and teachers from universities in the United States and the Caribbean. Our goal is to help you with your preparations for the next exam and to help you better understand each topic. We want you to achieve your best score on the exam. If you are not clear on concepts after reading the material, ask your parent or guardian for help. If they cannot help, ask another family member or a friend. If no one can help you, then ask your parents to send us a message on Facebook or WhatsApp or e-mail us.

- To reach us through Facebook, go on Facebook and search for “Shawn Shivdat.” Then send me a message using Facebook Messenger.
- To reach us by WhatsApp, save this number “Shawn Shivdat, +1 404-406-9638” and message me on WhatsApp.
- To reach us by e-mail, send a message to this e-mail address: info@caribed.org.

Keep in contact

If you are using this packet to prepare, we would like to hear from you. Please keep in touch with us so we can help you with any questions you may have. We can also provide updates when future materials are posted. Send us your name and contact information through WhatsApp, Facebook Messenger, or e-mail (listed above), or send a picture of this sheet filled out through WhatsApp, Facebook Messenger, or e-mail.

Name: _____

Parent’s phone number: _____

Parent’s e-mail address: _____

**PLEASE SHARE THIS GUIDE WITH OTHERS WHO MAY BENEFIT
FROM USING IT.**



How to use this guide:

1. The following pages have a total of 6 past exam questions. Try to answer these questions in the prescribed 55 minutes. If you are not able to answer a question, skip it and go on to the next question. When you are done answering all the questions, you can return to the ones you are having trouble with during your remaining time.
2. It is okay if you were not able to answer all the questions correctly on your first try. Keep practicing the questions, and you will get better. Soon, you will be able to answer all the questions in the 55 minutes. (**TIP:** Practice makes you perfect, so keep practicing.)
3. Answers to all the questions are on the pages immediately after the practice test. When you finish answering the questions, compare your answers to the answers on these pages.
4. Mark the questions which you got wrong.
5. Read our guide to solving each question. Even for questions you got correct, read the explanations we provided because you will likely learn something from them. Our explanations provide valuable information which can provide you with additional skills to solve other problems.
6. Always read the instructions for each question carefully before attempting to answer. Also, read the question itself carefully and pay attention to what the question is asking you to do before attempting to answer it.
7. We provide the answers to all the questions in the practice exams to help you. Do not look at the answers before you attempt the questions. If you look at the answers before, you will not learn a lot from this packet. So, do we have a deal? Okay, I heard you say yes.



**MINISTRY OF EDUCATION
NATIONAL GRADE SIX ASSESSMENT
PRACTICE TEST
SCIENCE
PAPER 2
2015**

Reading Time: 10 minutes

Writing Time: 45 minutes

READ THESE INSTRUCTIONS CAREFULLY BEFORE YOU ATTEMPT TO ANSWER THE QUESTIONS.

1. Write your candidate number clearly on each page.
2. This paper contains **six** questions. You are required to answer **question 1** and **three others**. Each question is worth 5 marks.

Note: You must answer **only four** questions.

Be sure to answer fully the **four** questions.

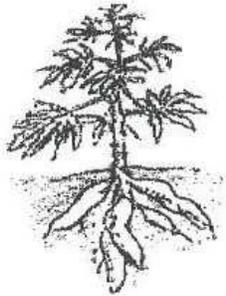
3. Write the answer for each question in the space provided in this booklet.
4. Answers **must** be written in complete sentences.
5. Ensure that your handwriting is clear.
6. If you have to erase, do so cleanly.
7. Look over your work when you have finished.
8. **Do not** take away **any** part of this booklet.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

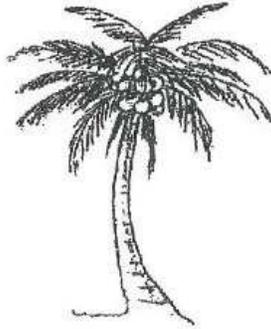


YOU MUST ANSWER THIS QUESTION AND THREE OTHERS.

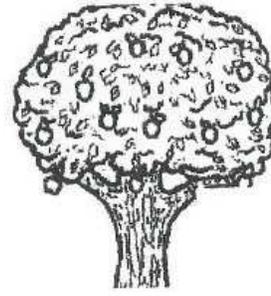
Study the diagrams of the various plants below, then answer **question 1**.



Cassava



Coconut



Mango

1. (a) Name **ONE** plant that is grown from stem cuttings.

_____ (1 mark)

- (b) Name the type of root system found in the sugar cane plant.

_____ (1 mark)

- (c) Which plant is grown **mostly** in the interior regions and is used as a **main** food by the Amerindians?

_____ (1 mark)

- (d) (i) State **one** reason for the mango plant being called a dicotyledonous plant.

_____ (1 mark)

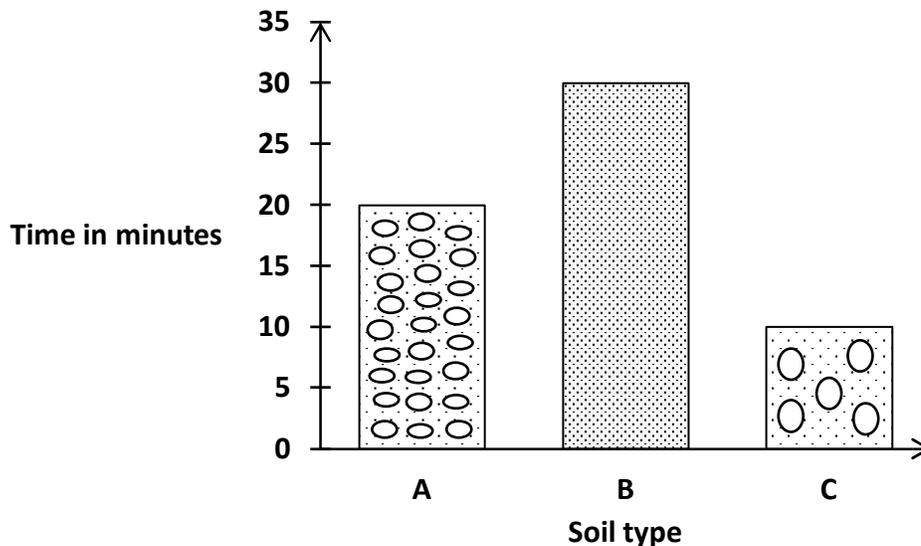
- (ii) State another characteristic of dicotyledonous plants.

_____ (1 mark)

Total 5 marks



The graph below shows the time taken for water to pass through different types of soil. Study the graph carefully, then answer **question 2**.



2. (a) Which soil type is mostly like clay?

_____ (1 mark)

- (b) How long did it take for water to pass through soil type A?

_____ (1 mark)

- (c) Which soil type allows water to pass through the fastest?

_____ (1 mark)

- (d) (i) Which soil type is **best** for planting sugar cane?

_____ (1 mark)

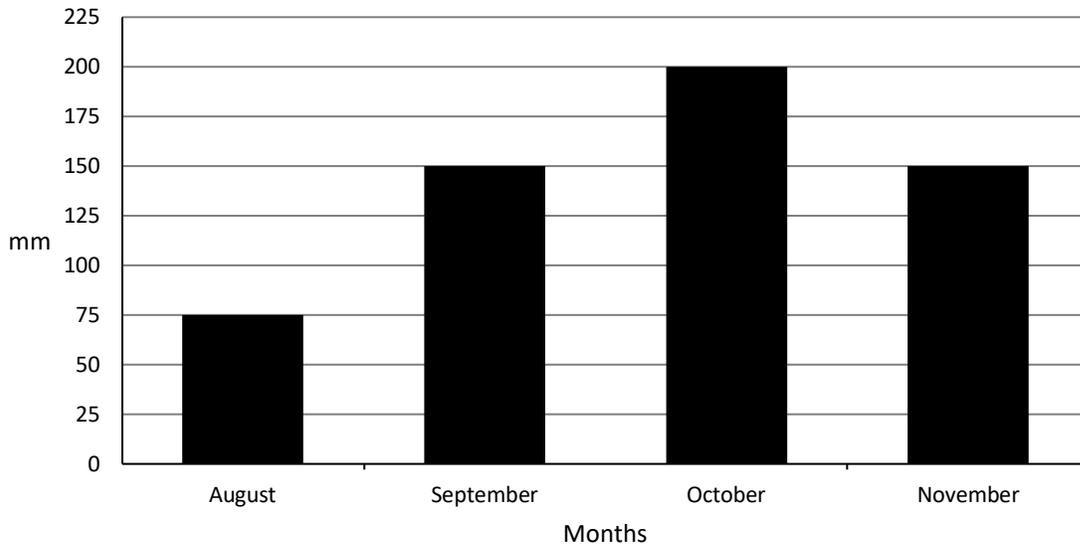
- (ii) State **one** reason for your answer in (d)(i).

_____ (1 mark)

Total 5 marks



Study the graph below, then answer **question 3**.



Rainfall pattern in Guyana
(average rainfall in mm per month)

3. (a) Name the instrument used to measure rainfall.

_____ (1 mark)

- (b) Which two months have the same amount of rainfall?

_____ (1 mark)

- (c) Why would August be **most suitable** for outdoor sports?

_____ (1 mark)

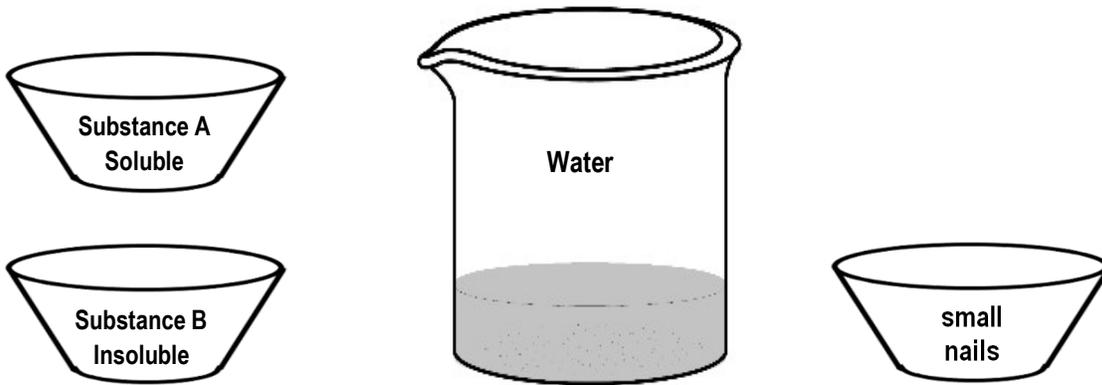
- (d) Calculate the difference in rainfall between the month with the highest and the month with the lowest recorded rainfall.

_____ (2 marks)

Total 5 marks



Study the diagrams below, then answer **question 4**.



4. (a) Give **one** example of substance **A**.

_____ (1 mark)

(b) Give **one** example of substance **B**.

_____ (1 mark)

(c) What will happen when these two substances are added to the water?

Substance **A** _____ (1 mark)

Substance **B** _____ (1 mark)

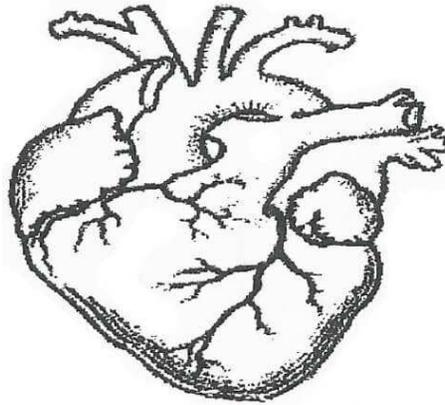
(d) Name the method used to separate the small nails from the mixture.

_____ (1 mark)

Total 5 marks



Study the diagram below, then answer **question 5**.



5. (a) Which body system is the organ associated with?

(1 mark)

(b) State the **main** function of this organ.

(1 mark)

(c) How can a diet filled with fatty foods affect the organ shown in the diagram?

(1 mark)

(d) How does this organ work during physical exercise?

(1 mark)

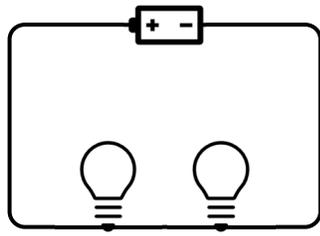
(e) How does this organ help in the process of respiration?

(1 mark)

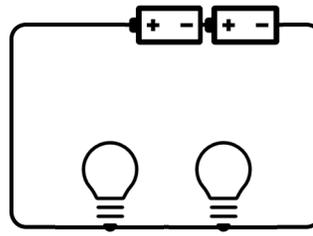
Total 5 marks



Study circuits below carefully, then answer **question 6**.



Circuit A



Circuit B

6. (a) Which part supplies the power for the circuit to work?

_____ (1 mark)

- (b) In which circuit would the bulbs light brighter?

_____ (1 mark)

- (c) Which part of a simple circuit is left out?

_____ (1 mark)

- (d) Energy stored in the battery/cell is converted by the bulbs to two other forms of energy. What are the **two** other forms of energy?

_____ (2 marks)

Total 5 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS UP, CHECK YOUR WORK ON THIS ASSESSMENT



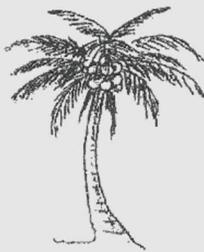
ANSWER EXPLANATIONS

QUESTION 1 ANSWER EXPLANATION

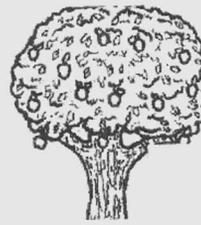
Study the diagrams of the various plants below, then answer **question 1**.



Cassava



Coconut



Mango

- (a) Name **ONE** plant that is grown from stem cuttings. (1 mark)
- (b) Name the type of root system found in the sugar cane plant. (1 mark)
- (c) Which plant is grown **mostly** in the interior regions and is used as a **main** food by the Amerindians? (1 mark)
- (d) (i) State **one** reason for the mango plant being called a dicotyledonous plant. (1 mark)
- (ii) State another characteristic of dicotyledonous plants. (1 mark)

Answer for part (a):

- (a) Cassava plants are grown from stem cuttings.

Answer Explanation

Not all plants come from seeds. Some can be grown from leaves, some can be grown from roots, and some can be grown from stems. Examples of plants that can be grown from stem cuttings are cassava, sugar cane, ginger, eddo, and onions. Coconut trees grow from seeds which are the coconuts themselves! Mango trees also grow from seeds, which are inside the mangoes. So, cassava is the correct answer.

Answer for part (b):

- (b) A fibrous root system is found in the sugar cane plant.

Answer Explanation

There are two types of root systems: tap root systems and fibrous root systems. In **tap root systems**, a single wide root penetrates deep into the ground and smaller roots branch from it. In **fibrous root systems**, many smaller roots branch closer to the surface of the ground. Often, plants that live in ecosystems where water and nutrients are deep inside the ground have tap root systems, while plants that live in ecosystems where water and nutrients are closer to the surface of the ground have fibrous root systems. Sugar cane plants have fibrous root systems because they often live in ecosystems where more nutrients are closer to the surface.

Answer for part (c):

- (c) The cassava plant is grown mostly in the interior regions and is used as a main food by the Amerindians.

Answer Explanation

The Amerindians lived in the interior regions, where there is well-drained soil and moderate rainfall. A plant that grows in this region must be able to survive where soils are wet but well drained, and root plants thrive in these soil conditions. Cassava is a root vegetable and is the correct answer.

Example Answers for part (d)(i) and (ii):

- (d) Many different answers can be accepted, so any of the following characteristics can be considered correct: mangoes are considered dicotyledonous plants because they have two cotyledons, netlike veins, vascular bundles arranged in a ring, a taproot, and floral parts in multiples of four or five.

Answer Explanation

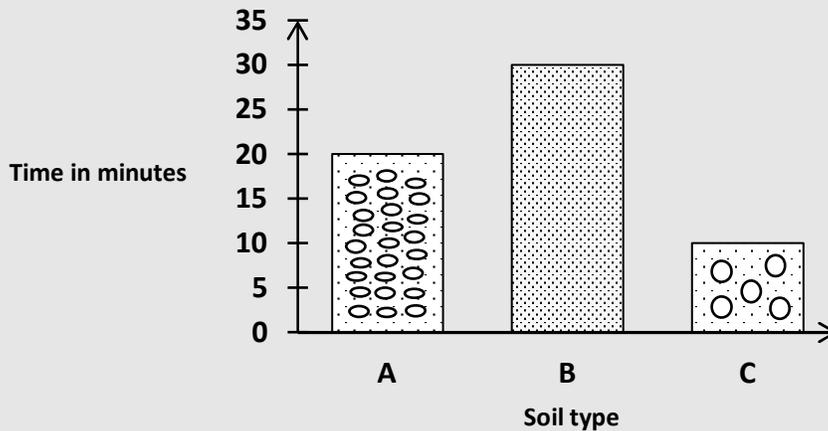
Dicotyledonous plants have many characteristics that differ from monocotyledonous plants. **Dicotyledonous plants** have two cotyledons, netlike veins, vascular bundles arranged in a ring, a taproot, and floral parts in multiples of four or five.

Monocotyledonous plants have one cotyledon, parallel veins, vascular bundles in a complex arrangement, a fibrous root system, and floral parts in multiples of three.



QUESTION 2 ANSWER EXPLANATION

The graph below shows the time taken for water to pass through different types of soil. Study the graph carefully, then answer question 2.



- (a) Which soil type is mostly like clay? (1 mark)
- (b) How long did it take for water to pass through soil type A? (1 mark)
- (c) Which soil type allows water to pass through the fastest? (1 mark)
- (d) (i) Which soil type is **best** for planting sugar cane? (1 mark)
(ii) State **one** reason for your answer in (d)(i). (1 mark)

Answer for part (a):

- (a) Soil type B is most likely clay.

Answer Explanation

The particles in clay are small, fine, and stick easily together. As a result, there are tiny spaces for water, but the water cannot flow through the clay, preventing drainage. So, clay will most likely take the longest time for water to drain. Soil type B takes the longest time to drain and is the correct answer.

Answer for part (b):

- (b) It took 20 minutes for water to pass through soil type A.

Answer Explanation

In order to read this bar graph, look at the bar for soil type A. Soil type A reaches 20 on the y-axis. In order to find the units for this number, look at the title of the y-axis, which is time in minutes. Therefore, the time taken for water to pass through soil type A is 20 minutes.

Answer for part (c):

- (c) Water passes through soil type C the fastest.

Answer Explanation

In this bar graph, the length of the bar indicates the time taken for the water to pass through. The longest bar indicates the slowest time taken for water to pass through, while the shortest bar indicates the fastest time taken for water to pass through. The soil type with the shortest bar and the fastest time for water to pass through is soil type C.

Answer for part (d)(i):

- (d) Soil type C is best for planting sugar cane.

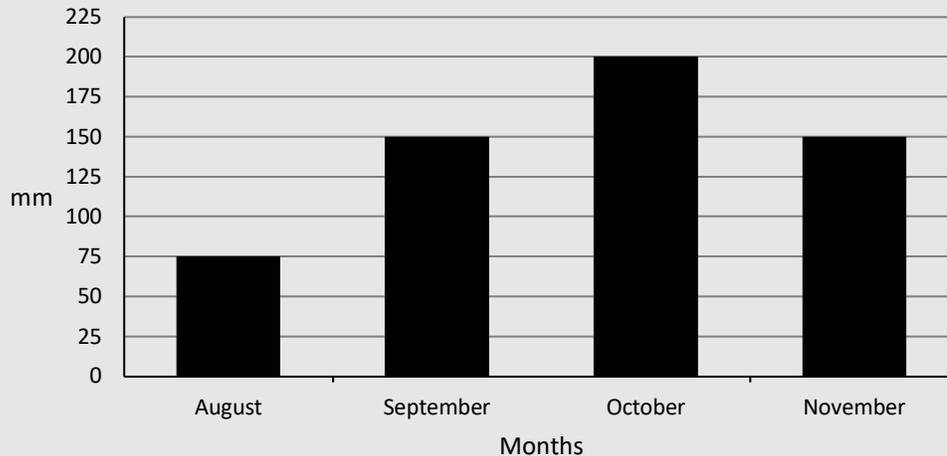
Example Answers and Explanation for part (d)(ii)

Sugar cane grows best in well-drained soil types. If a soil is well-drained, the water must be able to quickly pass through the soil. Soil type C allows for the water to be drained from the soil the fastest, which will allow for the well-drained soil that the sugar cane plant needs to grow.



QUESTION 3 ANSWER EXPLANATION

Study the graph below, then answer question 3.



Rainfall pattern in Guyana
(average rainfall in mm per month)

- (a) Name the instrument used to measure rainfall. (1 mark)
- (b) Which two months have the same amount of rainfall? (1 mark)
- (c) Why would August be **most suitable** for outdoor sports? (1 mark)
- (d) Calculate the difference in rainfall between the month with the highest and the month with the lowest recorded rainfall. (2 marks)

Answer for part (a):

(a) A rain gauge is the instrument that measures rainfall.

Answer Explanation

A **rain gauge** is a circular funnel that collects rain, and it can measure the amount of rain that has fallen over a specific time period.

Answer for part (b):

(b) September and November have the same amount of rainfall.

Answer Explanation

If two months have the same amount of rainfall, the lengths of the bars will be the same. August only received 75 mm of rain, while October received 200 mm of rain. However, the bars of both September and November show 150 mm of rain was received in each month and is the correct answer.

Answer for part (c):

(c) August would be the most suitable month for outdoor sports because it has the least amount of rain.

Answer Explanation

In the graph, August has the shortest bar on the graph and therefore has the least amount of rainfall. Because it has the least amount of rainfall, the rain will interfere the least with the outdoor sports.

Answer for part (d):

(d) The difference in rainfall between the months with the highest and lowest rainfalls is 125 mm.

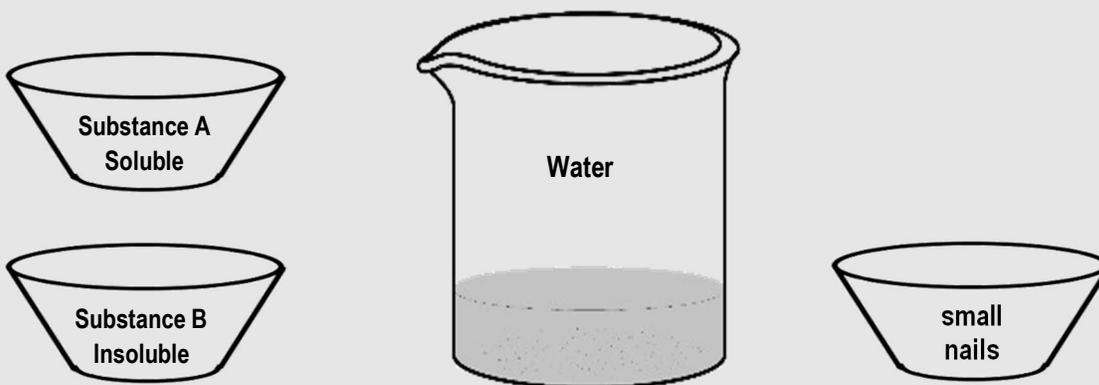
Answer Explanation

October received the highest rainfall of 200 mm, and August received the lowest rainfall of 75 mm. $200 - 75 = 125$, which is the correct answer.



QUESTION 4 ANSWER EXPLANATION

Study the diagrams below, then answer question 4.



- (a) Give **one** example of substance **A**. (1 mark)
- (b) Give **one** example of substance **B**. (1 mark)
- (c) What will happen when substance **A** is added to the water? (1 mark)
- (c) What will happen when substance **B** is added to the water? (1 mark)
- (d) Name the method used to separate the small nails from the mixture. (1 mark)

Example Answer for part (a):

- (a) Salt

Answer Explanation

A **soluble** substance is a substance that can be dissolved in water. There are many substances that can be dissolved in water, including salt and sugar. Any of these soluble substances can be used as the answer.

Example Answer for part (b):

- (b) oil

Answer Explanation

An **insoluble** substance is a substance that cannot be dissolved in water. There are many substances that cannot be dissolved in water, including oil, wax, metals, and sand. Any of these insoluble substances can be used as the answer.

Example Answer for part (c):

- (c) Substance A will dissolve in water, while Substance B will not dissolve in water.

Answer Explanation

A **soluble** substance is a substance that can be dissolved in water, so Substance A will dissolve in water. An **insoluble** substance is a substance that cannot be dissolved in water, so Substance B will not dissolve in water.

Answer for part (d):

- (d) Magnetism could be used to separate the small nails from the mixture.

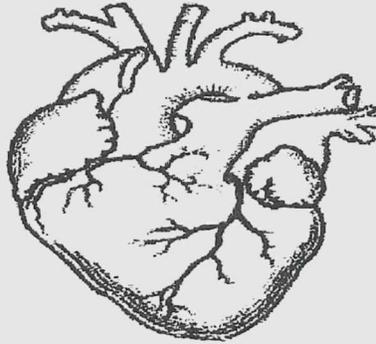
Answer Explanation

Magnetism is the attractive force between a magnet and objects that have a magnetic material inside them. Most nails have magnetic properties, allowing them to be separated from the mixture using a magnet.



QUESTION 5 ANSWER EXPLANATION

Study the diagram below, then answer **question 5**.



- (a) Which body system is the organ associated with? (1 mark)
- (b) State the **main** function of this organ. (1 mark)
- (c) How can a diet filled with fatty foods affect the organ shown in the diagram? (1 mark)
- (d) How does this organ work during physical exercise? (1 mark)
- (e) How does this organ help in the process of respiration? (1 mark)

Answer for part (a):

- (a) This organ is part of the circulatory system.

Answer Explanation

The diagram shows a picture of a heart. The heart is part of the circulatory system.

Example Answer for part (b):

- (b) The heart pumps blood throughout the body, supplying oxygen and nutrients to tissues and removing carbon dioxide and other wastes.

Answer Explanation

The **circulatory system** is made of blood vessels that carry blood away from and towards the heart. The **heart** pumps blood throughout the body, supplying oxygen and nutrients to tissues and removing carbon dioxide and other wastes.

Example Answer for part (c):

- (c) Fatty foods can cause the heart to slow or stop pumping blood.

Answer Explanation

Fatty foods cause narrowing of the arteries, and this decreases the blood flow to the heart. This will decrease the ability of the heart to pump blood and can increase your risk of heart attack or stroke.

Example Answer for part (d):

- (d) The heart pumps blood faster during physical exercise.

Answer Explanation

Your **heart rate**, which is the rate at which your heart pumps blood, increases because your body needs more oxygen and nutrients during physical exercise.

Example Answer for part (e)

- (e) Carbon dioxide will be exhaled during respiration, while oxygen will be inhaled during respiration. The heart supplies oxygen to the tissues and removes carbon dioxide from the tissues, which will then be exhaled again.

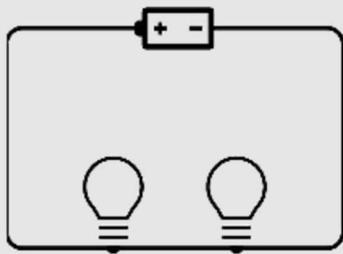
Answer Explanation

Respiration is the process through which oxygen is inhaled and carbon dioxide is exhaled. The body needs oxygen to function, and the oxygen is transported throughout the body with the help of the heart. The **circulatory system** removes carbon dioxide to be exhaled by the body and inhales more oxygen that is needed for the body.

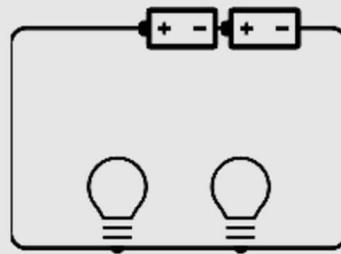


QUESTION 6 ANSWER EXPLANATION

Study circuits below carefully, then answer **question 6**.



Circuit A



Circuit B

- (a) Which part supplies the power for the circuit to work? (1 mark)
- (b) In which circuit would the bulbs light brighter? (1 mark)
- (c) Which part of a simple circuit is left out? (1 mark)
- (d) Energy stored in the battery/cell is converted by the bulbs to two other forms of energy. What are the **two** other forms of energy? (2 marks)

Example Answer for part (a):

- (a) The battery supplies the power for the circuit to work.

Answer Explanation

A battery converts chemical energy into electricity to be used as a source of power.

Answer for part (b):

- (b) Circuit B will light brighter.

Answer Explanation

Circuit B will have brighter lights because there are two batteries; because of this, there is more power to light the two bulbs. Circuit A has only one battery, so there is less power to light the two bulbs.

Answer for part (c):

- (c) The switch has been left out.

Answer Explanation

The four parts of a simple circuit are the energy source (battery), a conductor (wire), an electrical device (lightbulb), and a switch. There is no switch in the diagram.

Answer for part (d):

- (d) Energy stored in the battery is converted into electrical energy and light energy.

Answer Explanation

The energy in the battery is stored as chemical energy. This chemical energy is converted to electrical energy, and this electrical energy allows the lightbulbs to light up. The lightbulbs lighting up produces light energy.

