



Preparation for the National Grade Six Assessment

Guide #1 | 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
2020**

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.

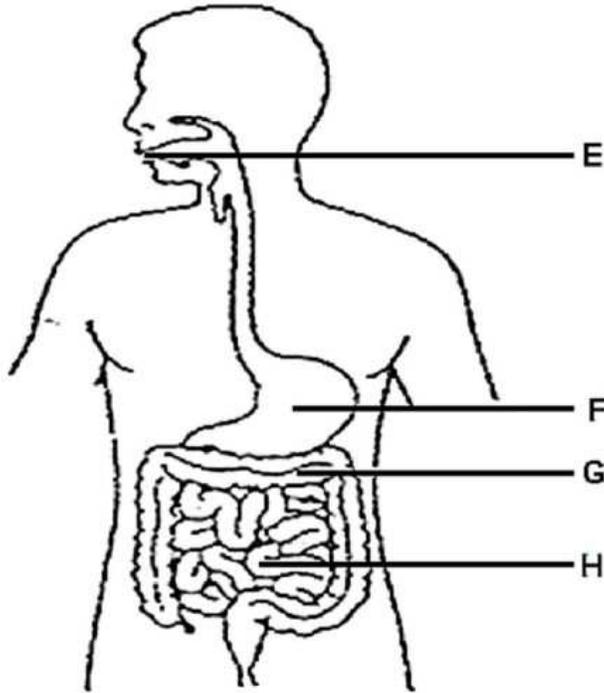
3. Write the answer for each question in the space provided in this booklet.
4. Answers **must** be written in complete sentences.
5. Ensure that your handwriting is clear.
6. If you have to erase, do so cleanly.
7. Look over your work when you have finished.
8. **Do not** take away **any** part of this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

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



YOU MUST ANSWER THIS QUESTION AND THREE OTHERS.

The diagram below shows one of the human body systems. Study it carefully and answer the questions that follow.



1. (a) In which of the labelled parts on the diagram above does digestion end?

(1 mark)

- (b) Identify the parts labelled E and G of the digestive system.

E _____

G _____

(2 marks)



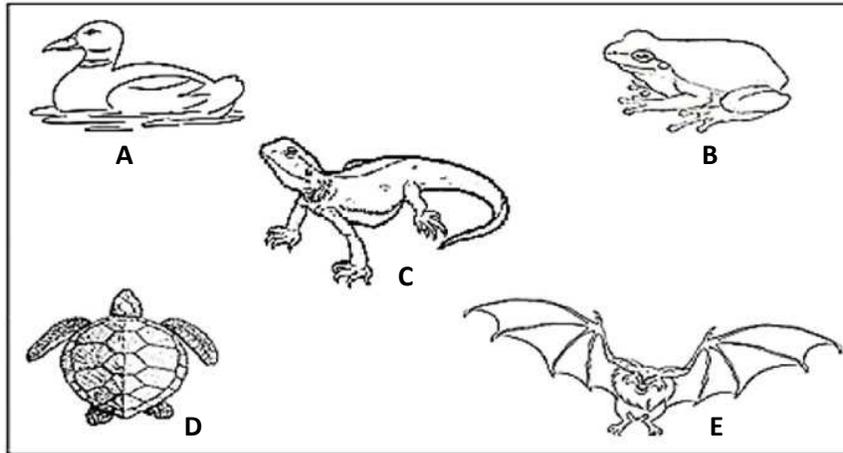
- (c) Briefly describe **two** activities that occur in the part labelled H during the process of digestion.

(2 marks)

Total 5 marks



Study the diagram of the animals below and answer the question that follow.



2. (a) How many classes of vertebrates are shown in the picture above?

(1 mark)

(b) Which two animals belong to the same class of vertebrates?

(2 marks)

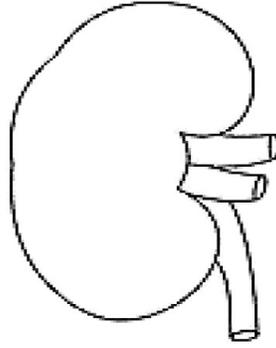
(c) Describe **two** ways in which animal **C** is adapted to live in its habitat.

(2 marks)

Total 5 marks



The diagram below shows one of the human body organs. Study it carefully and answer the questions that follow.



3. (a) To which human body system does the organ belong?

(1 mark)

(b) Name **one** other part that belongs to the body system named in (a) above.

(1 mark)

(c) Write the main function of the organ shown above.

(1 mark)

(d) If the organ shown above gets damaged, list **two** effects it would have on the human body.

(2 marks)

Total 5 marks



Study the diagram of the plants below and answer the questions that follow.



Cassava



Coconut



Mango

4. (a) (i) Which of the three plants is grown from stem cuttings?

(1 mark)

- (ii) Name the plant that has seeds which are dispersed by animals.

(1 mark)

- (b) Identify the type of root system found in the coconut plant.

(1 mark)

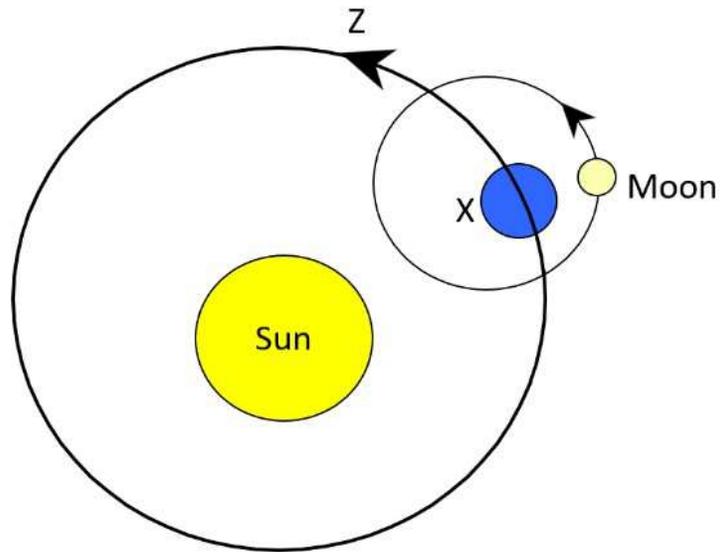
- (c) Briefly describe **two** similarities between the cassava plant and the mango plant.

(2 marks)

Total 5 marks



The diagram below shows the movement of the Earth around the sun. Study it carefully and answer the questions that follow.



5. (a) (i) Name the object labelled X.

(1 mark)

- (ii) The movement of the Earth shown at Z is called

(1 mark)

- (b) Which of the above is a natural satellite?

(1 mark)



(c) (i) Write **one** use of artificial satellites

(1 mark)

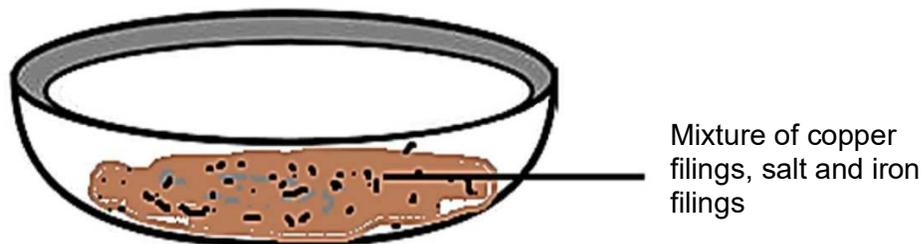
(ii) Describe **one** effect that a damaged artificial satellite can have on our daily lives.

(1 mark)

Total 5 marks



The diagram below shows a mixture. Study it carefully and answer the questions that follow.



6. (a) Name **one** metal contained in the mixture.

(1 mark)

- (b) Which of the substances in the mixture is soluble in water?

(1 mark)

- (c) Identify the **best** method by which the following substances in the mixture can be separated:

Iron filings _____ (1 mark)

Copper filings _____ (1 mark)

Salt _____ (1 mark)

Total 5 marks

END OF TEST

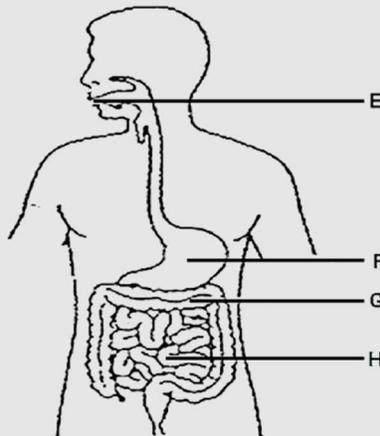
IF YOU FINISH BEFORE TIME IS UP, CHECK YOUR WORK ON THIS ASSESSMENT



ANSWER EXPLANATIONS

QUESTION 1 ANSWER EXPLANATION

The diagram below shows one of the human body systems. Study it carefully and answer the questions that follow.



- (a) In which of the labelled parts on the diagram above does digestion end? (1 mark)
- (b) Identify the parts labelled E and G of the digestive system. (2 marks)
- (c) Briefly describe **two** activities that occur in the part labelled H during the process of digestion. (2 marks)

Answer for part (a):

(a) H

Answer Explanation

Digestion is the process of metabolizing (breaking down) food, and it starts when you eat food. The food enters through your **mouth**, travels down your **oesophagus**, gets broken down by your **stomach**, is digested by the **small intestine**, and finally passes through your **large intestine** and **rectum**. On the diagram, the part labelled E is your mouth, the part labelled F is your stomach, the part labelled G is your large intestine, and the part labelled H is your small intestine. Following the **digestive tract**, part E would come first, then part F, then part H, and finally part G. However, the process of digestion ends in the small intestine because it is the last place where nutrients and minerals from food is absorbed. The large intestine is mostly responsible for removing excess water and storing the waste material as feces.

Answer for part (b):

(b) E is the mouth and G is the large intestine.

Answer Explanation

Part E is the **mouth**, the first point of entry for food that you digest. Part G is the **large intestine**, which removes excess water and stores the waste material as feces.

Example Answers for part (c):

- (c) Completion of digestion of food nutrients.
Absorption of food nutrients and minerals into the blood stream.
Transmission of indigestible food to the large intestine.

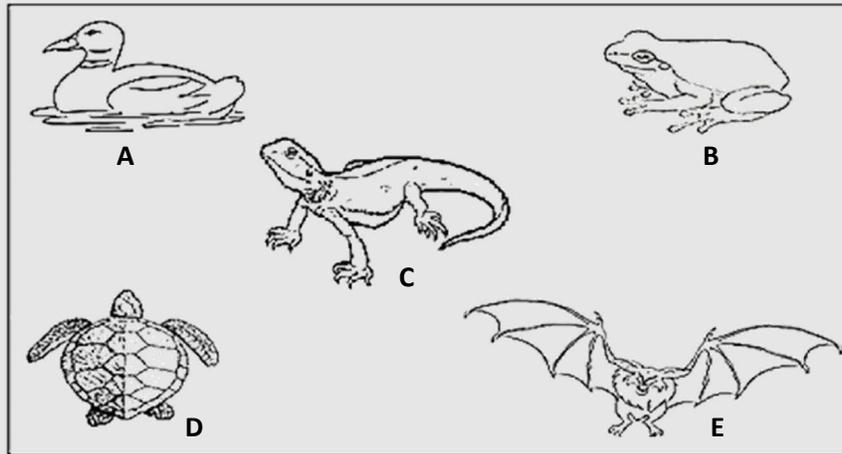
Answer Explanation

Part H, the **small intestine**, comes after the stomach in digestion. After the food is mechanically and chemically broken down by the stomach, the nutrients in the food need to be absorbed. The small intestine uses its large surface area to absorb nutrients from food into the blood stream. The small intestine also continues the process of chemical digestion.



QUESTION 2 ANSWER EXPLANATION

Study the diagram of the animals below and answer the question that follow.



- (a) How many classes of vertebrates are shown in the picture above? (1 mark)
- (b) Which two animals belong to the same class of vertebrates? (2 marks)
- (c) Describe **two** ways in which animal C is adapted to live in its habitat. (2 marks)

Answer for part (a):

(a) There are 4 classes of vertebrates in the picture.

Answer Explanation

Animal **A** is a duck, which is a type of **bird**. Animal **B** is a frog, which is a type of **amphibian**. Animal **C** is a lizard, which is a type of **reptile**. Animal **D** is a turtle, which is another type of **reptile**. Animal **E** is a bat, which is a type of **mammal**. So, altogether, we have a bird, an amphibian, two reptiles, and a mammal. The answer is there are 4 types of vertebrates.

Answer for part (b):

(b) Animals **C** and **D** belong to the same class of vertebrates.

Answer Explanation

Since animal **C** (lizard) and animal **D** (turtle) are both reptiles, they belong to the same class of vertebrates.

Example Answers for part (c):

(c) Camouflage for protection and webbed feet to help with swimming.

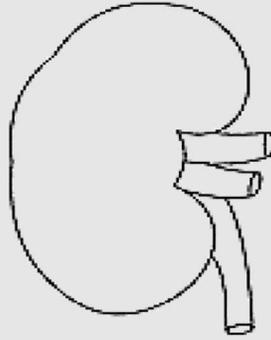
Answer Explanation

Some reptiles like animal **C** (lizard) have adapted to their environment by blending into the appearance of their environments. This is referred to as camouflage. Camouflage allows some animals to go undetected by predators, giving them a better chance to survive. Some reptiles like animal **C** have also developed webbed feet in aquatic habitats. Webbed feet have more surface area than unwebbed feet. Therefore, animals with webbed feet can apply more force to water when swimming and travel farther distances in water. Faster travel through water allows animals to escape predators and even find new sources of food.



QUESTION 3 ANSWER EXPLANATION

The diagram below shows one of the human body organs. Study it carefully and answer the questions that follow.



- (a) To which human body system does the organ belong? (1 mark)
- (b) Name **one** other part that belongs to the body system named in (a) above. (1 mark)
- (c) Write the main function of the organ shown above. (1 mark)
- (d) If the organ shown above gets damaged, list **two** effects it would have on the human body. (2 marks)

Answer for part (a):

- (a) Excretory system

Answer Explanation

The organ depicted is a **kidney**. We each have two kidneys, and they are part of the excretory system because they help filter our blood and create urine for us to excrete.

Example Answers for part (b):

- (b) Bladder, ureter, urethra

Answer Explanation

The **bladder**, **ureter**, and **urethra** are all parts of the excretory system. The function of the bladder is to hold urine until it can be excreted. The function of the ureters is to carry urine from the kidneys to the bladder. The function of the urethra is to carry urine out from the bladder.

Example Answer for part (c):

- (c) The kidneys function to filter the blood in order to remove excess fluid from the body and to remove toxic/metabolic waste from the body.

Answer Explanation

The main function of the kidney is to filter the body's blood. This is accomplished when blood is carried to the kidneys by arteries. Tiny tubes in the kidneys filter the salt and urea out of the blood. The urea combines with water to form urine, and this urine is brought to the bladder by ureters, and then passed through the urethra.

Example Answers for part (d):

- (d) Effects of a damaged kidney on the human body include:
- damage to other body organs
 - swelling of body parts such as face, stomach and feet due to excess fluid in the body
 - weakness
 - fatigue
 - shortness of breath
 - death.

Answer Explanation

Kidney failure happens when something blocks urine from leaving the kidneys, blood flow to the kidneys is decreased, or the kidneys do not function normally. When we are unable to filter our blood and remove wastes from our body, our body parts can swell due to too much fluid. We might feel weak or tired because there is too much harmful waste in our blood, or our other organs might be damaged because we cannot clean our blood. If the damage continues, it can cause death.



QUESTION 4 ANSWER EXPLANATION

Study the diagram of the plants below and answer the questions that follow.



Cassava



Coconut



Mango

- (a) (i) Which of the three plants is grown from stem cuttings? (1 mark)
(ii) Name the plant that has seeds which are dispersed by animals. (1 mark)
- (b) Identify the type of root system found in the coconut plant. (1 mark)
- (c) Briefly describe **two** similarities between the cassava plant and the mango plant. (2 marks)

Answer for part (a)(i):

(a) Cassava

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 (a)(ii):

(a) Mango

Answer Explanation

Seeds can be dispersed by **wind**, **water**, and **animals**. Since cassava is grown from stem cuttings, it does not have seeds that are dispersed by animals. Coconuts are the seeds of coconut trees, and they are too large to be widely dispersed by animals. Coconuts spread by water because they can float! Animals can disperse mango seeds because mango seeds have hard coverings which withstand digestive fluids in the stomach. This allows for animals to eat the mango and later excrete the seed in the stool. So, **mango** plants have seeds that are dispersed by animals.

Answer for part (b):

(b) The coconut plant has fibrous roots.

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. Coconut trees have fibrous root systems because they often live on shorelines, where more nutrients are closer to the surface.

Example Answers for part (c):

(c) Similarities between the cassava and mango plants include net veined leaves, tap root systems, and that they are dicotyledonous.

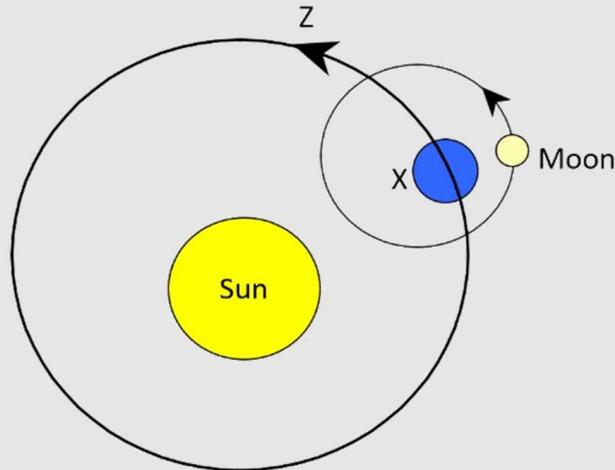
Answer Explanation

The cassava plant and the mango plant are similar because they are both dicotyledons, have tap root systems, and have net veined leaves. Plants with **tap root systems** have one large root that extends deep underground with many smaller roots that branch from it. **Dicotyledons** are flowering plants that produce seeds with two leaves (cotyledons). All dicotyledons have **net veined leaves**, which have a web-like pattern of veins on their surface. Monocotyledons are the other type of flowering plant, and they have one cotyledon in their embryos and parallel veined leaves. Mango and cassava plants are dicotyledons.



QUESTION 5 ANSWER EXPLANATION

The diagram below shows the movement of the Earth around the sun. Study it carefully and answer the questions that follow.



- (a) (i) Name the object labelled X. (1 mark)
(ii) The movement of the Earth shown at Z is called (1 mark)
- (b) Which of the above is a natural satellite? (1 mark)
- (c) (i) Write **one** use of artificial satellites (1 mark)
(ii) Describe **one** effect that a damaged artificial satellite can have on our daily lives. (1 mark)

Answer for part (a)(i):

(a) Earth

Answer Explanation

The object labeled X is the Earth. The Earth moves (orbits) around the **Sun**, and the **Moon** orbits around the Earth.

Example Answers for part (a)(ii):

(a) Revolution or orbit

Answer Explanation

The movement of the Earth shown at Z is called the **orbit**, or **revolution**. We know this because an orbit is the circular or elliptical path a planet takes around the Sun, and Z is showing the circular path the Earth is taking around the Sun.

Answer for part (b):

(b) The Moon is a natural satellite.

Answer Explanation

A **natural satellite** in astronomy is a smaller celestial body which moves around a larger body. The smaller body is held in orbit by gravitation. We have many **artificial satellites**, which are made by humans, orbiting around the Earth, but our natural satellite is the Moon because it was not put there by humans. The answer is that the **Moon** is a natural satellite.

Example Answer for part (c)(i):

(c) Uses of artificial satellites include military purposes, navigation at sea, weather forecasting, and communication signals.

Answer Explanation

Artificial satellites can be used for many different purposes like those described above. Artificial satellites have been launched into space over the past few decades by several countries. They do not carry people, and they carry out the functions outlined above.

Example Answers for part (c)(ii)

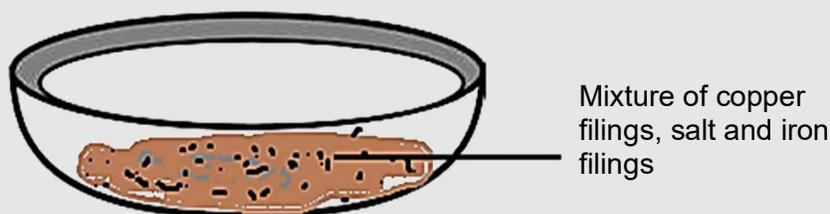
(c) A damaged artificial satellite can create:

- loss or poor internet and radio signals
- loss at sea
- poor or no weather alerts
- countries potentially being in danger of battling each other.



QUESTION 6 ANSWER EXPLANATION

The diagram below shows a mixture. Study it carefully and answer the questions that follow.



- (a) Name **one** metal contained in the mixture. (1 mark)
- (b) Which of the substances in the mixture is soluble in water? (1 mark)
- (c) Identify the **best** method by which the following substances in the mixture can be separated:
- | | |
|----------------|----------|
| Iron filings | (1 mark) |
| Copper filings | (1 mark) |
| Salt | (1 mark) |

Example Answers for part (a):

- (a) Iron or copper

Answer Explanation

Metals are hard, shiny substances like gold, silver, and zinc. Many metals have magnetic properties and are good conductors of heat and electricity. **Copper** is a metal because it is a good thermal and electrical conductor. **Iron** is a metal because it is magnetic, and it is also a good thermal and electrical conductor. The answer to this question could be either copper or iron.

Answer for part (b):

- (b) Salt

Answer Explanation

One special property of salt is that it can dissolve in water. If a material can dissolve in water, it is **soluble** in water. Metals cannot dissolve in water, so copper and iron are not water soluble.

Example Answers for part (c):

- (c) Iron filings can be separated using magnetism. The copper filings can be separated with filtration. The salt can be separated through evaporation.

Answer Explanation

Iron filings are strongly magnetic (more magnetic than copper), so if you held a magnet over the mixture, you would attract only the iron filings. This would allow you to separate them from the mixture.

Once the iron filings are removed, you could separate the copper filings by first adding water to dissolve the salt. This would create a mixture of salty water and copper filings, and you would be able to separate the copper filings by pouring the mixture through a filter. The salt would not be caught on the filter because it would be dissolved in the water.

Last, you could separate the salt from the water by boiling the mixture. This would **evaporate** the water, meaning that it would turn to gas and enter the atmosphere, leaving the salt behind.

