

Annual Examinations for Middle Schools 2024

YEAR 8

INTEGRATED SCIENCE

TIME: 1h 30min

Name: _____

Class: _____

1. A company is promoting their new food products in a supermarket. Their promotion is giving the following information about food.

Mark (✓) the sentences as TRUE or FALSE.



- | | TRUE | FALSE |
|--|--------------------------|--------------------------|
| a. The chocolate bar is rich in carbohydrates. | ☐ | ☐ |
| b. Meat contains lots of carbohydrates. | ☐ | ☐ |
| c. Meat is a good source of fibre. | ☐ | ☐ |
| d. Fats contain lots of energy. | ☐ | ☐ |
| e. Proteins are needed for energy. | ☐ | ☐ |
| f. Carbohydrates are a good source of energy. | ☐ | ☐ |
| g. Fibre is important for a healthy nervous system. | ☐ | ☐ |
| h. Protein is used by the body for growth and repair of cells. | ☐ | ☐ |

(Total: 8 marks)

2. Carla is preparing for an important sports event. She trains every day.



Answer the following questions.

- a. Carla's heart rate is 50 beats per minute when at rest.

Use these numbers to answer some of the following questions.

25, 40, 75, 140, 220

What would Carla's heart rate likely to be after:

- i. a light exercise? _____ (1)

- ii. a heavy exercise? _____ (1)

- iii. Explain your answer.

_____ (1)

- iv Do you expect a similar pattern for her breathing rate?

_____ (1)

- b. This table shows the average energy needed for each sport for one hour.

Sport	Average energy needed for one hour (kJ)
Bowling	1100
Tennis	1700
Football	2300

Carla plays football for three hours per week and goes for tennis for two hours per week.

- i. How much energy does Carla use up during her three-hour football session?

_____ (1)

- ii. Explain why Carla uses up her food reserves more quickly when playing football than when bowling.

_____ (1)

- c. Carla was advised not to smoke. Name **TWO** effects smoking could have on a smoker's body.

(2)

- d. Carla is doing her best not to get sick to avoid missing training sessions. List **TWO** things Carla can do to avoid getting sick.

(2)

(Total: 10 marks)

3. Read the story below and then answer the questions that follow.

At the end of the football season, all players of the winning team were presented with a gold medal. The club organised a party, inviting all their relatives and friends. The captain's mum baked a huge cake. The club paid for burning colourful fireworks at the end of the party.



- a. Gold is a metal. Name **TWO** characteristics of gold that show it is a metal.

i. _____

(1)

ii. _____

(1)

- b. Two statements in the story above show chemical changes. Write down these statements.

i. _____

(1)

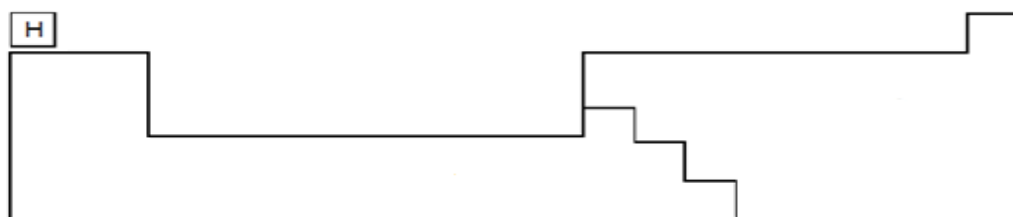
ii. _____

(1)

- c. Give **ONE** reason why the statements written in 'b' are considered as chemical changes.

(1)

- d. The diagram below shows the outline of the periodic table of elements. On the diagram, mark with an X the side where you put the element Gold.



(1)

- e. These are the symbols of some elements. Circle **ONE** metal and state its name.

Al O Cu C Fe N Mg

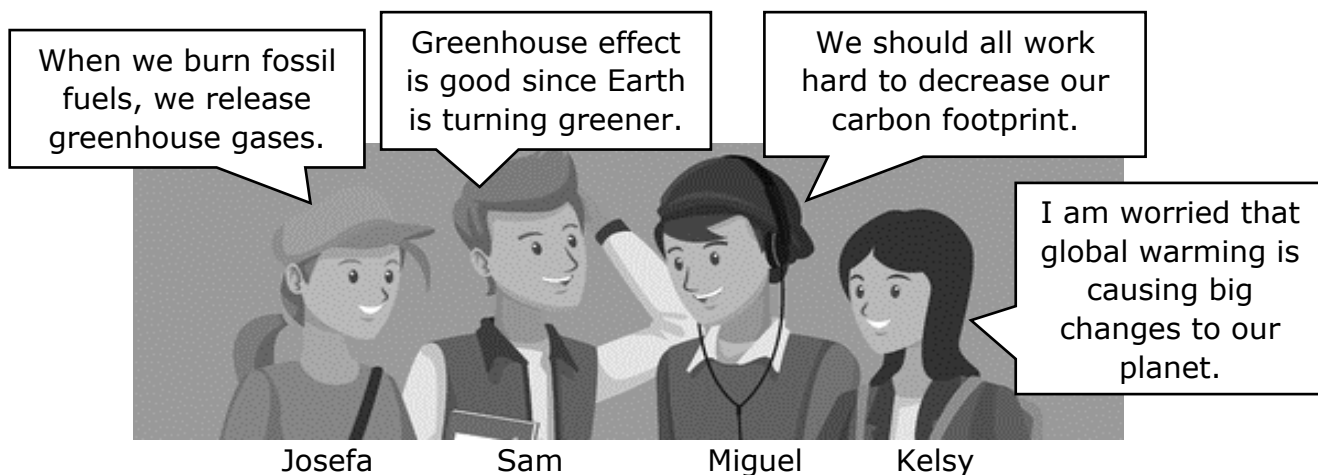
(1)

Name of metal: _____

(1)

(Total: 8 marks)

4. A group of friends were discussing climate change during their science lesson.



- a. The statement of one of the students is incorrect.

i. Write down the name of the student. _____ (1)

ii. Explain why the statement is incorrect.

_____ (1)

- b. Josefa is talking about fossil fuels and greenhouse gases.

i. Give **TWO** examples of fossil fuels. _____ (2)

ii. Explain what greenhouse gases are and give one example of such gases.

_____ (1)

Example: _____ (1)

- c. Kelsy is worried that global warming is causing big changes to our planet. Give **TWO** examples of such changes.

_____ (1)

_____ (1)

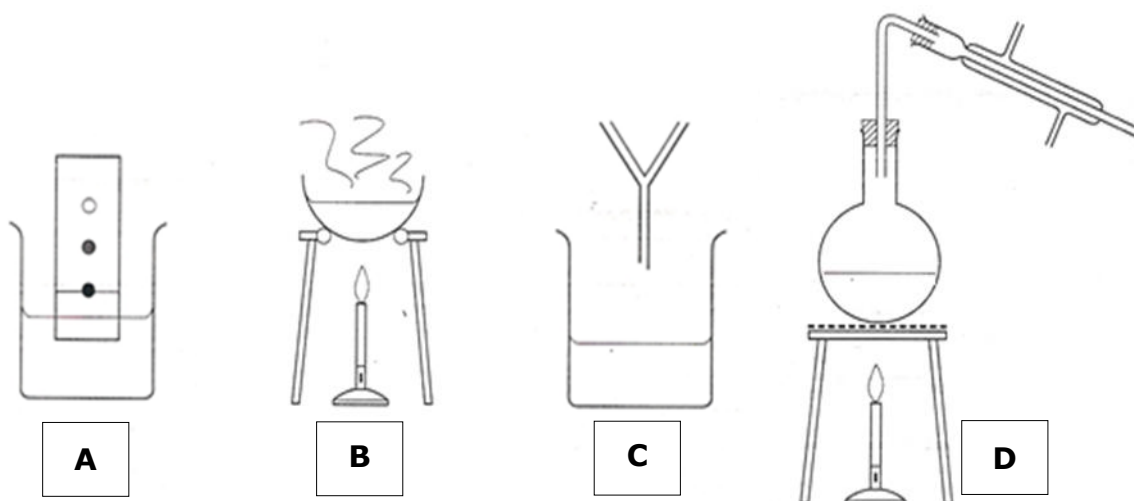
- d. Miguel is talking about the carbon footprint. We should all work hard to decrease our carbon footprint. Give **TWO** examples.

i. _____ (1)

ii. _____ (1)

(Total: 10 marks)

5. The diagrams below show different separation techniques.



- a. Name the separation techniques shown in diagram:

i. A _____ (1)

ii. B _____ (1)

iii. C _____ (1)

iv. D _____ (1)

- b. Which of the above separation techniques would you use to separate:

i. Sand from water? _____ (1)

ii. Salt from water? _____ (1)

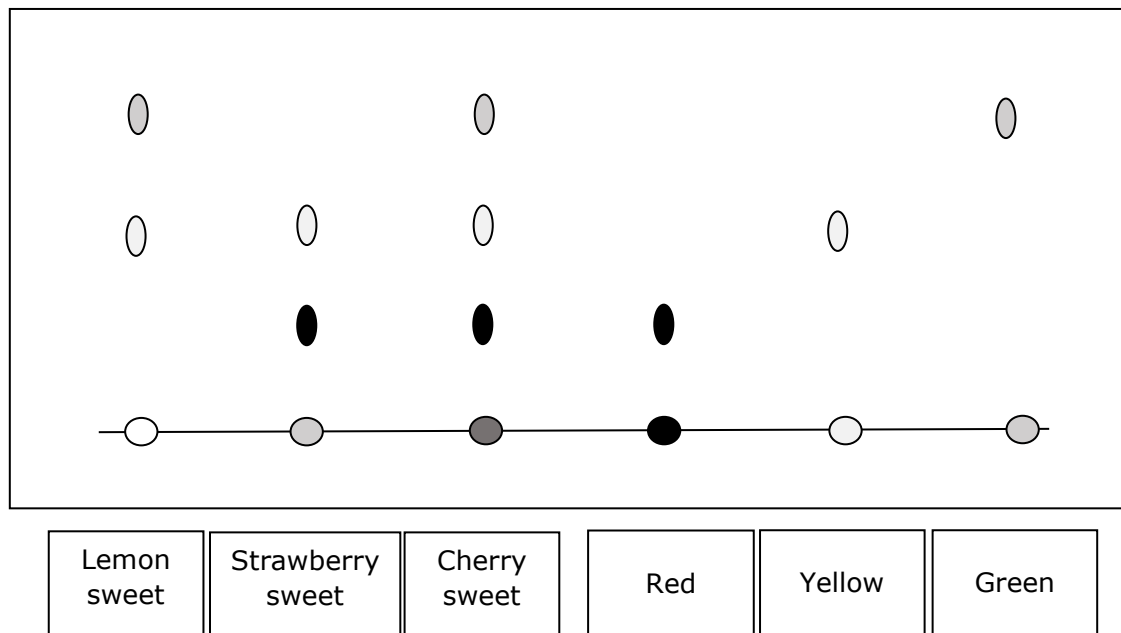
iii. The colours in black ink? _____ (1)

iv. Pure water from sea water? _____ (1)

v. Rice from water? _____ (1)

(Total: 9 marks)

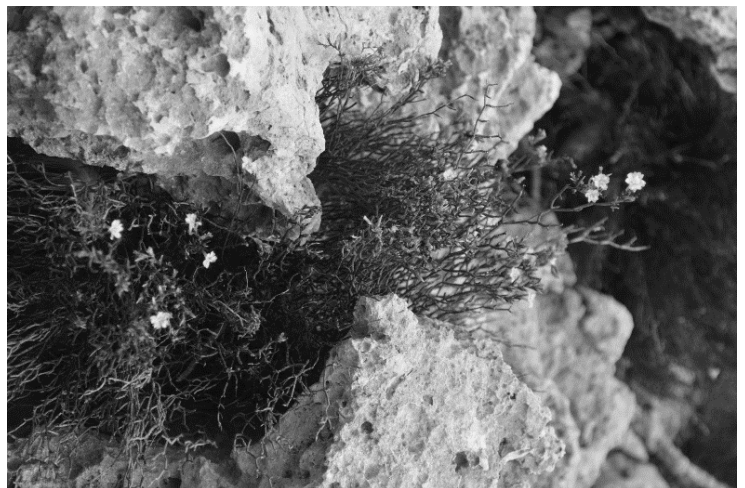
6. Some sweets were tested to find out what food colouring they contain. A chromatography experiment was done with some liquid from the lemon and strawberry sweets and three different food colourings. The results are shown below.



- a. Name the three different food colourings. (1)
- b. Which sweet contains all the three food colourings? (1)
- c. Tom is allergic to green food colouring. Which sweet can he eat safely? (1)

(Total: 3 marks)

7. In 2023, a group of scientists found a new species of Sea-Lavender plant. This plant was named Lanfranco's Sea-Lavender. This plant lives in a very small area of the Maltese islands and is an endemic flowering plant. It looks like a small woody shrub and is adapted to live in a coastal environment. It is strictly protected and the area where it grows is also protected as a nature reserve.



- a. The Sea-Lavender plant lives in a coastal area.
- i. What does this mean? _____
_____ (1)
- ii. Give **ONE** adaptation which plants living in such an environment usually have. _____
_____ (1)
- b. The Lanfranco's Sea-Lavender plant is endemic.
Explain the term 'endemic'.

_____ (1)
- c. The plant can be found in one of our nature reserves.
- i. Explain the term 'nature reserve'.

_____ (1)
- ii. Name **ONE** of the nature reserves in the Maltese islands. _____ (1)
- iii. Name a human activity which can negatively impact the Sea-Lavender.

_____ (1)
- d. Environmental NGOs help in the conservation of the local environment.
- i. Explain what NGO stands for. _____ (1)
- ii. Give **TWO** examples of local environmental NGOs.

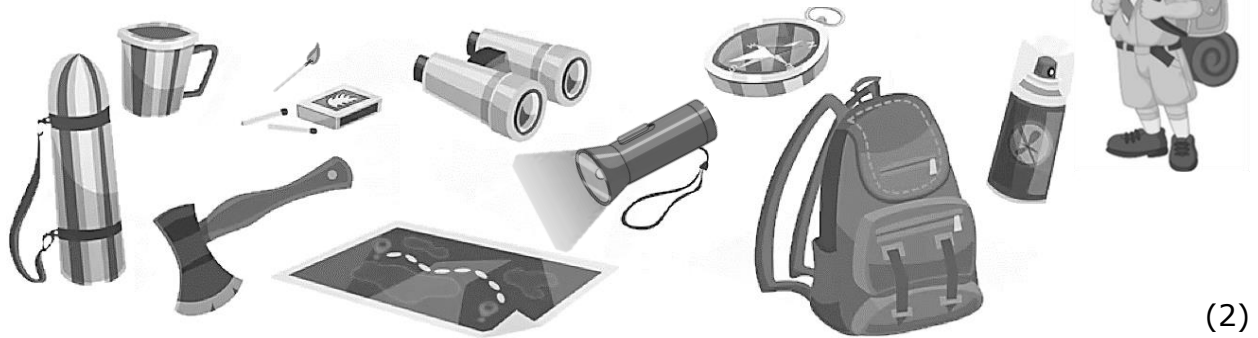
_____ (2)
- iii. State **ONE** example of how NGOs help to conserve the environment.

_____ (1)

(Total: 10 marks)

8. Ben was preparing for a night hike with his scout group. These are the items he packed.

a. Draw a circle around the **luminous** objects.



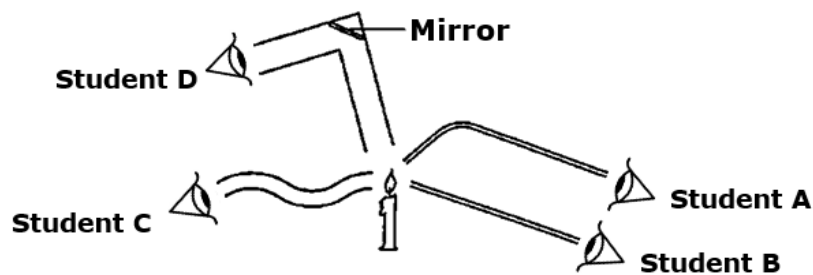
(2)

- b. Fill in the following sentences. The words in the box will help you. You can use these words once, more than once or not at all.

smooth, opaque, heavy, sources, straight, light, non-luminous, reflect, shiny
--

- Luminous objects are all _____ of light. (1)
- To be able to see _____ objects, light needs to _____ on them from a luminous object. (1)
- The most reflective objects have a _____ surface. They are _____ and have a _____ colour. (2)

- c. This diagram shows four students (A, B, C and D) looking at a candle.



- Name **ONE** student who will manage to see the candle. Explain why this is so. (1)
Student: _____ (1)
Reason: _____ (1)
- Name **ONE** student who will not manage to see the candle. Explain why this is so. (1)
Student: _____ (1)
Reason: _____ (1)

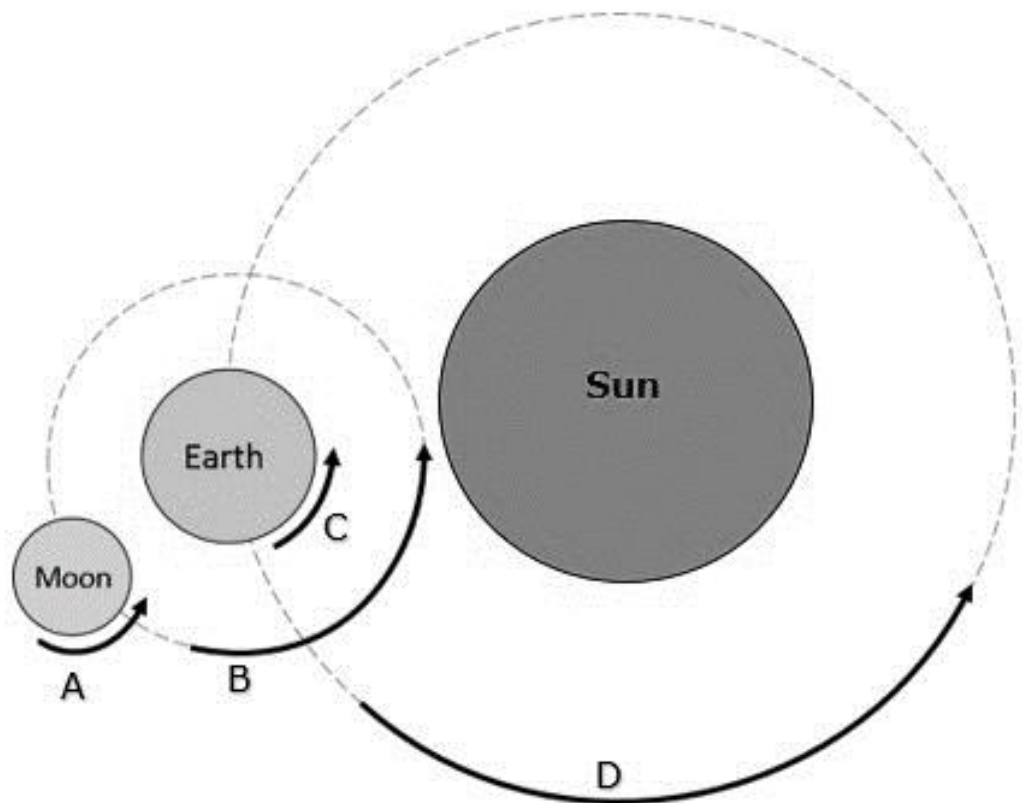
- d. During the night hike, Ben came across a number of bats. Bats hunt at night but they cannot see well. They use sound to locate their prey.

Underline the correct answer.

- i. Sound travels as sound (rays, beams, waves). (1)
- ii. Reflected sound is called an (alert, echo, ultrasound). (1)
- iii. Sound travels fastest in a (solid, liquid, gas). (1)

(Total: 15 marks)

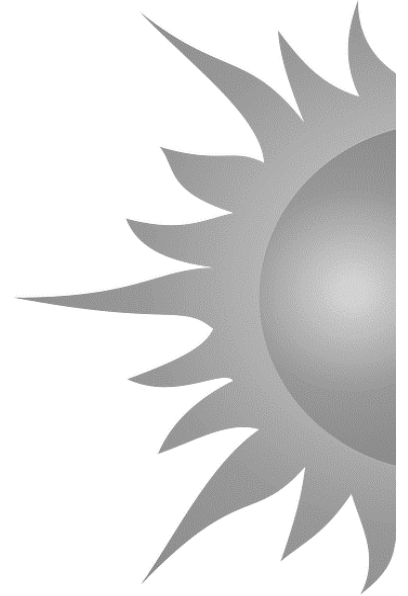
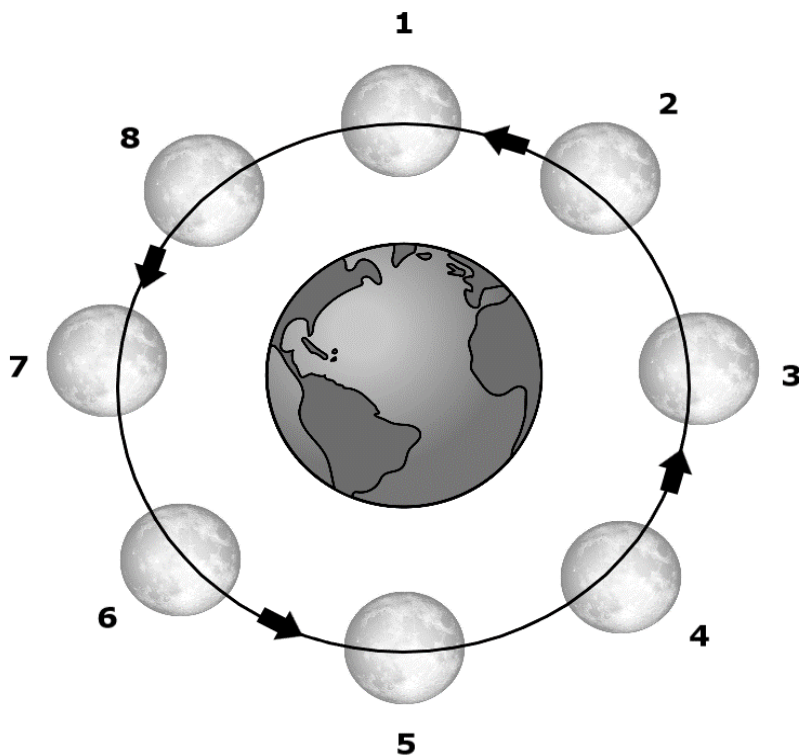
9. Look at the diagram below and answer the following questions.



(The diagram is not to scale)

- a. From the diagram above, name the letter or letters that represent each of the following:
- i. takes 28 days to complete: _____ (1)
 - ii. represents a year: _____ (1)
 - iii. show orbits: _____ and _____ (2)
 - iv. happens in 24 hours: _____ (1)

- b. The diagram below shows the phases of the Moon as it goes around the Earth. Answer the following questions.



- i. On the diagram, shade the dark areas of the Moon when in **phases 3 and 5**. (2)
 - ii. Write the number of the phase which shows a full moon. _____ (1)
 - iii. Today the Moon is in phase 1. Write the number you would expect it to be in 14 days. _____ (1)
 - iv. Explain why an object weighs less on the Moon than on Earth but the mass of the same object does not change.

_____ (1)
- d. Earth is one of the 8 planets in our solar system. Write down the name of the planet described in the phrases below.
- i. The largest planet: _____ (1)
 - ii. The hottest planet: _____ (1)
 - iii. The planet furthest from the sun: _____ (1)

(Total: 13 marks)

10. The police were called to investigate a fire in the stores of a company which produces diamonds. They called a team of forensic experts to investigate. The fire caused a lot of damage.



- a. The forensic experts found out that thieves managed to enter the store. Some small packets of diamonds were missing. Before leaving, the thieves started a fire to remove any clues.

i. Which three components are needed to start a fire?

(3)

- ii. The forensic experts were looking for a number of clues that show that the fire was caused by the thieves, identify the thieves and possibly find the missing diamonds.

Tick **THREE** (✓) clues which are useful for the forensic experts.

(3)

- a set of fingerprints on the door ☐
- the name of the place ☐
- blood stains on the floor ☐
- the colour of the floor tiles ☐
- the size of the room ☐
- the type of missing diamonds ☐

- b. Later on, the police found a car abandoned in a valley. It seems that the driver had an accident as a result of driving at high speed.

In the car they found small jars of salt. It could be the case that the thieves may have mixed the small diamond crystals with salt crystals to hide the diamonds. Explain how experts would check whether the diamonds are mixed with salt.

(1)

c. In the car, they found clues which may be related to the theft of diamonds. The forensic experts found one fingerprint, some hair strands and a single tooth.

i. How many different types of teeth are there in a human mouth?

(1)

ii. From the picture, identify the tooth found in the car.

_____ (1)

iii. Give the name of **TWO** other types of human teeth and their function.

Name of tooth: _____ (1)

Function: _____
_____ (1)

Name of tooth: _____ (1)

Function: _____
_____ (1)



iv. The strands of hair were analysed and compared to that of a suspect. Name the apparatus which may be used to analyse some strands of hair.

_____ (1)

(Total: 14 marks)

Note: If you have missed this year's fieldwork trip, ask the invigilator for the fieldwork written paper.

END OF PAPER – CHECK YOUR WORK AGAIN