DEPARTMENT FOR CURRICULUM,
LIFELONG LEARNING AND EMPLOYABILITY
Directorate for Learning and Assessment Programmes
Educational Assessment Unit

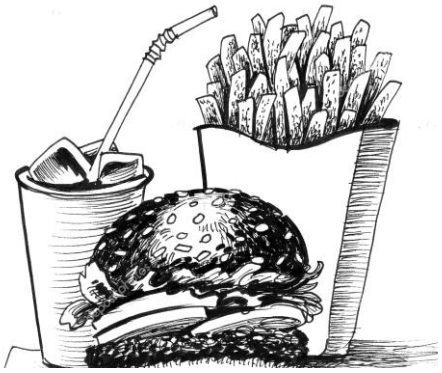
Annual Examinations for Middle Schools 2023

YEAR 8 INTEGRATED SCIENCE TIME: 1h 30min

Name: _____ Class: _____

ANSWER ALL QUESTIONS

1. Answer the questions about this Big Burger meal.



a. Name ONE type of food substance that is found in each part of the Big Burger meal and say why the body needs it.

The words in the box below will help you answer this question. Each word may be used once, more than once or not at all.

carbohydrates, energy, fat, growth and repair, health, minerals, protein, sugar, vitamin, water

i. **Bread roll**: Food substance: _____ (1)
Why the body needs it: _____ (1)

ii. **Burger patty (beef):** Food substance: _____ (1)
Why the body needs it: _____ (1)

iii. **Lettuce**: Food substance: _____ (1)
Why the body needs it: _____ (1)

b. Besides water, soft drinks usually contain a lot of sugar.
Give TWO reasons why sugars might be bad for you.

_____ (1)
_____ (1)

c. i. Is this Big Burger meal a good example of a balanced diet? _____ (1)

ii. Explain your answer. _____ (1)

_____

(Total: 10 marks)

2. Lucy spends some hours per week running as she is preparing for an athletic event. At times she monitors her temperature, pulse rate and breathing rate before, during and after running.

This table shows some of her results.

	Temperature (^{0}C)	**Pulse rate** (beats / minute)	**Breathing rate** (breaths / minute)	**Volume of air per breath** (cm^3)
at rest	36.6	62	12	400
while running	37.2	128	30	900

a. i. Explain what happens to Lucy's pulse rate when running.

_____ (1)

ii. Give a reason for this. _____

_____ (1)

b. i. Calculate the increase in volume of air per breath while running. In your answer include the unit. _____

_____ (2)

ii. Explain why Lucy needs more air while running.

_____ (1)

c. i. Describe the effect of exercise on Lucy's body temperature.

_____ (1)

ii. Explain why this happens.

_____ (1)

d. Prevention is better than cure. Lucy is trying to lead a healthy lifestyle and avoid unhealthy practices such as smoking. Identify ONE harmful substance in cigarettes or cigarette smoke and describe its effect on health.

Substance: _____ (1)

Effect on health: _____ (1)

e. As a precaution, her doctor suggested that she takes the vaccine against Influenza and COVID-19.

i. Name the type of microbe that causes these two diseases.

_____ (1)

ii. Explain how immunisations protect the body against these diseases.

_____

_____ (1)

iii. Identify ONE natural barrier used by the human body to prevent disease. _____ (1)

(Total: 12 marks)

3. The diagram shows a pair of ear muffs containing sound-absorbing material. Answer the following questions about sound.

a. The loudness of sound is measured in dB. State what dB stands for.

_____ (1)

b. Give TWO causes of noise pollution.

_____ _____ (2)

c. Identify TWO ways how noise pollution can be reduced.

_____ (1)

_____ (1)

d. Complete: A very loud sound can be painful and damaging to your hearing. This can damage the _____ of your ear. (1)

(Total: 6 marks)

4. Indri and Victoria are cooking some food during a camping trip. There are fireworks in the background.

a. Write down TWO light sources shown in the diagram.

_____ _____ (2)

b. Draw a line on the diagram to show how Victoria can see the fire. Put arrows on your line. (1)

c. Indri looks at the picnic basket. Draw lines to show how Indri can see the basket. Put arrows on your lines. (1)

d. Indri observed that he can see the fireworks before hearing the sounds from the fireworks.

i. Do you agree with Indri? _____ (1)

ii. Explain his observation. _____ (1)

_____

(Total: 6 marks)

5. Some solids dissolve in liquids to make a solution and some don't.

a. Give one word that describes a substance that does not dissolve.

_____ (1)

b. Name TWO everyday substances that will dissolve in water.

_____ _____ (2)

c. Name TWO everyday substances that will not dissolve in water.

_____ _____ (2)

d. Give one word that describes water when another substance dissolves in it. _____ . (1)

(Total: 6 marks)

6. This photo shows a small gold pendant found in 1906 together with other items in a rock-cut tomb in the limits of Rabat (Malta). This gold pendant is around 2400 years old and dates back from the time of Phoenicians. The gold is still shiny.

a. Tick (✓) the box which describes gold.

☐ solution ☐ element ☐ mixture ☐ compound (1)

b. From the list below, underline TWO properties which show that gold is a metal. (2)

1. It conducts electricity and heat.
2. It does not react with water.
3. It melts at 1064^0C.
4. It is yellow.
5. It is shiny.
6. It is very expensive.

c. In the above-mentioned tomb, rusty iron coins and pieces of glass were also found.

i. Write the word equation for the production of rust.

___iron___ + _____ → _____ (2)

ii. Underline: Rusting is a (physical / chemical) reaction. (1)

iii. Most pieces of glass were clear. Underline the best word which describes glass.

This glass is (opaque / transparent / translucent). (1)

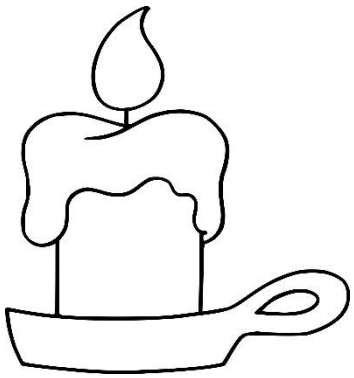
(Total: 7 marks)

7. This question is about burning.

   a. Sulfur dioxide is a compound used in wine industry to kill microbes. It is produced naturally by volcanoes. It is also produced in industry by burning sulfur in air.

      State whether the production of sulfur dioxide is an example of a physical change or a chemical change. _____ (1)

   b. The diagram shows a burning candle.



      i. Write down the physical change taking place.

      _____ (1)

      ii. Write down the chemical change taking place.

      _____ (1)

(Total: 3 marks)

8. Kim measured the mass of a glass dish. The mass was 71.26g. She then transferred a solution to it from a beaker. She left the dish in a hot sunny place near a window over the weekend. When she returned there were small crystals in the dish.

   a. Explain where the crystals came from. (1)

      _____

   b. Name the separating technique used.

      _____ (1)

   c. She reweighed the dish with the crystals and found that it had a mass of 84.36g. Calculate the mass of crystals that were in the dish.

      _____ (2)

(Total: 4 marks)

9. The head of school found out that a school office has been robbed so they called the police. A team of forensic scientists examined the crime scene.

a. Before entering the crime scene, forensic scientists had to wear special clothes, gloves and shoe covers. Explain why.

_____ (1)

_____

b. Forensic scientists found the following clues.

- Footprints next to the window
- A fingerprint on the lamp switch
- Writing on a paper
- Hair and blood on an open drawer

i. Underline the TWO statements which best describes what forensic science is:

- catching criminals in the act
- using science to help solve a crime
- arresting people
- guessing what happened during a crime
- identifying and comparing evidence from a crime scene (2)

ii The forensic scientists suspect that the robber entered through the window. Explain which clue shows this and why.

_____ (1)

c. A fingerprint lifted from the crime scene (X) was compared to other fingerprints from suspects (A, B, C and D).
Analyse and match the prints.

X **A** **B** **C** **D**

The print matches suspect _____ (1)

d. The scientists wanted to test which pen was used to write the message.

i. Name the method they should use.
_____ (1)

ii. Describe how the testing of the ink using the separation method mentioned above is carried out.
_____
_____
_____
_____ (3)

e. The scientists suspect that the robber hit his or her head on the open drawer. Name the apparatus they need to analyse the hair collected.
_____ (1)

(Total: 10 marks)

10. Over the last years, our need for energy increased.

a. Look at the images below. Circle the renewable energy sources. (3)

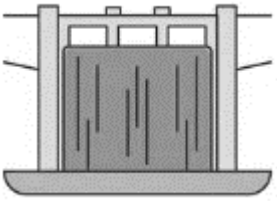
solar energy

Gas

wind energy

Oil

Coal



hydroelectric power

b. Read the following statements and sort them under the correct column in the table below. (6)

Can be used over and over again.
Gone forever when used.
More environmentally friendly.
Create a lot of pollution.
Also called fossil fuels.
Replaced over a short time.

Renewable energy	Non-renewable energy

(Total: 9 marks)

11. A group of Year 8 students went on a fieldwork trip collecting data at Chadwick Lakes nature reserve in the limits of Rabat, Mtarfa and Mosta. Chadwick Lakes are made up of a number of dams pouring into each other.

a. Underline the word that best describes the type of habitat at Chadwick Lakes.

garigue woodland coast marshland valley (1)

b. Chadwick Lakes is a nature reserve.

i. Describe what a nature reserve is. _____

_____ (1)

ii. Explain why nature reserves are important. _____

_____ (1)

c. Chadwick Lakes falls under the responsibility of a local environmental NGO.

i. State what NGO means.

_____ (1)

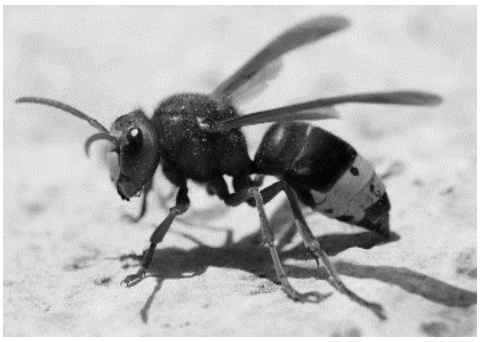
ii. Identify one role of an environmental NGO.

_____ (1)

iii. Give ONE example of a local environmental NGO.

_____ (1)

d. The students were surprised that they did not see even one single bee. At school they carried out a research exercise and found out that the indigenous oriental hornet is responsible for this. Hornets are omnivores, and they are killing our endemic honeybee species. The hornet population has increased over these past years because of an increase in buildings where they can nest. Warmer temperatures also helped hornets to spread across the Maltese islands.



i. Explain the terms:

Indigenous: _____ (1)

Endemic: _____ (1)

ii. From the paragraph, find a sentence that shows how human impact caused the increase in hornet population. (1)

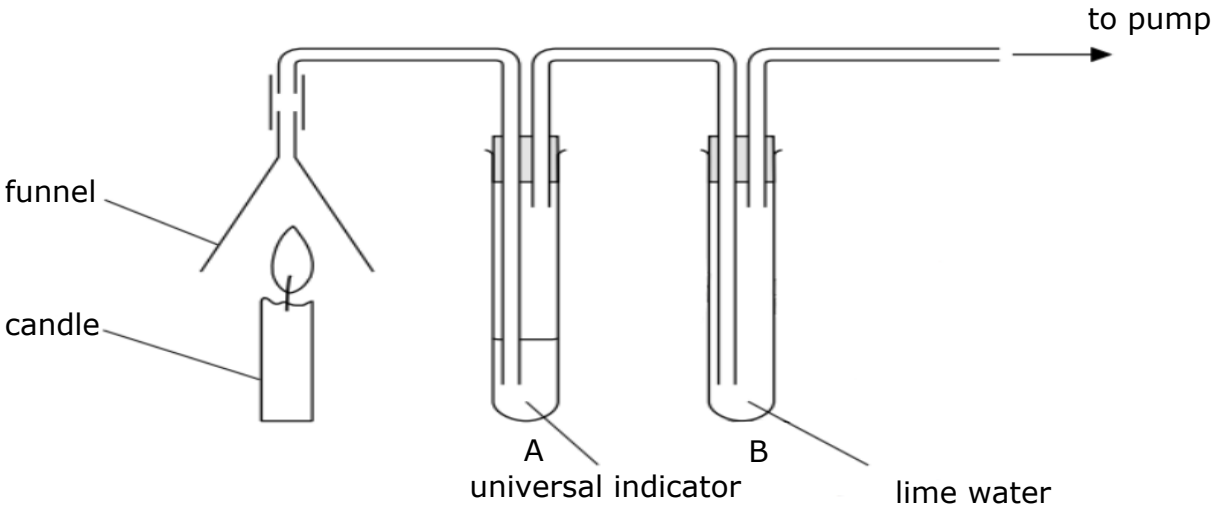
_____

iii. Give a reason why we might be experiencing 'warmer temperatures.'

_____ (1)

(Total: 10 marks)

12. Elona and Amelia wanted to study the gas given out when fuel is burnt.



a. Write down the name of the fuel used. _____ (1)

b. When the gas produced started to bubble in test-tube A, the universal indicator turned red. What does this show about the gas produced?

_____ (1)

c. The gas given out is carbon dioxide. Explain what happens to the lime water when carbon dioxide bubbles through it.

_____ (1)

d. List THREE ways how you can reduce your carbon footprint.

i. _____ (1)

ii. _____ (1)

iii. _____ (1)

(Total: 6 marks)

13. In 1969, Apollo 11 landed on the Moon.

a. Underline the statement which best describes the Moon.

- It is a planet floating around Earth.
- It is as big as the Earth.
- It is a natural satellite orbiting Earth.
- It is full of active volcanoes. (1)

b. Tick (✓) the correct statements. (2)

i. The phases of the Moon refer to the different colours of the Moon. _____

ii. Jupiter is the planet with the largest number of moons. _____

iii. Our Moon is a luminous object. _____

iv. The gravitational pull keeps the Moon in orbit. _____

c. Sabrina has a mass of 56kg.

i. Explain why her weight on the Moon and her weight on the Earth are not the same.

_____

_____

_____ (1)

ii. State the difference between mass and weight.

_____ (2)

_____

d. Write the correct number, from the ones given below, next to its corresponding statement. (5)

365 4 563 24 28 8 1 19

Number	Statement
	The hours for Earth to spin ones on itself.
	Planets in our solar system.
	The number of moons orbiting Earth.
	Days the Moon takes to orbit Earth.
	Days for Earth to complete one orbit around the Sun.

(Total: 11 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