

# KULLEĠĠ SAN BENEDITTU

## Boys' Secondary, Kirkop

Mark

### HALF-YEARLY EXAMINATION – 2011/12

Track 2 (AS)



FORM 2	INTEGRATED SCIENCE								TIME: 1h 30min
Question	1	2	3	4	5	6	7	8	Global Mark
Max. Mark	12	8	8	12	29	8	17	6	100
Mark									

DO NOT WRITE ABOVE THIS LINE

Name: \_\_\_\_\_

Class: \_\_\_\_\_

#### Instructions:

- ☐ Answer all the questions.
- ☐ Do not leave anything out.
- ☐ This paper carries 100 marks.

1. Read this information about **water** and then answer the following questions:

#### Water

Water is a compound made of oxygen and hydrogen. At room temperature, water is a transparent, colourless liquid. On our planet, water can be found naturally in all of its three states of matter: solid in the form of ice, liquid in the form of water, and as a gas in the form of water vapour. Liquid water freezes at 0°C and boils at 100°C. Water is also a very good solvent.

Water is the most common compound in the human body and so it is important that we drink regularly. We also use water for many other purposes in our daily lives, for example washing and cleaning.

a) Write down a phrase from the passage which describes:

(i) The **appearance** of water in its liquid form. (1 mark)

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(ii) The **freezing point** of water. (1 mark)

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(iii) The **boiling point** of water. (1 mark)

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(iv) A **property** of water. (1 mark)

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(v) **TWO uses** of water. (2 marks)

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b) Water is a **compound**. What do we mean by the term compound? (2 marks)

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c) Name the **TWO elements** that make up **water** and write their symbol. (4 marks)

Element	Symbol

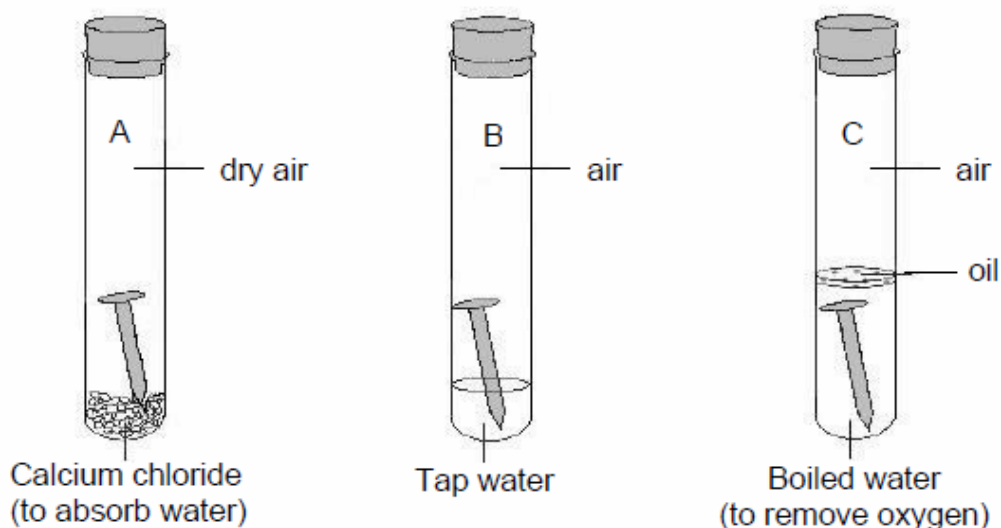
2. When a **chemical reaction** takes place, new materials are formed. These changes are **irreversible**.

The table below shows a number of changes that happen regularly in the kitchen. Tick [X] the correct column to show whether these are chemical or physical changes. (8 marks)

	Chemical change	Physical change
a) Burning gas in cooking stove		

b) Boiling water in a pan to cook pasta		
c) Frying an egg in a non-stick pan		
d) Sugar disappearing as it is stirred into a mug of tea		
e) Mixing coconut and milk to make coconut balls		
f) Defrosting chicken breast in the microwave oven		
g) Baking a chocolate cake in the oven		
h) Water droplets forming on the kitchen window		

3. Joanne carried out an experiment on **rusting**. She placed 3 shiny iron nails in 3 sealed test tubes **A**, **B**, and **C**, as shown in the diagram below.



a) Which nail will rust? \_\_\_\_\_ (1 mark)

b) Tick [X] ONE correct answer. (1 mark)

(i) Iron rusts when oxygen only is present. [ ]

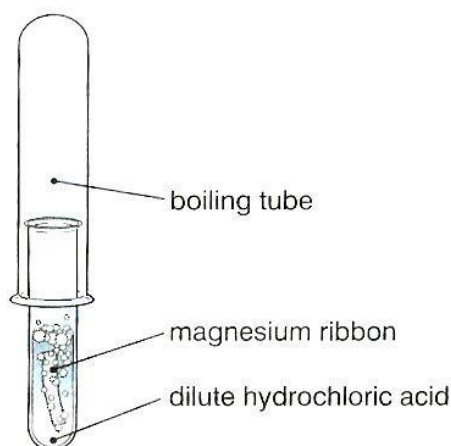
(ii) Iron rusts when oxygen and water are present. [ ]

c) Water pipes were once made of iron. Why are iron water pipes being replaced by plastic water pipes? (2 marks)

d) Name the TWO **elements** that make up **rust** and write their symbol. (4 marks)

Element	Symbol

4. Many **metals** react with **acid** giving **hydrogen gas**. The diagram below shows an example of such a reaction.



a) Which **metal** and which **acid** are reacting together? (2 marks)

\_\_\_\_\_ and \_\_\_\_\_.

b) Acids react with metals and produce a \_\_\_\_\_ and hydrogen gas. (1 mark)

c) How can you tell that a **gas** is given off? (3 marks)

\_\_\_\_\_

d) Where is the gas **collected**? (1 mark)

\_\_\_\_\_

e) Explain how you would check that the gas given off is **hydrogen**. (3 marks)

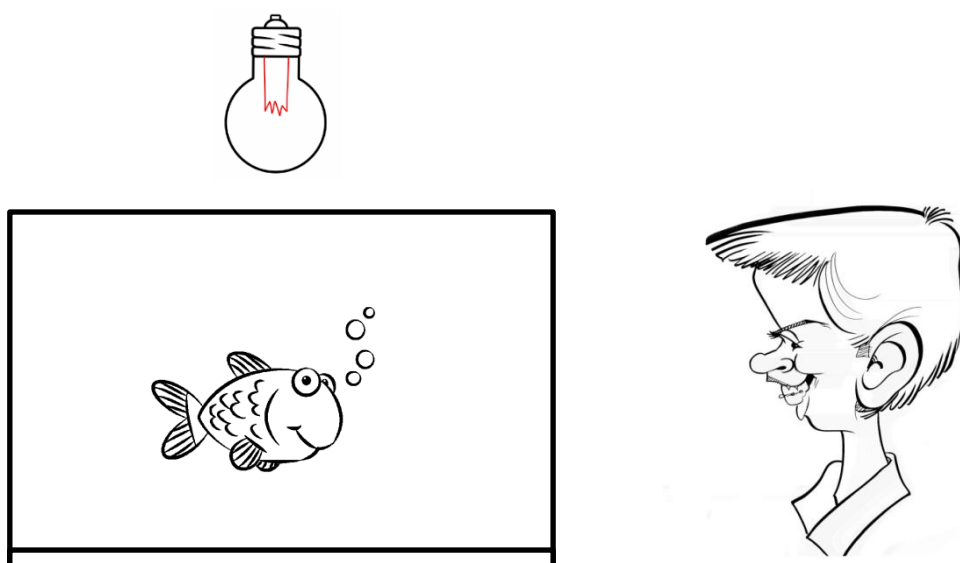
\_\_\_\_\_

f) List TWO properties of **hydrogen**.

(2 marks)

5. David is looking at his new aquarium.

The aquarium has one big fish in it and it is lit by a light bulb which is placed above the aquarium. The diagram below shows the setup of the aquarium.



a) On the diagram above:

(i) Draw an arrow as a ray of light to show how David can see the **light bulb**. Label this arrow **A**. (3 marks)

(ii) Draw an arrow as a ray of light to show how David can see the **fish**. Label this arrow **B**. (3 marks)

(Use a ruler and pencil for your drawings)

b) The light bulb is a source of light. Circle THREE other objects that are **sources of light**. (3 marks)

**Candle**

**Moon**

**Mirror**

**Sun**

**Electric socket**

**Television**

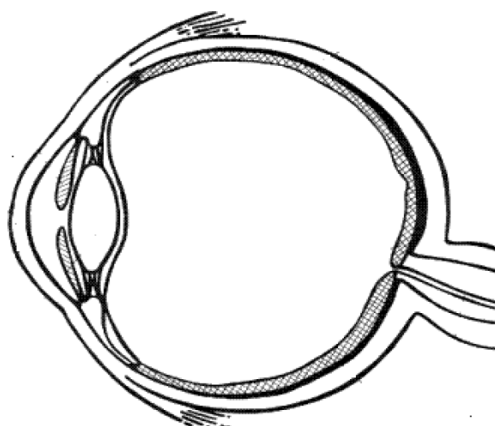
- c) David puts on some **music** on his stereo and keeps on enjoying looking at the fish swimming around his new aquarium. David's sister (Maria) is reading a book in **another room**. She is able to hear the music coming out of David's stereo but she cannot see the light of the bulb. This is because: (Tick [X] TWO correct explanations) (2 marks)

- (i) Light from the bulb is not strong enough [ ]
- (ii) Light does not travel through the walls [ ]
- (iii) Sound travels through the bedroom walls [ ]
- (iv) Light travels faster than sound [ ]

- d) The following diagram shows a cross-section of David's **eye**. Label the diagram using the following words:

**Pupil                  Lens                  Retina                  Cornea                  Nerve**

(Use a ruler and pencil for your drawings) (8 marks)



- e) Tick [X] the correct answer:

- (i) When David switches off the light bulb and the room becomes darker, his pupils

Get bigger [ ]                  Stay the same [ ]                  Get smaller [ ]                  (1 mark)

- (ii) When David is looking at his fish, the image is formed on his eyes'

Lens [ ]                  Cornea [ ]                  Retina [ ]                  (1 mark)

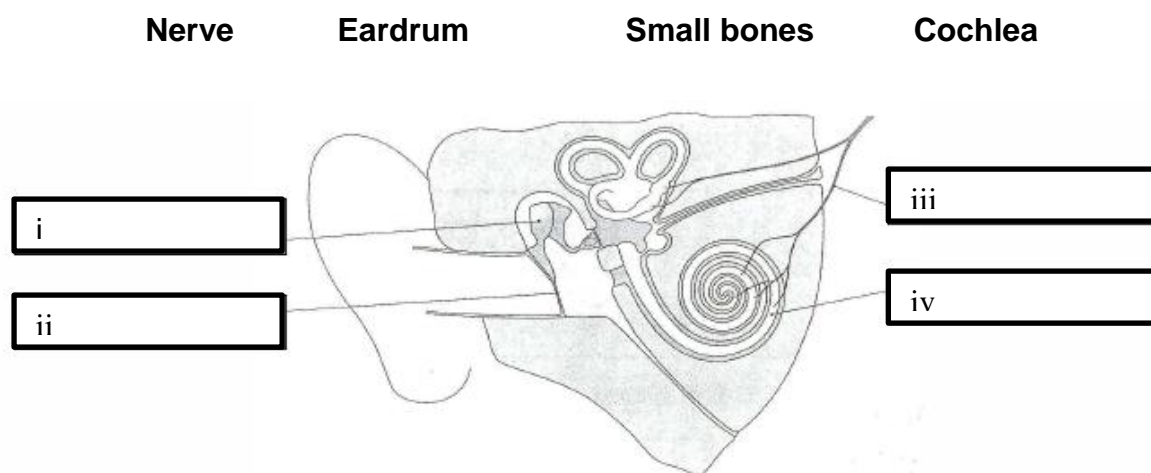
- (iii) This part of David's eye carries messages to the brain:

Nerve [ ]                  Cornea [ ]                  Lens [ ]                  (1 mark)

f) The following diagram shows parts of Maria's **ear**.

(i) Label the diagram using the following words:

(4 marks)



(ii) Describe what happens to Maria's **eardrums** when sound from David's stereo reaches them. (3 marks)

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6. Compare **light** and **sound** by answering TRUE or FALSE in the following pairs of sentences. (8 marks)

- |   |       |
|---|-------|
| a) <b>Light</b> can be produced by the human body | _____ |
| b) <b>Sound</b> can be produced by the human body | _____ |
| c) <b>Light</b> can be reflected                  | _____ |
| d) <b>Sound</b> can be reflected                  | _____ |
| e) <b>Light</b> travels in a vacuum               | _____ |
| f) <b>Sound</b> travels in a vacuum               | _____ |
| g) <b>Light</b> is faster than <b>sound</b>       | _____ |
| h) <b>Sound</b> is faster than <b>light</b>       | _____ |

7. Isaac just had his dinner. The pictures below show what items Isaac had for dinner:



a) Name ONE food from Isaac's dinner that is:

(i) Rich in **carbohydrates**: \_\_\_\_\_ (1 mark)

(ii) Rich in **lipids** (fats): \_\_\_\_\_ (1 mark)

(iii) Rich in **proteins**: \_\_\_\_\_ (1 mark)

b) Isaac drinks 2 litres of **water** every day. Why is water important for us? (3 marks)

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c) Isaac learnt at school that brown bread is healthier than white bread since it contains a lot of **fibre**. The following day Isaac had brown bread instead of white bread for lunch at school.

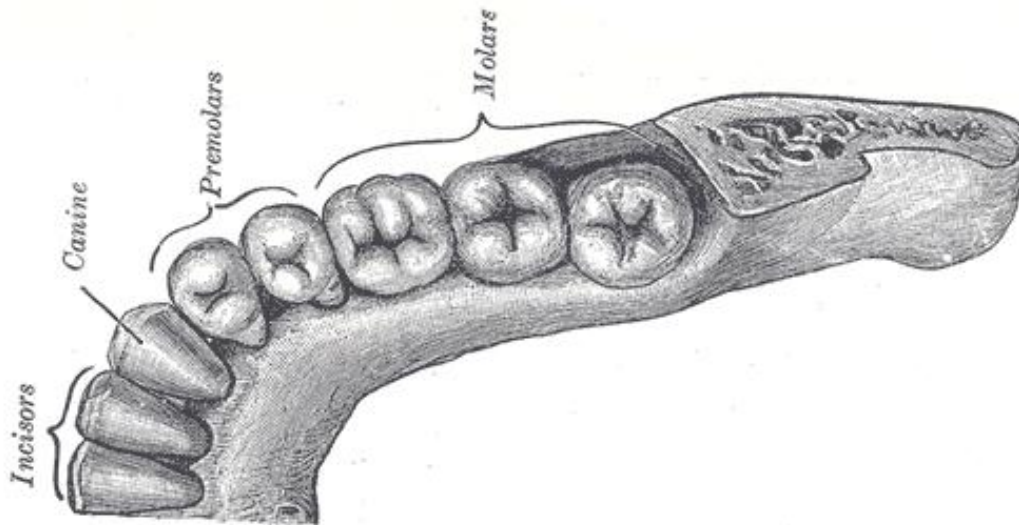
Why is it important that we eat food that is rich in fibre? (3 marks)

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- d) Isaac makes sure that he **chews** food properly before he swallows. The diagram below shows a section of Isaac's **teeth**.



- (i) How many **types** of teeth do humans have? \_\_\_\_\_ (1 mark)
- (ii) Fill in the table below: (4 marks)

Type of Tooth	Function of tooth
Incisors	
	Tear food
Premolars	
	Crush and chew food

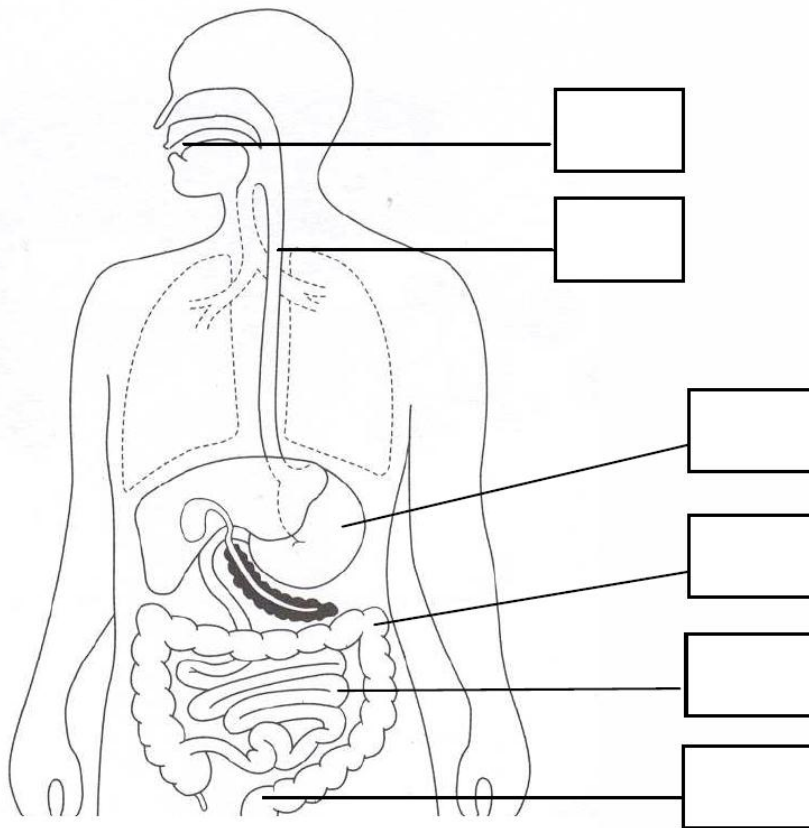
- (iii) One morning Isaac was looking at the mirror when he noticed that one of his molars had a black spot. Isaac panicked and went to the dentist the following day. The dentist told him that one of his molars was showing signs of tooth decay. The dentist cleaned Isaac's tooth and covered it with a filling.

What advice do you think that the dentist gave Isaac to keep his teeth healthy and prevent tooth decay? (List THREE) (3 marks)

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8. The following diagram shows the **human digestive system**. Use the table below to label the diagram with the LETTERS showing where the following take place:



(6 marks)

What happens	Place
Mouth, where food is taken in	<b>A</b>
Large intestine, where water is absorbed	<b>B</b>
Small intestine, where food is absorbed into the blood	<b>C</b>
Anus, from where waste is removed	<b>D</b>
Gullet, where chewed food is passed through	<b>E</b>
Stomach, where food is broken down into a fine paste	<b>F</b>