

KULLEĠĠ SAN BENEDITTU

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Levels
5 – 6 – 7 – 8

HALF-YEARLY EXAMINATION – 2015/2016

FORM 2

INTEGRATED SCIENCE

TIME: 1h 30min

Question	1	2	3	4	5	6	7	8	9	10	11	Global Mark
Max. Mark	6	7	20	6	13	5	9	10	10	5	9	100
Mark												

Instructions to students:

Answer **ALL** questions.

Read each question carefully.

DO NOT WRITE ABOVE THIS LINE

Name: _____

Class: _____

1. Present laws in Malta, state that smoking is illegal inside public buildings.

A) Smoking can be very harmful. Which three problems can be caused by smoking?

(Tick ✓ 3 correct answers)

- ☐ Shortness of breath
- ☐ Being overweight
- ☐ Heart disease
- ☐ Food poisoning
- ☐ Lung cancer

(3 marks)

B) Some scientists investigate 'passive smoking'. They checked the health of three groups of people.

<p>Group A</p> <p>Non-smokers who spend no time in smoky places</p>	<p>Group B</p> <p>Non-smokers who spend time in smoky places</p>	<p>Group C</p> <p>Smokers who spend time in smoky places</p>
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(i) Which group of people breathe in the *least* cigarette smoke?
 _____(1 mark)

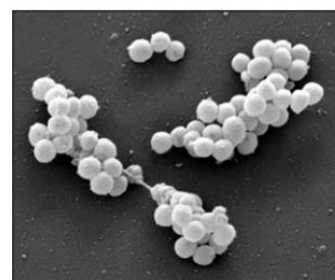
(ii) Which two groups will help scientists find out the effects of passive smoking?
 _____(1 mark)

C) People in group B are likely to have similar health problems to people in group C. Explain why.

 _____(1 mark)

(6 marks)

2. MRSA bacteria can cause serious infections. The bacteria can live on a healthy person's *skin* or in their *lungs* without causing any harm.



A) In the table below, suggest two ways how MRSA bacteria can be spread from person to person, and how the spread of the bacteria can be prevented for each method.

(2 marks)

	Method of Spread	Method of Prevention
1		
2		

B) People can be vaccinated against some diseases caused by bacteria or viruses.

Describe how vaccination prevents a person getting a disease.

(2 marks)

C) Sometimes *viruses*, *bacteria* and *fungi* are useful. Name the microbe involved in the production of:

- i) Bread _____
- ii) Yoghurt _____
- iii) Cheese _____

(3 marks)

(7 marks)

3. A) Last summer, Bobby took a bucket with him to the beach. Last week he found sand mixed with salt in it.



i) Where could the salt have come from?

(1 mark)

ii) What happened to the water in the bucket over time?

(1 mark)

B) Bobby wanted to remove salt from the bucket to get clean sand. He thought he must add some water to the mixture.

i) What will happen to the salt?

(1 mark)

ii) What technique can he use to separate the sand from the salt solution?

(Tick ✓ the correct answer)

☐ evaporation

☐ filtration

☐ chromatography

(1 mark)

- iii) Draw a labelled diagram of the setup he needs, to perform this separation using the available apparatus listed below: (4 marks)

filter paper

funnel

beaker

Diagram:

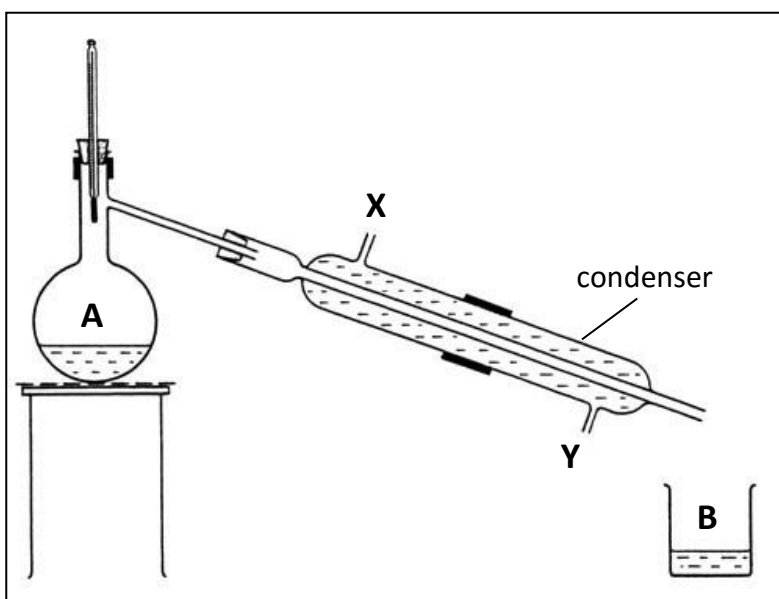
- iv) Underline the correct word:

- The remaining sand in the funnel is called the (residue, filtrate, solution).
- The solution in the beaker contains salt and (sand, water, filter paper).

(2 marks)

- C) Bobby then decided he wants to get the salt to use it for cooking. He took the solution to school to perform **distillation**.

He set up the following apparatus as shown below:



- i) On the diagram on page 4, **draw and label** an important missing apparatus. (2 marks)
- ii) On the diagram, **label** the instrument needed to measure the temperature of the solution. (2 marks)
- iii) The place where Bobby needs to pour the salt solution is marked as **A** or **B**? _____ (1 mark)
- iv) X and Y are two openings in the condenser. Tap water has to go **into** the condenser through opening **X** or **Y**? _____ (1 mark)
- v) Which of the following reason explains why distillation is **not ideal** to obtain salt?
- ☐ It wastes gas and water.
 - ☐ It is more suitable to obtain pure water.
 - ☐ The apparatus is made of glass and can break easily. (1 mark)
- vi) What better technique than distillation could Bobby perform *to obtain salt from water*?
- ☐ evaporation ☐ filtration ☐ chromatography (1 mark)
- vii) Bobby was left with salt crystals. He tried to dissolve the crystals in alcohol. The salt crystals *did not* dissolve in alcohol. He then wrote down:

It can be concluded that salt crystals are _____ in water,
but _____ in alcohol.

(2 marks)

(20 marks)

4. This question is about definitions of elements, compounds and mixtures.

Draw a line from each of the *substances* below to the *group* that it belongs to. Then draw a line from each *group* to the correct *description*.

Substance	Group	Description
sea water	compound	It contains two or more types of atoms or molecules which can be physically separated.
salt	mixture	It contains only one type of atom.
oxygen	element	Two or more types of atoms are joined together

(6 marks)

(6 marks)

5. Josh is investigating the digestive system.

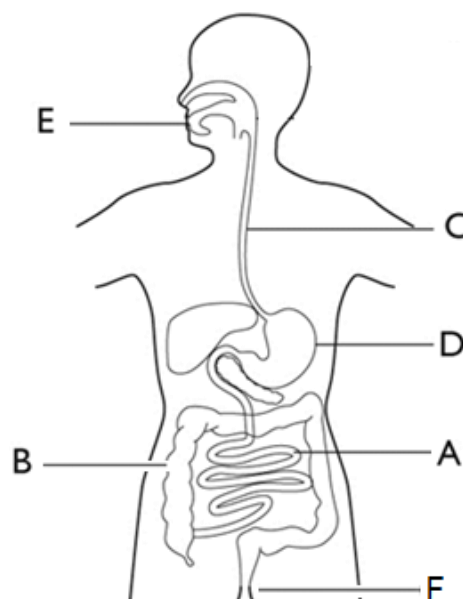
A) What is the function of the digestive system?

_____ (1 mark)

B) Give the name of each organ labelled on the diagram.

(6 marks)

Letter	Organ Name
A	
B	
C	
D	
E	
F	



C) Using the letters, list the correct order through which food passes as it moves through the digestive system.

_____ (1 mark)

D) i) Name the *acid* produced in organ D. _____ (1 mark)

ii) Give *two* ways how this acid helps in the digestive system

_____ (2 marks)

E) Write the letter of the organ where the:

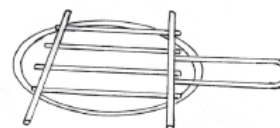
i) absorption of nutrients happens: _____ (1 mark)

ii) removal of waste takes place: _____ (1 mark)

(13 marks)

6. This question is about metals and non-metals.

A) Karen was thinking why some objects need to be made of metals. She cooked sausages on a barbecue. The metal grill of the barbecue is made of steel. Six properties of steel are given below.



Which properties are needed for the metal grill? (Tick ✓ **two** correct boxes.)

It conducts electricity. ☐

It is rigid ☐

It has a very high melting point. ☐

It is magnetic ☐

It is shiny ☐

It rusts. ☐

(2 marks)

B) Karen found other objects made of metal.

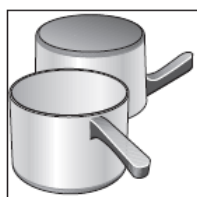
The drawings on page 8 show three objects made from copper.

Draw a line from each object to the reason for using copper for that object.

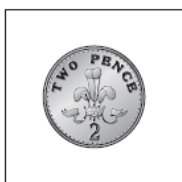
Draw *only* three lines.

Objects made from copper

Reason for using copper



Base of a saucepan



Coin



Wires in a cable

It does not rust.

It is a good conductor
of heat.

It is a good conductor
of electricity.

It is not magnetic.

(3 marks)

(5 marks)

7. The following chart shows the amount of nutrients present in a variety of meats.

Type of Meat	Nutrient Composition per 100g of cooked lean meat		
	<i>Protein</i>	<i>Iron</i>	<i>Fats</i>
Beef	21	2	9.28
Pork	22	1.10	9.66
Chicken	21	1.21	7.41
Duck	23	2.70	11.2

A) Which of these meats would you suggest for:

growth and repair of body cells _____ (1 mark)

following a low fat diet _____ (1 mark)

B) Why are carbohydrates needed in our diet?

_____ (1 mark)

C) Name two other nutrients (food substances) and give a reason why these nutrients are needed.

Nutrient	Use

(4 marks)

D) Define the term *balanced diet*.

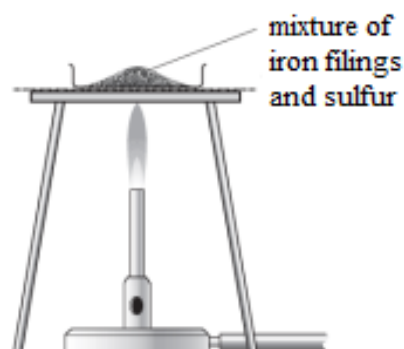
 _____ (2 mark)

(9 marks)

8. This question is about compounds.

A teacher mixed iron filings with sulfur on a metal tray.
 Sulfur is yellow. Iron filings are grey.

The mixture glowed very brightly. When the mixture cooled, a black solid called iron sulfide was left.



A) From this information, give one way you can tell that a chemical reaction took place.

_____ (1 mark)

B) What type of substance is each of the chemicals involved in this reaction?

Choose from:

metals mixture non-metals compound

i) Iron _____

ii) Sulfur _____

iii) Iron sulfide _____

(3 marks)

- C) Robert held a magnet near to each of the three substances. In the table below, write *yes* or *no* to show whether the substance is magnetic. (2 marks)

Substance	Is the substance magnetic?
Sulfur	
Iron	
Iron sulfide	No

D) When iron is heated with sulfur, iron sulfide is formed.

- i) Give the name of the solid formed when zinc is heated with sulfur.

_____ (2 marks)

- ii) Complete the word equation for this reaction between sulfur and oxygen.

Sulfur + oxygen → _____ (2 marks)

(10 marks)

9. This question is about the circulatory system.

Blood is the fluid which carries all necessary substances needed by our cells.



- A) Apart from cells, name *two* substances carried by blood.

_____ (2 marks)

- B) What is the *function* of the heart?

_____ (1 mark)

- C) Jamie is participating in a 5km marathon. What happens to his pulse rate during the marathon and *why*?

_____ (2 marks)

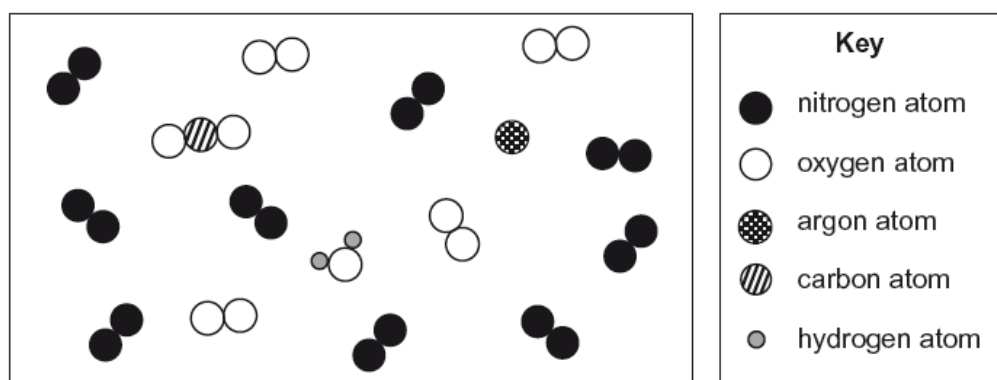
D) Decide whether these statements are TRUE or FALSE:

(5 marks)

- i) The heart pumps blood to the lungs _____
- ii) Red blood cells fight off infections _____
- iii) The heart is an organ which forms part of the digestive system _____
- iv) Obesity and lack of exercise increase the risk of heart disease _____
- v) Veins and arteries are special blood vessels _____

(10 marks)

10. Susie is investigating what air is made up of. The diagram below represents the particles found in air.



A) Complete the following table. Use the diagram and key above to help you. (4 marks)

Name	Symbol	Formula
Argon		Ar
Nitrogen		
Oxygen		O ₂

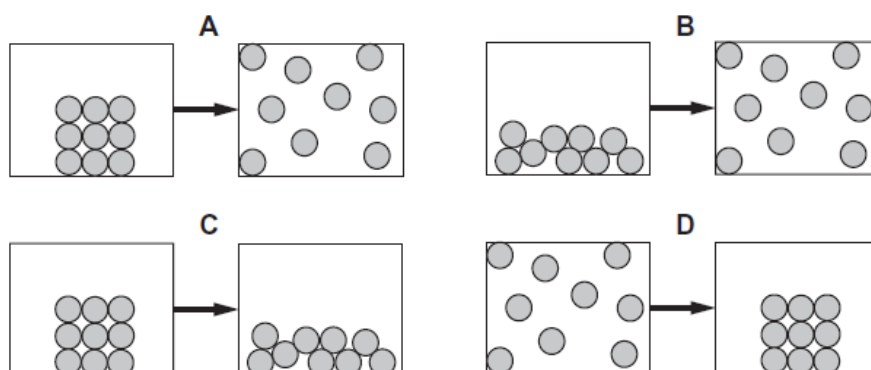
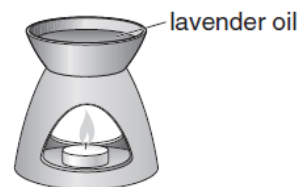
B) Air is a gas at room temperature. What evidence in the diagram above shows this?

_____ (1 mark)

(5 marks)

11. This question is about state of matter.

Rosie poured some lavender oil into an oil burner. She heated it with a candle. The oil changed state.



A) Which diagram represents this change of state? Write the letter. _____

(2 marks)

B) Choose words from the box to complete the sentence below.

solid	liquid	gas
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i) As the candle is lit, the candle wax starts to melt. When the wax melts, it changes from a _____ to a _____. (2 marks)

ii) When heated the lavender oil evaporates more quickly; it changes from a _____ to a _____. (2 marks)

C) In her house, Rosie sees some changes. Are the changes below **physical changes** or **chemical changes**? Write the correct answer.

- i) Candle wax melting _____
- ii) Wood burning _____
- iii) Toasting bread _____

(3 marks)

(9 marks)

END OF EXAM